2023

Improving the Academic Success of Technical College Students with Disabilities: A Multisite Descriptive Case Study

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Improving the Academic Success of Technical College Students with Disabilities: A Multisite Descriptive Case Study

by
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A Dissertation
Submitted in Partial Fulfillment of the Requirements for
The Degree of Doctor of Education
In Curriculum and Leadership
(Higher Education Administration)

Keywords: Universal Design for Learning, Students with Disabilities, Instructional Practices, Technical College, Learning Challenges, Postsecondary Education

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Dedication

I dedicate this dissertation in memory of my mother, Annie Dean Shepherd, who always supported me, my education, and my dreams. I also dedicate this dissertation to my sons, Devinn and Christopher, whom I hope to have watched me throughout this process and learned that despite struggles, they, too, can dream big.

Acknowledgements

I want to thank the chair and methodologist of my dissertation committee, Dr. Jennifer Brown, for her constructive feedback and encouragement. Dr. Brown demonstrated the strength, knowledge, commitment, and accountability that was needed for this journey. I also want to thank Dr. Toni Franklin, my content specialist, for her insight on the Universal Design for Learning framework and encouragement during the beginning stages of my dissertation process. Her vision helped me conceptualize my ideas into a study relevant to current research and the disability community. Dr. Gina Sheeks, a committee member, provided an understanding of the need for services to improve students' higher education experience and retention. She made me believe that I had something of value to contribute to the world of post-secondary education and research. This research study also benefited greatly from the generous support of Dr. Loui Lord Nelson, founder of The UDL Approach.

I want to thank my family and friends for their support and encouragement, without which I would not have been able to sustain my journey. I want to especially thank Dr. Patricia Patrick for inviting me to monthly meetings with her doctoral students. She helped to open my eyes to the dissertation process and helped create the comprehensive support system that I needed. I want to thank Cailee Davis, my writing tutor, who was a counselor, advisor, and friend. I will forever be grateful for the energy and encouragement she poured into me during some of the most challenging moments during my dissertation journey. I also want to thank Dr. Rebecca Dargan, my mentor and dissertation coach, who provided steadfast support from the beginning of my doctoral studies. Most importantly, I want to thank God, the core of my existence, for enabling me to discover myself through this process.

Vita/Resume

Andrea C. Ingram

Educational visionary for over 25 years, promoting higher learning in technical college education.

CORE COMPETENCIES

Advising & Mentoring, Setting Program Schedules, Student-Centered Instruction, Curriculum Development & Implementation, Data Assessment, Descriptive Statistics, Inferential Statistics

EDUCATION

Doctor of Education in Curriculum and Instruction, Higher Education Administration, 2023
COLUMBUS STATE UNIVERSITY, Columbus, GA

Master of Science, Computer Science, 2015
GEORGIA SOUTHWESTERN STATE UNIVERSITY, Americus, GA

Master of Science Administration, Management, 1994
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Bachelor of Arts, Computer Science, 1991
GEORGIA SOUTHWESTERN STATE UNIVERSITY, Americus, GA

Bachelor of Arts, Mathematics, 1991
GEORGIA SOUTHWESTERN STATE UNIVERSITY, Americus, GA

CAREER HISTORY

DIRECTOR of TECHNOLOGY, ***Sumter County School System***
2022 – present

- Coordinates the development and implementation of technology plans for instructional programs, support services, and administrative functions.
- Initiates and maintain communications with system and school level administrators and staff to assist them in effectively utilizing technology in the system.
- Provides on-going technical support and assistance to staff members as appropriate.
- Serves as the Chair of the System Technology Committee.
- Produces reports as directed by the Superintendent or designee.
- Maintains liaison with State Department of Education, other districts, information industry, and others as appropriate to maintain up-to-date information on technological and programmatic developments in the field.
- Works with appropriate personnel to determine annual budgetary needs for technology services and oversee technology expenditures.

- Assists the school system in the development of an integrated K-12 technology education curriculum.
- Coordinates system-wide property inventories.
- Works with system personnel in the implementation of software in the classroom.
- Assists with the application of supplemental funding.
- Coordinates with outside agencies to obtain the most benefit from manufactures incentive programs.
- Supports the school system staff in the installation and upgrade of new and used equipment.
- Ensures accurate and timely data transmission to various agencies and vendors.

BUSINESS COMPUTER TECHNOLOGY DIVISION CHAIR, ***Southern Georgia Technical College***
2006 – 2022

- Developed a cohesive team within the division.
- Ensured division compliance with all state and federal guidelines.
- Conducted a thorough review of current programs to determine their relevance and recommend new programs and Technical Certificates of Credits (TCCs).
- Actively promoted the development and growth of team members so maintain effective division operations.
- Maintained an active role in the community. Currently, serve on Advisory Boards and Councils for the local school district and university within the College's service area.
- Built and maintained positive relations with other division chairs.
- Advocated and promoted quality instruction within the division focused on student success.

COMPUTER INFORMATION SYSTEMS INSTRUCTOR/DEPARTMENT CHAIR, ***Southern Georgia Technical College***
1997 – 2022

- Monitored the integrity of the CIS training facilities, equipment, and instructional methodologies to ensure unwavering compliance with COC accreditation requirements.
- Facilitated open lines of communication with the Computer Information Systems Advisory Committee to ensure students are adequately trained to meet the employment requirements of local businesses and industry.
- Designed and implemented new curriculums to keep programs on the cutting edge of technology and to ensure the marketability and growth of the program.
- Advised and trained students using forefront CIS Technologies, such as Cisco, Oracle, and Microsoft.

CO-DIRECTOR OF ASSESSMENT, ***Southern Georgia Technical College***
2015 – 2021

- Developed, planned, and organized programs to create and implement a Quality Enhancement Plan (QEP) required to meet the goals of reaffirmation in accordance with College's strategic plan.
- Provided direct oversight for the assessment of the QEP.
- Conducted training on processes and interventions related to the QEP.
- Annually created reports and communicated progress of QEP to Senior Staff and Board of Directors, among other stakeholders.
- Managed daily efforts of new developments or changes concerning the committee and plan.
- Developed an achievable implementation timeline with specific goals enabling progress toward student success.
- Supported the Vice President of Institutional Effectiveness in deriving and implementing a plan to assess the QEP.
- Accessed data and co-wrote the 5-year Impact Report for the QEP.

COMMITTEE MEMBERSHIPS

- **Chair,** *Sumter County Family Connections Executive Committee*, 2017 – present.
- **Chair,** *Georgia Southwestern State University Alumni Board***,** 2018 – present.
- **Vice Chair,** *Sumter County Board of Health*, 2018 – present.
- **Member,** *Ignite College and Career Academy Executive Board*, Sumter County School System, 2018 – 2022.
- **Member,** *Sumter County Schools CTAE Advisory Committee*, 2016– 2022.
- **Member,** *Academic Planning Team*, South Georgia Technical College, 2010 – 2022.
- **Member,** *Internal Foundation Campaign Committee,* South Georgia Technical College, 2013, 2015 – 2022.
- **Member,** *Sumter County Schools Parental Advisory Committee,* Sumter County School System, 2013 – 2022.
- **Member,** *Webster County Schools CTAE Advisory Committee,* Webster County School System, 2013 – 2022.
- **Co-Chair,** *Quality Enhancement Plan Committee*, South Georgia Technical College, 2015 – 2021.

ACCOMPLISHMENTS

- Successfully directed and completed South Georgia Technical College's first Quality Enhancement Plan (QEP), 2015-2021.
- As the Program Director and Division Chair, maintained Council on Occupational Education (COE) and Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) accreditation for twenty years and five years, respectively, with no infractions.
- Recognized as *South Georgia Technical College Rick Perkins Recipient,* 2001, 2016. Instructors are recognized and honored for their significant contributions to technical education through innovation and leadership in their fields.

Abstract

Students with disabilities in higher education have lower retention and graduation rates than students without disabilities. While postsecondary administrators are attempting to meet the needs of students by implementing necessary reforms, barriers remain like issues with disclosure, transition planning, and faculty knowledge. This present qualitative descriptive case study sought to explore the instructional practices that were implemented by technical college educators to accommodate students with learning challenges, including students with disabilities, utilizing the Universal Design for Learning framework to determine which current technical college faculty instructional accommodations practices intersect with or diverge from Universal Design for Learning principles. The participants were a purposeful sample of 12 full-time technical college faculty members from six technical colleges in a southern state with at least five years of teaching experience at the postsecondary level and had worked with at least one student with a disability. Data were collected in three phases through the Universal Design for Learning Checklist, Semi-structured Interviews, and Document Analysis of course syllabi. Frequency counts and thematic analysis were utilized to analyze the data. This qualitative research has implications for identifying consistent and best instructional practices that positively impact the academic achievement of college students with disabilities. The findings indicated that technical college faculty have been implementing Universal Design for Learning instructional strategies, both intentionally and unknowingly, in an attempt to provide equitable access to all students regardless of ability and that technical college students can benefit from the implementation of Universal Design for Learning principles into college courses. The findings also implied that professional development training can become a vital aspect of instructors' improvement programs to enlighten them about strategies that are available to improve their work with students with disabilities.

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Chapter I: Introduction

Postsecondary faculty members recognize the need for diverse, inclusive instructional accommodations practices to enhance the success rate of college students with disabilities. For students with disabilities, accommodation may be necessary throughout their time in higher education. Support may be needed, from completing the enrollment process to supporting students with disabilities in classroom learning and encouraging them to engage with other students within the diverse student population (Couzens et al., 2015). Onsite accommodations, coupled with legislation and continued advocacy for postsecondary education, encourage students with disabilities to continue enrollment in higher education institutions to complete their program of study and graduate in a timely manner (Couzens et al., 2015; Newman et al., 2019). The National Center for Education Statistics (2016) reported that approximately 2.2 million documented students with disabilities were enrolled in higher education institutions. According to Santos et al. (2019), 96% of higher education classrooms contain students with a disability. However, many of these students fail to experience academic success and drop out of school before completing their program of study and graduating with a degree (Kudor & Accardo, 2018). Many factors may contribute to this problem, including issues relating to varied accommodations.

Acquiring accommodations through disclosure is vital for receiving the necessary support needed for college students with disabilities to attain their degrees. While students with disabilities receive accommodation at the secondary level, they do not receive academic accommodation at the postsecondary level at the same rate because they do not disclose their disability (Newman & Madaus, 2015b). In a large-scale study of student accommodations using data from the National Longitudinal Transition Study-2, Newman and Madaus (2015b) examined

the perceptions of a nationally representative cohort of 3,190 students who reported enrolling in a postsecondary program since graduating high school.

Newman and Madaus (2015b) compared the receipt of specific accommodations, modifications, and supports at the secondary level to the students' rate of receipt in postsecondary settings. After analyzing the data using a cross-wave cross-instrument weight, the results indicated that 98% of students with disabilities received support services in high school compared to only 24% of students with disabilities pursuing postsecondary education. The results also showed that only 35% of students who received accommodation in high school reported their disability when they attended a college or university. Likewise, 59% received at least one modification during high school, but only 4% received at least one modification during college. Receipt of accommodations has proven to retain and graduate students with disabilities (Fossey et al., 2015).

Newman and Madaus (2015a) concluded that more than 70% of college students who received accommodations at the secondary level do not disclose their disability. Newman and Madaus (2015b) suggested that secondary transition planners, parents, and students should be aware of the need for the students to disclose their disability to acquire accommodations at the postsecondary level. Further, higher education institutions should be mindful of the almost two-thirds of students with disabilities on their campuses who do not, for various reasons, disclose their disability; this occurrence highlights the importance of colleges considering Universal Design principles in developing curricula, as Universal Design methods are meant to engage students of all levels and ability, including students with disabilities, regardless of disclosure.

Faculty support of students' unique needs is another vital element used to help students with disabilities thrive in higher education. Becker and Palladino (2016) asserted that dropout

rates are exacerbated when students with disabilities are not supported. Further, in a study conducted by Wright and Meyer (2017), the researchers concluded that faculty accommodation practices could promote disclosure and positively impact retention. Zeedyk et al. (2019) conducted a study to evaluate the experiences and needs of college students with autism spectrum disorder and identify faculty knowledge of working with them. Participants included 13 students with autism spectrum disorder and 18 college professors, all of whom completed in-depth interviews. The results revealed that some faculty went beyond the scope of the mandated accommodations and criticized the current services provided, deeming them one size fits all approaches.

According to Womack (2017), good teaching can minimize the need for accommodations and disclosure. The principles of Universal Design for Learning utilized in instruction maximize learning for all students (Center for Applied Special Technology [CAST], 2022a). Universal Design transforms one size fits all instruction into diverse, accessible learning that meets the varied needs of students (CAST, 2022a). Bradshaw (2020) conducted a qualitative study to explore inclusive practices, such as Universal Design for Learning, and the knowledge and beliefs of college professionals about students with disabilities.

The Universal Design Theoretical Framework guided semi-structured interviews with 10 participants. Findings from the study indicated that Universal Design for Learning benefits students with visible, hidden, documented, undocumented, and undiagnosed disabilities (Bradshaw, 2020). Through the lens of Universal Design for Learning, the researcher of the current study explored instructional practices in higher education for accommodating students with disabilities that may support the success rate of documented and undocumented students with disabilities.

Background of the Problem

The 1960 Civil Rights movement set precedence for advocating for students with disabilities to act against educational barriers (Leake & Stodden, 2014). The Civil Rights Act of 1964 paved the way for students with disabilities to integrate into society fully (Gibbons et al., 2015a). The Education for All Handicapped Children Act of 1975, reinforced by Section 504 of the Rehabilitation Act of 1974, governs mandated support and accommodations during P-12 education.

Section 504 of the Rehabilitation Act of 1974, the Americans with Disabilities Act of 1990, and the Higher Education Opportunity Act of 2008 are legislation that ensures full access to educational opportunities by mandating accommodations for students with disabilities during postsecondary education. Further, Section 504 of the Rehabilitation Act of 1974 prohibits postsecondary institutions from discriminating against students with disabilities. The Higher Education Opportunity Act of 2008 grants the Secretary of Education authority to waive sections of the law that would prevent students with disabilities from attending college. The Americans with Disabilities Act of 1990 requires reasonable accommodations to ensure equitable learning in an educational environment. The Americans with Disabilities Act of 1990 also mandates postsecondary institutions to provide reasonable accommodations for qualifying students with disabilities who request services.

The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1974, however, provide a caveat to accommodations, stipulating academic adjustments must not alter program standards, requirements, or recruitment and admission procedures. Accommodation often includes extended time on exams, audiobooks, note-takers, frequent breaks, accessible building and classroom entries, and seating (Mbuvha, 2019). Additionally, if

an accommodation request seems unreasonable, a compromise can be discussed between the instructor, student, and a disability service provider. Although reasonable accommodations are available to students with documented disabilities, whether these accommodations are sufficient for all students' degree attainment and job acquisition is unknown (Stevens et al., 2018).

The literature shows that students with disabilities are not graduating at the same rate as their peers who do not have a disability. Gibbons et al. (2015a) also found that students with disabilities who do not hold a degree reduced their chances of becoming independent, productive members of society and reduced their ability to improve their quality of life. According to Mbuvha (2019), while disability administrators address low graduation rates among students with disabilities by upholding laws and providing adequate support, students with disabilities do not receive adequate support from faculty. Stevens et al. (2018) asserted that there are no provisions on how college faculty work with students with disabilities. A proliferation of literature on faculty perception and behavior towards accommodating students with disabilities exists, but few studies addressed the instructional practices that technical college faculty implement for accommodating students with disabilities in their classrooms.

The literature indicated that higher education leaders and educators adhere to the legal mandates and support all students' academic achievement; however, as stated above, students with disabilities are not graduating at the rate of their peers without disabilities (Kimball et al., 2016). Further, Wilhelm (2003) warned that what amounts to reasonable accommodation for one student may not be reasonable for another. Stevens et al. (2018) asserted that there is no clear documentation that shows how college faculty accommodate students with disabilities. Hence, this gap in the research of accommodations was the focus of this multisite descriptive case study. This multisite descriptive case study may add to the body of educational research by generating

documentation on how technical college faculty provide instruction to accommodate students with disabilities to determine both shared and distinct practices that are utilized in classroom instruction.

Statement of the Problem

Students with disabilities are a growing population at colleges and universities (Lombardi et al., 2016; West et al., 2016). The National Center for Educational Statistics (2016) indicated that 11.1% of the students who enrolled in postsecondary institutions were disabled. According to the National Center for Education Statistics (2017), 19% of undergraduate students in higher education were reported to have a disability. The number of students with disabilities pursuing higher education has increased significantly since 1978 and could most likely continue to increase (Timmerman & Mulvihill, 2015). However, a problem exists in U.S. colleges and universities; the students with disabilities population has lower retention and graduation rates than non-disabled populations (Fleming et al., 2017b). Students with disabilities who graduate often take longer to obtain their degrees (Ju et al., 2017). Newman et al. (2016) reported that while 34% of this subpopulation finished a four-year degree, it took 8 years on average.

Santos et al. (2019) asserted that postsecondary faculty struggle to meet the variety of needs of a diverse student population. In a concurrent mixed methods study exploring the challenges that secondary teachers experienced in implementing differentiated instruction strategies designed to meet the various needs of students in an inclusive classroom, Shareefa et al. (2019) examined data that were collected with an open-ended questionnaire followed by semi-structured interviews. The open-ended questionnaire was completed by 32 special education teachers, and semi-structured interviews were conducted with eight teachers who were purposefully selected from the survey participants. The most prominent findings from the

Shareefa et al. (2019) study were that successful implementation of differentiated instruction was impeded by time, resources, knowledge, class size, support, and teacher's workload. Nonetheless, secondary teachers have been using differentiated instruction for decades, and positive results have been shown in the literature (Turner et al., 2017).

While differentiated instructional practices of secondary educators have proven to be effective in supporting the various needs of students, Turner et al. (2017) purported that differentiated instruction in postsecondary education remains inconclusive. To contribute to the literature in this area, Turner et al. (2017) conducted an exploratory qualitative study examining the use of differentiated instruction in higher education classrooms of 50 or more students. The results suggested that postsecondary educators are challenged to provide differentiated instruction in large classrooms that could benefit students with disabilities. The challenge to support the academic achievement of college students with disabilities is intensified by the vagueness of accommodation letters and students' unwillingness to disclose their disability (Santos et al., 2019).

Unlike secondary education, disability disclosure in postsecondary education is voluntary. While laws governing a free and appropriate education require secondary educators to identify students with disabilities, the Family Educational Rights and Privacy Act of 1974 prohibits postsecondary educators from asking or inquiring about a student's disability status (20 U.S.C. § 1232g). The law requires information stored in a student with disabilities' educational records to be kept confidential unless the student gives permission to disability services to disclose such information. By law, postsecondary faculty cannot seek to identify students with disabilities. College students who need services must advocate for themselves and seek accommodations. According to the National Center for Education Statistics (2017), only 11% of

undergraduate students self-reported. Barnard-Brak et al. (2010) conducted a study to discern the meaning of disclosure for college students with disabilities relative to the strategies that they used when seeking accommodation. This qualitative study indicated that students with disabilities were successful academically when they disclosed their disability, negotiated accommodations with faculty, and avoided downplaying their disability status.

Without disclosure, college students are ineligible for disability-related accommodations. Nevertheless, postsecondary faculty are expected to provide high-quality instruction for all students, regardless of their disability. Regardless of their knowledge of the presence of a disability or their willingness to accommodate, faculty are expected to adhere to the regulations governing the support of this student population. Moreover, the failure rate of students with disabilities highlights the potential failure of higher education institutions to ensure that equitable educational opportunities are available to all citizens (Wilhelm, 2003).

Given the low rate of self-disclosure, understanding what other factors can influence postsecondary education success among students with disabilities could be beneficial. Furthermore, academic achievement may be difficult for students with disabilities without proper support (Newman et al., 2016). As the number of students with disabilities continues to grow, and their academic achievement rates remain lower than their non-disabled peers, investigation of daily instructional practices of higher education faculty that might influence the academic success of students with disabilities is crucial.

Purpose of the Study

Acquisition of accommodations significantly improves the probability of retaining and graduating students with disabilities. Newman et al. (2019) examined the impact of disability-specific and support receipt available to all students on the perseverance and completion of

students with learning disabilities. Results indicated that students who received support that were available to all students and/or specific to a disability were more likely to complete two- or four-year college. There is a lack of information on the consistent application of accommodations that are provided to students with disabilities who enrolled in higher education institutions. As there is little research on what postsecondary educators, specifically technical college faculty, are doing to support students with disabilities, exploration of technical college faculty's instructional practices for accommodating students with disabilities will add to the body of existing research (Santos et al., 2019; Stevens et al., 2018; Turner et al., 2017). This qualitative descriptive case study explored the instructional practices that were implemented by technical college educators to accommodate students with disabilities. Data that were collected from the first-person perspective of technical college faculty identified shared and distinct instructional practices that were implemented to accommodate students with disabilities and how they adapted their instruction to meet the needs of all students.

Research Questions

1. What are the instructional practices of technical college faculty to accommodate students with disabilities?
2. How satisfied are technical college faculty with the instructional practices that they have implemented to accommodate students with disabilities?
3. What recommendations do technical college faculty have for improving their instructional practices for accommodating students with disabilities?

Theoretical Framework

Following the reauthorization of the Individuals with Disabilities Act in 2004, the principles of the Universal Design for Learning, a framework for education best practices, were

formulated (Edyburn, 2010). During the reauthorization of the Individuals with Disabilities Act, the term universal design maintained the conceptual definition given the term in Section 3 of the Assistive Technology Act of 1998. The term universal design was redefined in the Higher Education Act of 2008 as a scientific framework for guiding educational practices and was officially referred to as Universal Design for Learning (Edyburn, 2010).

Universal Design for Learning has been gradually implemented in many postsecondary institutions across the nation, both intentionally and unknowingly, to provide equitable access to all students, with Universal Design for Learning strategies aimed to support students of all learning styles, abilities, and levels, including students with disabilities, through the same instruction. As Universal Design for Learning remains the preeminent accommodations framework for faculty and students, this study utilized the same Universal Design for Learning framework to determine the inclusive practices of technical college faculty. This multisite study explored the instructional accommodations, both within and outside the Universal Design for Learning framework, aimed to support students with disabilities at technical colleges in a southern state.

Methodology Overview

Colleges and universities are legally responsible for providing reasonable accommodations to ensure the educational success of students with disabilities. However, little information exists to show how higher education faculty provide accommodations for students with disabilities (Stevens et al., 2018). In addition, there is limited research literature on the accommodations that are provided to students with disabilities (Santos et al., 2019; Stevens et al., 2018; Turner et al., 2017). This multisite qualitative descriptive case study explored faculty's

common and distinct instructional practices and identified effective strategies for accommodating students with disabilities (Baxter & Jack, 2008; Billups, 2021).

The research design for this study was a qualitative descriptive case study. Qualitative case studies enable researchers to gain an in-depth understanding of an individual, group, or event and the meaning from the point of view of those individuals involved within the selected real-life context (Lekunze & Strom, 2017). This design provides researchers with the ability to determine the how and why of a phenomenon (Singh, 2013). This method also allows an in-depth exploratory, explanatory, and descriptive analysis of single or multiple cases (Lekunze & Strom, 2017). A qualitative descriptive case study was the chosen research design because this method allowed an in-depth analysis of the instructional practices that were used by technical college faculty to accommodate students with disabilities.

The descriptive case study explored individuals' unique practices through participants' descriptions of the instructional practices that were used in real-life cases in progress (Baxter & Jack, 2008). This multisite descriptive case study was bounded by faculty with at least five years of teaching experience and who had implemented instructional practices for accommodating students in a southern state. Results from this descriptive case study may help postsecondary faculty better understand the instructional practices needed to help students with disabilities succeed in their program of study in multiple higher education settings based on the participants' descriptions and details. Additionally, results from this study may help identify effective instructional practices for accommodating students with disabilities that could be shared through professional learning for faculty.

Delimitations and Limitations

Possible Delimitation

The researcher established possible boundaries for this study. The delimitations included the requirement for instructors to have experience working with at least one student with disabilities and 5 or more years of experience teaching at the postsecondary level. Surveys were used to collect the responses from technical college faculty. Further, the participants had to be full-time technical college instructors.

Possible Limitations

Academic success is complex and cannot be determined by an independent variable. Therefore, considering a student's disability as the sole catalyst for failure to complete studies would be inaccurate. Other factors, such as the use and availability of support systems, frequency of accommodations, peer influence, and economic resources, may also influence academic success. A small sample size may influence the outcome of the study. The selected southern state for this study has several colleges and a correspondingly large number of faculty who provide instruction to students with disabilities. With time constraints and the inability to evaluate on a larger scale, the small sample size within one state's technical college system could influence the evaluation outcomes.

Another limitation was the possibility of social desirability bias. Faculty members usually want to portray flexibility, empathy, and the ability to make accommodations but may not display these behaviors in the classroom when accommodations are required. Responses may also be based on what the faculty considered suitable rather than what they do or believe. However, the information obtained in this study can, nonetheless, provide some enlightenment

into the instructional practices of technical college faculty for accommodating students with disabilities.

Definition of Terms

Academic success. Completion of a course of study in higher education (Kudor & Accardo, 2018).

Accommodation. A device, practice, intervention, or procedure provided to a student with a disability that affords equal access to instruction or assessment. Its purpose is to reduce or eliminate the impact of the student's disability so that he or she can achieve a standard. A key point is that accommodation does not change the content being taught, nor does it reduce learning or achievement expectations (McLaughlin, 2012).

Disability. A disorder that negatively impacts one or more of life's essential activities, including the following categories: deaf and hard of hearing, visual impairment, mobility impairment, psychiatric disabilities, learning disabilities, attention-deficit/hyperactivity disorder, systemic disabilities, brain injuries, and multiple chemical sensitivities/environmental illnesses (Belch, 2004).

Disclosure. The decision of a student to make any special needs or disabilities known (Grimes et al., 2017).

Instructional practices. The classroom delivery of course content in keeping with educational standards (Correnti & Martinez, 2012).

Intellectual disability. A cognitive impairment that is characterized by significant limitations in intellectual and cognitive functioning and adaptive behavior as expressed in conceptual, social, and practical adaptive skills (Higher Education Opportunity Act, 2008).

Invisible disability. Disabilities, such as ADHD or other learning issues that are not readily or physically noticeable (Kreider et al., 2015).

Learning challenge. The cognitive, motivational or affective challenges that may influence a student's motivation and/or ability to learn (Ambrose et al., 2010).

Modification. A modification may also be a device, practice, intervention, or procedure. However, in this case, a teacher is changing the core content standard or the performance expectation (McLaughlin, 2012, p. 23).

Nondisclosure. The decision of a student to keep any special needs or disabilities hidden (Grimes et al., 2017).

Postsecondary faculty and staff. Faculty and staff members who are employed by the higher education institution either full-time, part-time, half-time, or adjunct (Stevens et al., 2018).

Postsecondary institution. A two-year or four-year college or university, business, or technical college (Stevens et al., 2018).

Reasonable accommodation. Simple, inexpensive changes a school must take to allow students with disabilities the chance to succeed in a classroom setting, which often includes extended time on exams, audiobooks, note-takers, frequent breaks, accessible building and classroom entries, and seating (Mbuvha, 2019; Wilhelm, 2003).

Retention. The ability to maintain students with disabilities with a higher education institution until the student has earned and obtained a certificate, diploma, or degree (Kimball et al., 2016).

Significance of the Study

According to Stevens et al. (2018), the determination of reasonableness and the quality of accommodations is left to the disability personnel and faculty of each institution of higher education. Hong (2015) indicated a need to research the effectiveness of mandated support, and Stevens et al. (2018) asserted that there are no provisions on how college faculty work with students with disabilities. Limited research was found on the consistency of instructional accommodations that are provided to technical college students with disabilities (Santos et al., 2019; Stevens et al., 2018; Turner et al., 2017).

Exploring how technical college faculty accommodate students with disabilities helped to ascertain shared and distinct instructional practices for accommodating students with disabilities and determine faculty's views about their accommodations. This qualitative research study may help identify consistent and best practices that positively impact the academic achievement of college students with disabilities. This research aimed to determine the instructional practices that technical college faculty implement to promote academic achievement and retention, which is vital to educational leaders, faculty, and students.

Summary

Higher education institutions' most prevalent concern is retention (Kimball et al., 2016). Faculty face the unique challenges of their growing diverse student population because of the enrollment increase among students with disabilities in higher education institutions. These challenges are magnified by the failure of students with disabilities to earn their college degrees because they directly impact retention rates. The literature indicated that higher education leaders and educators adhere to the legal mandates and support all students' academic achievement; however, students with disabilities are not graduating at the rate of their peers without disabilities

(Kimball et al., 2016; Kudor & Accardo, 2018; Mbuvha, 2019; Santos et al., 2019; Stevens et al., 2018).

The purpose of legislation, such as the Americans with Disabilities Act of 1990, is to ensure that students with disabilities have access to the same opportunities as everyone else. Obtaining a degree improves the chances of students with disabilities to become independent, productive members of society and their ability to improve their quality of life. The acquisition of accommodation enhances the probability of retaining and graduating documented students with disabilities. Wilhelm (2003) warned that reasonable accommodations for one student might not be suitable for another. Hong (2015) indicated a need to research the effectiveness or usefulness of mandated support.

The literature also indicated a need for updated postsecondary faculty training on the lawful requirements for accommodating students with disabilities (Stevens et al., 2018). Although several colleges and universities have adopted inclusive postsecondary programs, these programs tend to be certificates or non-degree programs where students with disabilities earn credentials rather than a degree (Gibbons et al., 2015a). Stevens et al. (2018) found no provisions on how college faculty accommodate students with disabilities.

Hence, a gap exists in the consistency of accommodations that are provided to students with disabilities. With faculty being the most pivotal point of connection in students with disabilities' academic experience, determining their level of awareness of accessibility guidelines is imperative to ensure adequate support. Training needs and resources should be identified to equip faculty with the knowledge and tools necessary to meet students with disabilities' needs and avoid legal entanglement. Most importantly, exploring the current instructional accommodation practices might add to the body of knowledge by revealing technical college

faculty's shared and distinct practices that they have implemented to promote college completion among students with disabilities.

Chapter II: Review of Literature

A college degree is a gateway to a better life for students with disabilities (Qian et al., 2018). A college degree creates opportunities for students with disabilities in the labor market, identifying a direct link between employment and completion of postsecondary education. Academic achievement can be the most influential resource for students with disabilities to achieve financial independence and equality. Access to higher education has made provisions for students with disabilities to become an integral part of society more than any other opportunity in history (Gibbons et al., 2015a). The rewards of attaining a college degree include the full realization of students with disabilities as significant contributors to society. Since the passage of the Americans with Disabilities Act in 1990, colleges and universities have experienced significant growth in enrollment among students with disabilities. Nonetheless, this subpopulation is significantly less likely to earn a college degree (Ju et al., 2017; Kimball et al., 2016). The following literature review was conducted to understand the current research and what has been reported concerning the accommodations provided to college students with disabilities.

This literature review is the result of an exploration of the kinds of accommodations that are available to students with disabilities in technical colleges, the perceived success of these accommodations, and barriers that impede students with disabilities from using available accommodations. Topic areas included in the literature review include theoretical framework, institutional accommodations, expanding accommodations, barriers to accommodations, and summary.

Theoretical Framework

The theoretical framework for this study was Universal Design for Learning. Universal Design for Learning, grounded in neuroscience research and cognitive development, is a scientifically based framework for developing curricula to improve and optimize teaching and learning for a broad range of learners, including students with disabilities (CAST, 2022b). Universal Design for Learning intentionally builds accessibility features into pedagogy from planning to course development, eliminating the task of retrofitting courses, and reducing the need for disability-specific accommodations (Gosbell, 2021).

Implementing the principles of Universal Design for Learning in technical colleges helps instructors meet the needs of students with a wide variety of learning challenges, including both disclosed and non-disclosed students with disabilities (Burgstahler, 2013). Instructors use Universal Design for Learning to reduce or eliminate barriers through flexibility in the delivery of instruction. Instructors also use Universal Design for Learning to offer students options in how they respond or demonstrate knowledge, while the instructors maintain high achievement expectations for all students. Utilizing Universal Design for Learning in a technical college environment, instructors incorporate traditional and emerging teaching methods and tools to provide a holistic learning experience for as many students as possible (Boothe et al., 2018).

Historical Overview

Universal Design for Learning is derived from the concept of Universal Design. Universal Design is a framework for creating products and spaces that meet most learners' needs (Beamish et al., 2017). In the 1950s, considering the aging population, Ron Mace, an architect restricted to a wheelchair, foresaw the need to redesign homes to accommodate the elderly and desired to create a barrier-free environment for everyone (Tobin & Behling, 2018). Mace

promoted the idea that physical environments should be designed to meet the needs of a broad range of diverse individuals (Tobin & Behling, 2018). Mace and his colleagues from the School of Design at North Carolina State University sought to create a design for products and spaces that would be accessible and usable to their fullest extent without special modifications or adaptations, regardless of a person's age or ability (Null, 1995; Story et al., 1998).

The 1950s were also a time of deinstitutionalization for individuals with disabilities who were relocated from institutions to inclusive community living (Tobin & Behling, 2018). Architects wrestled with implementing segregated accessibility standards, laying the foundation for the universal design movement (Story et al., 1998). The term *Universal Design*, coined in the 1970s by Ron Mace, was first used and promoted in the United States in 1985 as an approach to meet the needs of a wide range of users (Center for Universal Design, 2008; Ostroff, 2011).

Shortly after Congress enacted the Americans with Disabilities Act of 1990, Section 508 of the Rehabilitation Act was amended, extending Universal Design beyond the physical environment to include all communication and information technology (Story et al., 1998). The inclusion of digital technology (i.e., phone lines, television, and the internet) in lawful mandates of Universal Design led to a significant shift toward creating Universal Design for Learning (Tobin & Behling, 2018). Eventually, the concept of physically modified spaces to accommodate physical disabilities led to the creation of the principles of the Universal Design theoretical framework adaptation for the classroom. In 1999, Frank Bowe was the first researcher to apply the principles of Universal Design to education in his book titled *Universal Design in Education: Teaching Nontraditional Students* (Ostroff, 2011). While Universal Design makes physical structure accessible from the start, Universal Design for Learning aims to encourage educators to

anticipate the varied needs of students during the beginning stages of course planning and development (Burgstahler, 2009; Grilful-Friexenet et al., 2017; King-Sears, 2009).

Rose and Meyer (2002) asserted that failure to learn is not the result of the limiting capacities of the learners but reflects the educational system's failure to address learners' needs. Further, Rose and Meyer argued that neurological research revealed that the same instructional approaches would not work for every learner, regardless of ability. As Rose, Meyer, and their colleagues worked to design instructional material to meet the needs of all students, they were inspired by the foundational concepts of Universal Design (Coyne et al., 2012).

In 1984, Rose and Meyer's research in cognitive neuroscience and Universal Design was significant groundwork for the founding of the Center for Applied Special Technology (Rose & Meyer, 2002). The Center for Applied Special Technology was an assistive technology project that was designed to develop and apply technologies to create a print-based curriculum for students with disabilities (Rose & Meyer, 2002). Over the years, the Center for Applied Special Technology has shifted to transforming curriculum through the term that they coined, Universal Design for Learning (Hitchcock et al., 2002).

Educators tend to associate Universal Design for Learning with technology. However, Universal Design for Learning is also about pedagogical or instructional practices emphasizing a responsive curriculum that promotes flexible teaching, learning, and assessment that can adapt to the needs of all students, including students with disabilities (Coyne, 2012). McGuire et al. (2003) contended that reasonable accommodations, such as allowing students with disabilities to complete their exams in other settings with appropriate assistive technology and flexible time allocation, are retrofitted arrangements and implemented after an exclusive design has been imposed. Further, the accommodation approach is based on a biomedical understanding of the

disability and professional medical documentation before accommodations are permitted (Mole, 2013). While the accommodation approach is reactive, Universal Design for Learning is proactive and all-inclusive of various challenges students encounter, including students with disabilities.

Universal Design for Learning is a tool for implementing the social model of disability (Mole, 2013). In the social model, disability happens when a learner's environment does not cater to individual characteristics; therefore, if a student cannot access course materials, the course needs to be altered rather than the student (Rose et al., 2006). Universal Design for Learning places the label disabled on the curriculum, shifting the focus from making specific accommodations for learners with disabilities to creating a learning environment usable by all students, regardless of their functional limitations (Mole, 2013).

Mole (2013) explored the motivations and intentions of instructors in five U.S. universities who claimed to use a social model approach for providing disability services. This researcher aimed to identify successful attempts to create inclusive learning communities in higher education to use as recommendations for further research. A qualitative questionnaire focused on tools, particularly Universal Design, that were used to implement changes made to services to be consistent with the social model. Directors of the disability services office in the five institutions participated in follow-up phone interviews.

Mole found that the philosophy of Universal Design benefited every student in the classroom, promoted an inclusive learning environment, and extended beyond the teacher-centered approach. Robinson et al. (2020) asserted that students with disabilities who felt connected to their environment had a greater sense of belonging. Mole (2013) recommended that disability services staff become experts in Universal Design concepts to design and promote

responsive social policy. Disability services staff should also focus on implementing professional development and collaborative training on the concept of Universal Design. Social supports, such as Universal Design for Learning, promote inclusion, a sense of belonging, and academic achievement for students with disabilities.

Expansion of Universal Design to Education

Universal Design is based on seven guiding principles. These guiding principles include equitable use, flexible use, simple and intuitive use, perceptible information, tolerance for errors, low physical effort, and size and space for approach and use (Connell et al., 1997). The philosophy and principles of Universal Design have been adapted to several educational models that include, but are not limited to, Universal Design of Instruction, Universal Design for Instruction, and Universal Design for Learning.

Universal Design of Instruction applies the seven Universal Design principles to a learning environment, making learning goals achievable by individuals with a wide range of differences in their abilities (Burgstahler, 2001). Universal Design for Instruction, a framework to guide faculty in reflective practices, added two additional principles to the seven: a community of learning and instructional climate (Higbee & Goff, 2008; McGuire et al., 2006). Universal Design for Learning, the framework for this study, is distinguished from the other adaptations because this model is founded in cognitive neuroscience and codified in federal law (CAST, 2022a; Higher Education Opportunity Act, 2008).

The Higher Education Opportunity Act (2008) defined the term universal design for learning as a scientifically valid framework for guiding educational practice. Practices provide flexibility in the ways information is presented, in the ways students respond or demonstrate knowledge and skills, and in the ways students are engaged. Practices also reduce barriers in

instruction, provide appropriate accommodations, support, challenge, and maintain high achievement expectations for all students, including students with disabilities and students who are limited English proficient (CAST, 2022a; Higher Education Opportunity Act, 2008).

In 2018, the reauthorization of the Perkins Act, which supports technical education, included Universal Design for Learning as a tool to strengthen career and technical education to better prepare students for the 21st-century workforce. The reauthorization of the Perkins Act of 2018 includes and emphasizes providing appropriate accommodations for special populations using Universal Design for Learning principles. Further, training in using the Universal Design for Learning principles is mandated for the professional development of teachers, faculty, specialized instructional support personnel, career guidance and academic counselors, and paraprofessionals. Training mandates are required for instructors who teach students with disabilities and English language learners (Perkins Act, 2018). Despite the legal requirements stipulated in the Perkins Act, much of this training is not delivered to technical college faculty and is not consistently enforced in classroom design (Santos et al., 2019; Stevens et al., 2018; Turner et al., 2017).

The Principles of Universal Design for Learning

Within Universal Design for Learning, the seven principles of Universal Design have been generalized into three principles. These principles support why, what, and how people learn, accounting for human variability. The three principles include multiple means of engagement, multiple means of representation, and multiple means of action and expression (CAST, 2022a).

Multiple means of engagement are intended to motivate learners by stimulating interest in various ways (CAST 2022a). Once interest is generated, multiple means of representation are

designed to present information and content in multiple ways to reach students wherever they are (Rose et al., 2006). Multiple means of action and expression provide learners with differentiated ways to express the knowledge they have learned (CAST, 2022b). Table 1 depicts the three principles with their guidelines and examples of how postsecondary educators can implement Universal Design for Learning in the classroom.

Table 1

Universal Design for Learning Principles Guidelines and Examples

UDL Principles	Guideline	Example of Implementation
Provide Multiple Means of Representation Recognition Networks The "WHAT" of learning	Provide options for perceptions ● Optional ways to customize the displayed information ● Alternatives for auditory and visual information	Faculty engage learners by providing alternative ways to promote engagement to develop self-regulated student learners who remain engaged in the classroom environment (Meyer et al., 2014).
	Provide options for language, mathematical expressions, and symbols ● Clarification of vocabulary, symbols, syntax, and structure ● Illustration of key concepts through multiple media	For example, an instructor can provide transcripts of video and/or audio files to create a learning environment that is ready for deaf/hard-of-hearing students, students with an unstable internet connection who find it difficult to stream videos or English as a second language, students who benefit from being able to pair.
	Provide options for comprehension ● Highlight patterns, critical features, ideas, and relationships ● Support transfer and generalization	audio to the written word (Flanagan & Morgan, 2021). An instructor can also post guided notes electronically, use assistive technology to

UDL Principles	Guideline	Example of Implementation
	● Provide or activate background knowledge	support reading; use an online dictionary or thesaurus; use a clear, consistent format for all content use a clear, plain font that is easy to read (Flanagan & Morgan, 2021).
Provide Multiple Means of Action and Expression Strategic Networks The "HOW" of learning	Provide options for physical action ● Provide various methods for response and navigation ● Optimize access to tools and assistive technology Provide options for expressions and communication ● Use multiple tools for construction and composition ● Use multiple media for communication ● Build fluencies through support for practice and performance Provide options for executive function ● Guide and support goal-setting, planning, and strategy development ● Facilitate information and resource management ● Enhance capacity for progress monitoring	Faculty must provide and present content in multiple forms to optimize how learners associate the content (Meyer et al., 2014). For example, an instructor can provide students with self-reflective surveys to monitor their progress or exit surveys to check the success of individual lessons. Quizzes and games can also be used to assess and express knowledge (Flanagan & Morgan, 2021). Directions are provided in multiple modalities, including written, audio, and video (Flanagan & Morgan, 2021). Students are given options on how they share course work, such as summaries on the discussion board, with video, audio recording, creating a podcast, or

UDL Principles	Guideline	Example of Implementation
		creating an infographic (Flanagan & Morgan, 2021).
Provide Multiple Means of Engagement Affective Networks The "WHY" of learning	Provide options for recruiting interest ● Increase individual choice and autonomy ● Optimize relevance, value, and authenticity ● Minimize threats and distractions	Faculty provides multiple options for executive functions, expression and communication, and opportunities for physical activity to help learners develop strategic expertise (Meyer et al., 2014).
	Provide options for sustaining effort and persistence ● Emphasize the importance of goals and objective ● Vary challenge and support levels ● Foster collaboration and communication ● Increase mastery-oriented feedback	For example, an instructor can diversify lesson plans to include multimedia, such as written articles paired with videos, or deliver content through a quiz and/or game that actively engages students. Further, group assignments allow students to fulfill different roles within the group, providing students the agency of choice (i.e., to choose their role; Flanagan & Morgan, 2021).
	Provide options for self-regulation ● Promote expectation and beliefs that optimize motivation ● Facilitate personal coping skills and strategies ● Develop self-assessment and reflection	Instructors implement resources to support content based on the preference of students (i.e., podcast or video, different website formats culturally representative resources; Flanagan & Morgan, 2021). Instructors select topics that are relevant to students and provide specific feedback

UDL Principles	Guideline	Example of Implementation
		using video, audio, annotations, text, or a combination of the above (Flanagan & Morgan, 2021)

Note. Source: CAST (2022a)

Universal Design in technical colleges eliminates or reduces barriers for students with disabilities and stresses a deliberate form of teaching that clearly outlines course objectives (Dalton et al., 2019). Hence, Universal Design for Learning seeks to minimize barriers and maximize student learning. Educational planners using Universal Design also recommend that information be delivered in different formats (i.e., video, audio, text, and hands-on) to accommodate students with disabilities and other diversity in the classroom (Dalton et al., 2019).

Mbuvha (2019) affirmed that incorporating Universal Design for Learning creates learning spaces in traditional and online environments that are more inclusive of students with disabilities. Wilson (2017) asserted that Universal Design for Learning could radically transform the meaning of inclusive education and the concept of disability in education. Furthermore, many college and university program planners have adopted Universal Design for Learning models to enhance teaching and learning (Mbuvha, 2019).

Is Universal Design for Learning Evidence-Based?

The increased enrollment among students with disabilities in postsecondary institutions has caused a need to reexamine access and instructional practices (Lalor, 2018). As a result, Dukes et al. (2017) argued that there is a need for evidence-based practices to ensure that postsecondary education benefits all students, including students with disabilities. Edyburn (2010) contended that although the Higher Education Opportunity Act of 2008 defined universal design for learning as a scientifically valid framework, the Universal Design for Learning

framework could not be substantiated at that time. Further, a review of Universal Design for Learning research at the postsecondary level yielded only eight studies (Robert et al., 2011). Given the limited research literature and amount of research studies, Universal Design for Learning has not been proven evidence-based at the postsecondary level (Davies, 2013;Roberts et al., 2011). However, Universal Design for Learning, intended initially to benefit P-12 students with disabilities, has been identified as a best practice for accommodating college students with disabilities, especially those students who are undiagnosed or choose not to disclose (Hamraie, 2016; Newman & Madaus, 2015b).

In a qualitative study conducted by Griful-Freixenet et al. (2017), the researchers explored the principles of Universal Design for Learning to determine whether they addressed the needs of students with disabilities in a traditional postsecondary model. Semi-structured interviews were used to capture data from 10 college students with disabilities. After a systematic analysis of interview transcriptions and identifying themes, the results indicated that the learning needs of college students with disabilities aligned with the Universal Design for Learning framework, particularly with the third principle, multiple means of engagement.

Similarly, in a study to explore the motivations and intentions of five U.S. universities that claimed to use a social model approach for providing disability services, Mole (2013) aimed to identify successful attempts at creating inclusive learning communities in higher education recommendations for further research. Mole (2013) used a qualitative (semi-directive) questionnaire to collect data on the implementation of tools, including Universal Design, used to align services to be consistent with the social model. Directors of the disability services office of the five institutions participated in follow-up phone interviews. Mole (2013) found that the philosophy of Universal Design benefited every student in the classroom, promoted an inclusive

learning environment, and went beyond the “one size fits all” approach. Further, Mole recommended that disability services staff should become experts in the concepts of Universal Design; focus on educating and collaborating with faculty, teaching support services, administrators at all levels, facilities staff, and information technology services on the concept of Universal Design; and review publications and documentation guidelines on the implementation of the social model and Universal Design.

The instructional model for developing a curriculum utilizing Universal Design for Learning, according to Smith (2012), includes setting clear goals, considering appropriate methods, selecting various content delivery methods, and designing formative assessment approaches and ongoing opportunities for monitoring and feedback. Smith (2012) conducted an action research study to explore the reflective practices of one faculty member as she applied the principles of the Universal Design for Learning framework. The study was used to determine the framework's effectiveness in a graduate-level research methods education course at a large, urban research-oriented college in the southeastern United States. The study focused on students' perceptions of the instructor's use of Universal Design for Learning, student engagement, and the relationship between the use of Universal Design principles and student engagement. The researcher collected data from eight graduate students who were enrolled in two sections of an introductory research course using quantitative and qualitative data sources (i.e., Likert scale survey, observation, informal conversations, and reading students' blogs).

Findings suggested that when faculty design courses through the Universal Design for Learning lens, course goals are more clearly aligned with instructional practices. Students were engaged positively in the course, and the relationship between students’ interest and engagement

was also positive. Further, students indicated that Universal Design for Learning strategies were essential to their success in the course.

Kumar and Wideman (2014) conducted a case study to explore the practical application of Universal Design for Learning and the response of first-year undergraduate students to Universal Design for Learning-inspired course attributes. The researchers collected data from 25 participants who completed a 20-minute in-class questionnaire. Following the questionnaire, four students (i.e., English was their second language for three students; and one student had a learning disability) agreed to be interviewed. After the in-class questionnaire data were collated and the interviews analyzed for common themes, key findings indicated that Universal Design for Learning was beneficial to all students, including students with disabilities. For students with disabilities, the course design reduced their need to access the college's disability service office support. Further, students experienced greater control over their learning process, leading to increased self-efficacy, academic achievement, and retention.

Application of Universal Design to Current Study

As in the previously mentioned studies, postsecondary educators have intentionally and successfully implemented the instructional strategies of Universal Design of Learning to support and promote academic achievement. However, the literature revealed that some higher education practitioners unknowingly implemented Universal Design for Learning framework attributes. Utilizing the action-based, constructivist, grounded theory framework, Kimball et al. (2016) collected and analyzed data from 31 student affairs professionals during seven focus groups. After analyzing the data using grid analysis, findings suggested that, while very few participants utilized the term universal design, most participants described perspectives and actions that resembled the Universal Design principles, while implying long-term use of Universal Design

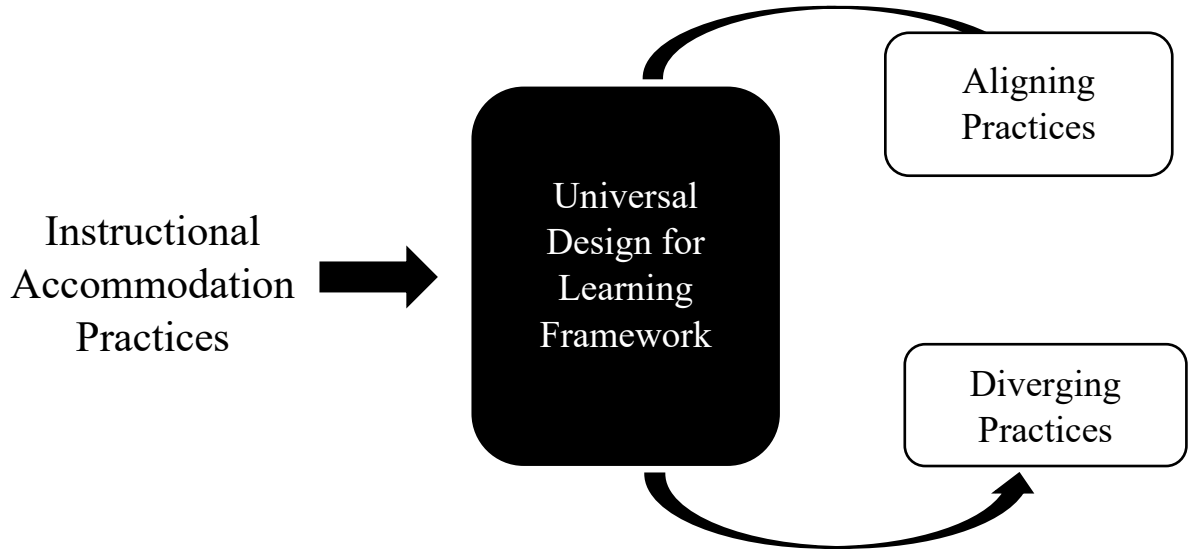
strategies. Further, findings supported the Universal Design literature that suggests "All professionals have the responsibility and capacity to create services, programs, and environments that are useful and inclusive to all students," including students with disabilities (Kimball et al., 2016, p. 188).

While some higher education faculty are implementing Universal Design for Learning strategies (often, as stated above, unknowingly), this relatively new teaching framework is largely underutilized by faculty at postsecondary institutions (Gosbell, 2021). However, the literature indicated that when educators approach teaching and learning through the lens of Universal Design for Learning, the principles focus on instruction and provide targeted approaches to supporting students' effective, strategic, and recognition learning networks (Rose & Gravel, 2010; Rose & Meyer, 2002). Moreover, postsecondary educators can improve the educational outcomes for a diverse group of learners by considering the three central principles of Universal Design for Learning in the design of instructional goals, methods, classroom materials, and assessments (Rose & Strangman, 2007).

Overall, while largely underutilized by higher education faculty, Universal Design for Learning, when applied, provides the most equitable framework for learning instruction. Therefore, this study utilized the Universal Design for Learning theoretical framework to determine the inclusive practices of technical college faculty by examining the instructional accommodations that were implemented to support students with learning challenges, including students with disabilities. Figure 1 illustrates the examination of technical college faculty through the lens of Universal Design for Learning (Rose & Strangman, 2007).

Figure 1

Instructional Accommodation Practices Viewed Through the Lens of Universal Design



Note. A graphical display of the instructional accommodation practices of technical college faculty magnified through the lens of Universal Design for Learning, resulting in practices that align and diverge from this framework.

The Universal Design for Learning framework was used to magnify the instructional accommodation practices of technical college faculty to take a closer look at the support provided to students with disabilities. This examination determined the ways in which current technical college faculty instructional accommodations practices intersect with or diverge from Universal Design for Learning principles. By comparing the instructional accommodation practices of technical college faculty to the principles of Universal Design for Learning and determining the practices that intersect or align, the researcher was also able to determine if technical college faculty unknowingly utilize Universal Design for Learning strategies. As Universal Design for Learning has been established as a best practice that is effective in

promoting academic success among students with disabilities, comparison results have implications for identifying the effectiveness of technical college faculty instructional accommodation practices. This study may help raise the awareness of higher education faculty and present opportunities for rethinking approaches to make learning engaging for all students.

Historical Overview

Students with disabilities have been part of our society for many years. Society once viewed the students with disabilities population as worthless and burdensome. Until the mid-1960s, students with disabilities were isolated and excluded because their disabilities were viewed as abnormalities (Dray, 2008). However, reactions to students with disabilities have changed to more positive responses. Since the 1960s and 1970s, due to increased parental advocacy and legislation, special education has become inclusive, integrating students with special needs into general education classrooms (Dray, 2008). Students with disabilities are considered part of an inclusive society in which all individuals have value and merit and are able to offer meaningful contributions. The progress of inclusive practices in secondary education created an avenue for ensuring the inclusion of students with disabilities into the larger society.

The late former President Lyndon B. Johnson was known as the first education president because of his commitment to providing equal educational opportunities for every citizen as he forged a war against poverty (Loss, 2012). Johnson made great strides in promoting education as the government's secret weapon against poverty and unemployment (Loss, 2012). However, educational challenges of inequality existed. African American citizens in Topeka, Kansas, were dissatisfied with the 1896 Supreme Court ruling, separate is equal, in the *Plessy v. Ferguson* case, which caused African American students to be denied access to all-White district schools. In 1954, the ruling of *Brown v. Board of Education* outlawed segregation based on unalterable

characteristics, such as race, gender, and disability, citing the practice of segregating schools as a violation of a citizen's guaranteed equal protection under the 14th Amendment (Tucker, 1998). This Supreme Court decision in the case of *Brown v. Board of Education* (1954) established that separate but equal is not equal, providing the legal foundation for guaranteeing a free and appropriate public education to students with disabilities (Tucker, 1998).

The *Other America*, the literary work of Michael Harrington, released in 1962, helped to divulge the deprivation of the African American family and further promoted the idea that education was a solution to America's poverty issues (Loss, 2012). However, a few years later, the Coleman Report and the Moynihan Report, suggesting that the Black family was irredeemable, challenged the concept of education as a weapon to fight poverty (Loss, 2012). Faced with adversity, Johnson's fight for equality of opportunity was faltering.

In 1964, the enactment of the Civil Rights Act helped to revive Johnson's platform on education and promote the diversification of secondary and postsecondary education. The passage of the Civil Rights Act of 1964 was a pivotal moment in the movement that fought for equality and in the future of higher education (Nagel et al., 2015). The Civil Rights Act denounced the subjection of discrimination and the exclusion or denial of U.S. citizens from participating or benefiting in any federally-funded program based on race or other characteristics as specified by the law (Determan & Ware, 1966). The Civil Rights Movement in the 1950s and 1960s, which sought change and equal opportunity through landmark cases, such as the *Brown v. Board of Education* and the passage of the Civil Rights Act, resulted in changes to many aspects of educational policies and approaches, paving the way for students with disabilities to advocate for equal opportunities to education (Loss, 2012).

Despite the activism of the 1960s resulting in the *Brown v. Topeka Board of Education* ruling and the passage of the Civil Rights Act, the desegregation of students with disabilities into secondary institutions was not strictly enforced. Secondary public education institutions experienced major adversities in accommodating students with disabilities as the educational perspective shifted towards a more inclusive paradigm (Dray, 2007). The dedication and mobilization of parents and families, national organizations, and state and national politicians were the driving catalysis to combat the resistance to inclusion of students with disabilities. In the pursuit of equality of education, advocates for students with disabilities cited *Brown v. Board of Education* in their argument, claiming that students with disabilities had the same rights as students without disabilities.

In 1972, two landmark cases were brought against state statutes and policies that promoted the exclusion of students with disabilities: *Pennsylvania Association for Retarded Citizens v. Commonwealth* of Pennsylvania and *Mills v. Board of Education*. The plaintiffs in *Pennsylvania Association for Retarded Citizens v. Commonwealth of Pennsylvania* argued that the state's secretary of education and public welfare, the Board of Education, and 13 school districts violated the 14th Amendment because the state was delaying or failing to provide a publicly supported education for students with disabilities. The decision in the Pennsylvania case specified that students with intellectual disabilities ages 6 to 21 years must be provided a free public education that is desirable and like the educational programs provided for their peers who are not disabled (Ballard, 1982).

Mills v. Board of Education, a suit filed against the District of Columbia's Board of Education on behalf of all out-of-school students with disabilities, charged that students with disabilities were improperly excluded from P-12 schools without due process of law (Ballard,

1982). The *Mills* ruling mandated that the Board provided all students with disabilities a publicly supported education and ordered the District of Columbia to provide due process safeguards (Ballard, 1982). The decisions in these landmark cases set precedence for filing similar lawsuits across the United States.

The first major legislation passed to protect students with disabilities against discrimination based on their disability was Section 504. The law was originally proposed as an amendment to the Civil Rights Act of 1964 (Yell et al., 1998). In 1973, during the reauthorization of the Vocational Rehabilitation Act of 1954, Section 504 of the Rehabilitation Act was passed and was fundamental to furthering students with disabilities and their access to higher education (Rothstein, 2018).

The Rehabilitation Act, Section 504, of 1973 declared that any agency or activity receiving federal funding could not discriminate against or deny benefits to students with disabilities (Tucker, 1998). Most higher education institutions receive federal funding and, therefore, are subject to the mandates of Section 504. The passage of this legislation did not receive the attention of other civil rights laws because the Rehabilitation Act was not the result of advocacy (Rothstein, 2018). At the passage of Section 504 of the Rehabilitation Act, activism by individuals seeking access to college was nonexistent, primarily because of the limited number of students with disabilities who were college-age and college-ready (Rothstein, 2018). Consequently, secondary education would be the most comprehensive education available to students with disabilities at that time.

In lieu of judicial success, students with disabilities were still being denied access to an appropriate secondary education (Ballard, 1982). School districts argued that funds were not sufficient, facilities and instructional materials were inadequate, and trained teachers were

unavailable. By the early 1970s, although the laws varied, many states had passed laws requiring provisions of public education for students with disabilities. However, the states' attempts were uneven and inconsistent.

In 1974, the Elementary and Secondary Education Act of 1965 was amended to require each state that received federal special education funds to establish goals for providing full educational opportunities for students with disabilities. The amendment, reflected in the Education Amendment Act of 1974, acknowledged the right of students with disabilities to education and provided educational funding under Title IV-B. The Act was deemed unenforceable by advocates. Furthermore, very few teachers were trained to work with students with disabilities even after the Act was passed.

By 1975, Congress had determined that millions of U.S. students with disabilities were not receiving an appropriate education to ensure full equality of opportunity (Tucker, 1998; Education of All Handicapped Children Act, 1975). Approximately one million students with disabilities were excluded entirely from public education (Tucker, 1998). To assist school districts with financial, programmatic, and staffing resources to provide adequate equal educational opportunity, the federal government passed the Education of All Handicapped Children Act of 1975.

The Education of All Handicapped Children Act requires all public state schools that receive federal funds to provide students with disabilities with equal access to education and one free meal per day. States were also required to submit a state plan describing policies, procedures, and timetables to educate students with disabilities in accordance with the Act. The Education of All Handicapped Children Act mandated nondiscriminatory testing, evaluation, and placement procedures, a procedural due process involving parents, and free and appropriate

education (Yell et al., 1998). The Supreme Court ruling of *Honig v. Doe* (1988), regarding students with behavioral disorders, reinforced the Education of All Handicapped Children Act's requirement that students with disabilities be integrated with general education students unless the severity of the disability was such that education in a regular classroom could not be achieved satisfactorily (*Honig v. Doe*, 1988). The Education of All Handicapped Children Act of 1975 was the beginning of comprehensive education for students with disabilities, making it possible for students with a wide array of impairments to participate in public education.

Central to the provisions of the Education of All Handicapped Children Act of 1975 is the Individual Education Plan, the primary vehicle for implementing the goals of the Act (*Honig v. Doe*, 1988). When appropriate, the Individual Education Plan is a legal document created by teachers, parents, school administrators, related service personnel, and students to review the student's progress and create a new plan. The plan is individualized and based on a student's academic performance and progress in the classroom with supports that focus on the student's unique needs to help direct his learning; further, the plan is reviewed annually and revised where necessary as the student progresses. Under the Act, the plan constitutes a legal document that guides the support and services that will enable the student to improve educational results and is the cornerstone of free and appropriate public education for each secondary student with a disability (*Honig v. Doe*, 1988).

Nearly two decades after the passage of the Education of All Handicapped Children Act of 1975, the U.S. Congress passed the Americans with Disabilities Act, one of the most comprehensive pieces of civil rights legislation, into law on July 26, 1990. The Act provides anti-discrimination protections to individuals with disabilities, whereby no person can be denied access or excluded from public programs or services solely because of their disability (Dray,

2007). While Section 504 applied to colleges and universities, the legislation passed with little-to-no fanfare (Rothstein, 2018).

Therefore, the impact of Section 504 on higher education was not realized for years following the law's enactment. However, the passage of the Americans with Disabilities Act in 1990, designed to extend the provisions of Section 504 to non-federally funded public and private organizations, received greater media attention (Rothstein, 2018). The Americans with Disabilities Act, guaranteeing that people with disabilities have equal opportunity to participate in the mainstream of American life, promoted greater awareness of disability discrimination. Focused on removing societal and institutional barriers due to prejudice and antiquated attitudes, modeled after the Civil Rights Act of 1964, the Americans with Disabilities Act prohibits discrimination based on race, color, religion, sex, or national origin. The Americans with Disabilities Act defines disability, concerning an individual, as a physical or mental impairment that substantially limits one or more major life activities of such individual; a record of such an impairment; or being regarded as having such an impairment (Americans with Disabilities Act, 1990). Major life activities include, but are not limited to, performing manual tasks, seeing, hearing, speaking, learning, reading, concentrating, thinking, and communicating (Americans with Disabilities Act, 1990).

Specific to colleges and universities, the Americans with Disabilities Act requires higher education institutions to provide reasonable accommodations to qualified students with disabilities who request them (Americans with Disabilities Act, 1990). A reasonable accommodation could include modifications to policies, procedures, or practices unless the institution can demonstrate that the modifications fundamentally alter the nature of the educational services or provide an unfair advantage (Americans with Disabilities Act, 1990).

Examples of academic accommodations are producing written material in alternative formats, note-takers or scribes. adaptive equipment and technology, providing a language interpreter, altering existing facilities, reducing course load, allowing course substitutions or waivers, and alternative testing methods (Newman & Madaus, 2015b).

An academic accommodation that causes undue financial or administrative burden or requires substantial alterations to a program's requirements or standards is considered unreasonable. Furthermore, program directors in higher education institutions are not required to supply auxiliary services aids, attendants, or services for personal use. Qualified students with disabilities must be able to perform the essential educational program functions with or without accommodations (Americans with Disabilities Act, 1990). Lastly, as a result of the rising consciousness of discrimination that excluded and segregated students with disabilities from being full participants in society, the Americans with Disabilities Act of 1990 popularized people-first language. The concept of people-first language demonstrated the ideology that students with disabilities should be viewed as people first, with their disability as second, and the word *disability* replaced *handicap* (Dray, 2008).

In October 1990, the Education of All Handicapped Children Act was renamed the Individuals with Disabilities Education Act, and the people-first language established by the Americans with Disabilities Act was adopted (Individuals with Disabilities Education Act, 1990). The reauthorization of the Individuals with Disabilities Act in 1990 redefined special education purpose as the catalyst for preparing students with disabilities for further education, employment, and independent living (Leake & Strodden, 2014). The Individuals with Disabilities Act of 1990 mandated the addition of a transition plan to the Individual Education Plan to help students with disabilities transition to postsecondary life. Newman et al. (2011)

explained that four out of five students with disabilities listed postsecondary education in their transition plan. Prior to the reauthorization of the Individuals with Disabilities Act in 1997, students with disabilities were rescheduled from the general education classroom to separate, segregated classes utilizing a different curriculum with lower standards than the curriculum and content that were provided in the general classrooms.

In 1997, the reauthorization of the Individuals with Disabilities Act reinforced the mandate that schools must provide services in the least restrictive environment. The Act also required students with disabilities to be included in state testing, providing access to the general curriculum and shifting from a segregated model to an inclusionary model whereby special education teachers engaged in co-teaching to assist students with disabilities in a general classroom. The age for the transition services was lowered from 16 to 14 years old to ensure appropriate planning for a successful transition into adulthood and postsecondary education.

The reauthorization of the Individuals with Disabilities Act in 2004 resulted in a name change to the Individuals with Disabilities Education Improvement Act ([IDEIA], 2004). The Individuals with Disabilities Education Improvement Act of 2004 aligned with the No Child Left Behind Act of 2001, which ensured that students with disabilities had an opportunity to obtain a high-quality education and to reach proficiency on state academic achievement standards (No Child Left Behind Act, 2002). The 2004 reauthorization required the use of research-based interventions to assist students with learning difficulties to determine special education eligibility. The Individuals with Disabilities Education Improvement Act of 2004 also required states to establish performance goals for students with disabilities to align with the goals of their peers without disabilities (IDEIA, 2004). Secondary schools were required to report the progress of students with disabilities on standardized testing. Data that were captured for state

performance indicators and the Summary of Performance, a document required by the Individuals with Disabilities Education Improvement Act for all students who were served by special education and graduated with a general diploma, could be used to inform disability documentation in college (IDEIA, 2004).

As more and more high school students with disabilities became college-ready, coupled with the impact of legislation, higher education institutions experienced an increase in enrollment among this population of students (Kimball et al., 2016). In 2008, the amended Higher Education Opportunity Act (HEOA) contained provisions designed to increase access to postsecondary education for students with disabilities. The provisions include but are not limited to describing programs to provide students with disabilities with quality postsecondary education (HEOA, 2008).

The Americans with Disabilities Act was also reauthorized in 2008 to reflect the expected interpretation of the definition of *disability* with the original intent of Congress. The Act also reflected how courts defined *handicap* under the Rehabilitation Act of 1973 after a series of court cases in the late 1990s and early 2000s reversed much of the coverage for individuals with disabilities that was provided by the original Act. During the summer of 1999, three court cases, known as the *Sutton* trilogy, changed the landscape of the original intent of the Americans with Disabilities Act of 1990. As a result of the *Sutton* case rulings, individuals with a range of substantially limiting impairments were identified incorrectly as not meeting the disability requirements and were left unprotected by the Americans with Disabilities Act of 1990 if their disabilities were diminished by devices, medicines, or other means (Coleman, 1999). The *Sutton* trilogy and the Supreme Court ruling in *Williams v Toyota* (2002), which defined major life activities as activities of central importance to daily life and substantially limited as “prevents or

severely restricts, led to Congress's decision to revisit the original intent of the Americans with Disabilities Act.

After much deliberation, the Americans with Disabilities Act Amendment Act of 2008 restored the definition of *disability* or *disabled* to Congress's original intent. Finding fault with the Equal Employment Opportunity Commission Americans with Disabilities regulations, Congress reinstated a broader scope of protection under the Americans with Disabilities Act through the amendment (Americans with Disabilities Act Amendment Act, 2008). The Equal Employment Opportunity was mandated to revise the regulations to be consistent with the Americans with Disabilities Act of 1990 and the Amendment Act of 2008. Hence, the Americans with Disabilities Act Amendment Act of 2008 broadened the inclusivity of the term disability, providing wide-ranging coverage for individuals with disabilities, including students. In addition, the broader definition of the term disability lessens the documentation burdens associated with accessing accommodation services when transitioning to postsecondary education by shifting the primary purpose of documentation from proving eligibility for services to determining appropriate academic accommodations (Keenan et al., 2019).

With less emphasis on proving eligibility, the focus on providing support for students with disabilities has shifted to students' needs in all classroom settings. As higher education has shifted to include hybrid-based and online learning, the expectation of accommodation in a traditional brick-and-mortar setting is the same for students with disabilities in a virtual environment. Consequently, when accommodating students with disabilities in an online learning environment, colleges and universities must adhere to legislation, such as the 21st Century Communications and Video Accessibility Act of 2010 and the amended Section 508 of the Americans with Disabilities Act.

The 21st Century Communication and Video Act, which was passed in 2010 during the administration of President Barack Obama, enhanced the accessibilities laws enacted in the 1980s and 1990s, bringing them up to date with 21st-century technologies, such as Voice-over-Internet-Protocol phone service, electronic messaging services, and interoperable video conferencing services (Thomas & Bhargava, 2011). In 2018, the amendment to Section 508 of the Americans with Disabilities Act was enacted in response to the hundreds of lawsuits brought against higher education institutions. The plaintiffs alleged that colleges and universities violated the 1998 amendment of Section 508 of the Rehabilitation Act of 1973, which mandated that electronic and information technology that was utilized in federally funded higher education institutions be accessible to students with disabilities (Carlson, 2018). The amendment to Section 508 of the Americans with Disabilities Act adopted Web Content Accessibility Guidelines 2.0 as the official standard of web accessibility. The Web Content Accessibility Guidelines 2.0 require all higher education institutions' websites to provide perceivable, operable, understandable, and robust elements (i.e., audio, video, images, text, hyperlinks, buttons, toolbars, and menus) for students with disabilities (Taylor & Bicak, 2019).

Attorneys in courts are often reluctant to interfere in colleges and universities' decision-making unless there is a substantial departure from accepted academic norms. In determining case rulings involving higher education institutions, courts tend to defer to an institution's policy determination regarding academic standards and requirements (Rothstein, 2009). However, postsecondary institutions are legally obligated to remove any barriers to equal educational opportunities for students with disabilities.

By providing reasonable accommodations, faculties in colleges and universities avoid the costs and burden of litigation while ensuring equitable educational opportunities for this

subpopulation of students and potentially benefiting society as a whole. Table 2 summarizes the laws that mandate the implementation of accommodation practices to support students with disabilities in higher education institutions. Table 2 includes the law, enactment year, focus, and impact, and an explanation of whether the law pertains explicitly to accommodating students with disabilities at the university level (direct) or students with disabilities in general (indirect).

Table 2

Laws Influencing Postsecondary Accommodation Practices

Law	Year	Focus	Impact
Sec 504 of the Rehabilitation Act	1973	Addresses educational opportunities for students with disabilities at all levels of public education (P.L. 93-112).	Direct
Education of All Handicapped Children Act	1975, amended and renamed in 1990	Provides secondary students with disabilities equal access to education and introduces the individualized education plan (P.L. 42-142).	Indirect
Individuals with Disabilities Education Act	1990 amended in 1997	Mandated a transition plan as part of the individualized education plan for secondary education (P.L. 93-112).	Indirect
Individuals with Disabilities Education Act	1997 renamed in 2004	Emphasized access to general education curriculum for secondary students with disabilities (P.L. 93-112).	Indirect
Americans with Disabilities Act	1990, amended 2008	Protects individuals with disabilities against discrimination and ensures equal access to higher education and reasonable accommodations (P.L. 101-336).	Direct
Individuals with Disability Improvement Act	2004	Required early intervention for students utilizing research-based interventions for assisting students with learning difficulties and determining special needs eligibility (P.L. 108-446).	Indirect

Law	Year	Focus	Impact
Higher Education Opportunity Act	2008	Established model comprehensive Transition and Postsecondary Programs for Students with Intellectual Disabilities to improve outcomes for students with disabilities (P.L. 110-315).	Direct
Americans with Disabilities Act	2008	Reduced documentation requirements for accessing accommodation at postsecondary institutions (P.L. 110-325).	Direct
21st Century Communications and Video Accessibility Act (CVAA)	2010	Emphasized accessibility compliance for the web and other technologies (Thomas & Bhargava, 2011).	Indirect
Section 508 of the American with Disabilities Act	Amended 2018	Extended the 1998 amendment of Sec 508 of the Rehabilitation Act, requiring federal agencies to make their electronic and information technology accessible to the general public. Adopted the Web Content Accessibility Guidelines as the official standard of web accessibility (Taylor & Bicak, 2019).	Direct

Note. The word direct refers to laws that directly impacted higher education, and "indirect" are laws that impacted all students with disabilities (primarily secondary education).

Three key cases instrumental in further defining the requirements for reasonable accommodation during postsecondary education were *Southeastern Community College v. Davis* (1979), *Wynne v. Tufts University School of Medicine* (1991), and *Johnson v. Washington County Career Center* (2012). The first U.S. Supreme Court decision addressing any issues concerning Section 504 of the Rehabilitation Act, which laid the foundation for addressing issues of students with disabilities in higher education, was *Southeastern Community College v. Davis*

(1979). The Southeastern Community College case addressed what it meant to be otherwise qualified.

The U.S. Supreme Court ruled that being otherwise qualified meant a student must be able to carry out the essential program requirements with or without reasonable accommodations despite their disability (Rothstein, 2018). According to the ruling in *Wynne v. Tufts University School of Medicine* (1991), postsecondary institutions must determine accommodation alternatives, their feasibility, and the cost and effects alternatives have on the institutional program. Therefore, the burden of providing a rationally justifiable reason why the alternatives would lower the academic standards or require substantial program modifications is placed on the institution.

The Wynne v. Tufts case is often cited as the standard for determining whether an institution must provide requested accommodation. *Johnson v. Washington County Career Center* (2012) established the requirement for students to provide documentation for proper diagnosis and request specific accommodations. Colleges and universities are not obligated to accommodate students who do not disclose their disability. Table 3 highlights influential court cases filed to clarify or uphold standards outlined for college students with disabilities and serve as precedence for equitable education for all students of all abilities and summarizes the court cases that have influenced the accommodation practices that are implemented by higher education institutions to support students with special needs.

Table 3

Court Cases Influencing Postsecondary Accommodation Practices

Court Case	Complaint	Ruling (Outcome)	Impact
Brown v. Board of Education (1954)	Plaintiffs were being denied equal protection under the law of the 14th Amendment because the practice of racially segregated schools was inherently damaging to educational opportunities for minorities.	State laws establishing separate public schools for students of different races is unconstitutional.	Indirect
Pennsylvania Association for Retarded Citizens v. Commonwealth (1972)	Plaintiff argued that students with mental retardation were not receiving publicly supported education; hence, their equal protection under the 14th Amendment was being violated.	Educational programs for students with mental retardation between the ages of 6 and 21 years should be most like the programs provided to their nondisabled peers.	Indirect
Mills v. Board of Education of the District of Columbia (1972*)*	Based on the 14th Amendment, the plaintiffs charged that students with disabilities were improperly excluded from school without due process of law.	Students with disabilities have a right to due process and procedural safeguards, such as the right to a hearing with representation, the right to appeal, the right to have access to records, and the requirement of written notification at all stages of the process.	Indirect
Southeastern Community College v. Davis (1979)	Francis Davis, a deaf individual, was denied admission to nursing school because of concerns about the safety of patients.	Established that "otherwise qualified" means a student is able to carry out the essential functions of the program with or without reasonable accommodations despite the disability.	Direct

Court Case	Complaint	Ruling (Outcome)	Impact
Wynne v. Tufts (1991)	Plaintiff claimed that his learning disability placed him at an unfair disadvantage in taking multiple-choice exams, and Tuft refused to use other methods.	The burden is on the institution to consider alternative means, feasibility, cost and effect of the program, and provide a rationally justifiable conclusion.	Direct
Johnson v. Washington County Career Center (2012)	Plaintiff alleged that she was unlawfully discriminated against by being excluded from participating in and acquiring the benefits of services, programs, or activities that were provided.	Academic institutions are not required to accommodate under the Americans with Disabilities Act until receiving a proper diagnosis and request for specific accommodations.	Direct

Throughout the latter half of the 20th century and into the 21st century, disability rights advocates have been victorious in opening the educational doors for students with disabilities, changing the societal outlook on and acceptance of this subpopulation into the mainstream of the U.S. and higher education. Citing violation of equal protection under the 14th Amendment, the court ruling of *Brown v. Board of Education* that separate facilities based on race were unequal paved the way for students with disabilities to access a free and appropriate education. As indicated by the 10th Amendment of the U.S. Constitution, education was considered the states' business. However, many states were delinquent in providing appropriate educational access to students with disabilities.

To assist with improving access and quality of education, in 1975, federal legislation brought various state and federal legislation into one comprehensive law, the Education of All Handicapped Children Act. The Education of All Handicapped Children Act, known today as the Individuals with Disabilities Education Improvement Act, stabilized and promoted the full

inclusion of students with disabilities into academia. Without the laws and court rulings that enabled students with disabilities to complete secondary education, there would have been no possibility for students with disabilities to continue into postsecondary educational opportunities. Subsequently, due to legislation, such as the Americans with Disabilities Act and Section 504 of the Rehabilitation Act, approximately 2.2 million students with disabilities are enrolled in postsecondary level education (NCES, 2016).

Two-Year Technical Colleges

The establishment of the two-year college was an outgrowth of a combination of concerns about opening avenues to offer skilled training for prospective employees in the work environment. Economic trends and the work-ready training needs of prospective employees were the forces that escalated the trend of establishing two-year colleges. The goal of educational planners and decision-makers in two-year colleges was to promote opportunities for higher education and to ensure equity in higher education (Goldrick-Rab & Kendall, 2014). From these perspectives, open-admissions and affordability policies were established for community colleges as gateways to higher education for under-served students, especially students from marginalized populations who were historically underrepresented and under-served. Students with disabilities were included among this under-served and underrepresented population of students who began to appear in the enrollment of two-year colleges (Goldrick-Rab & Kendall, 2014).

In the *Truman Commission Report of 1947,* the U.S. Commission on Higher Education ensured the nation that two-year colleges were established to support the nation's effort to assume roles and responsibilities as the world's leader for a democratic nation (Sullivan, 2015). The *Truman Commission Report of 1947* strengthened the belief that educational planners and

decision-makers throughout the United States had an obligation to eradicate barriers and open doors to educational opportunities for all students, including students with disabilities (Sullivan, 2015). The establishment of two-year colleges brought and popularized the concept of higher educational opportunities previously inaccessible to many marginalized populations. The mission of two-year colleges ensures ease of access through many provisions, including open access, reduced tuition, and vocational and technical advancement for a wide range of populations, especially nontraditional students. For the purpose of this study, the term *nontraditional* is used to describe a population of students who are older students with dependent children, older students serving as caretakers for senior relatives, students from single-parent homes, first-generation students, English language learners, or students with disabilities.

To meet the needs of nontraditional students and other diverse populations, technical education and job-readiness training became the focus of many two-year colleges, which created the framework for the establishment of technical colleges (Dassance, 2011). With the availability of technical colleges, these higher education institutions made available short-term and long-term training in marketable skills for the community and the economy of the region. These higher education institutions also became the gateway for both general education students and students with disabilities to increase or advance their competency in basic skills as they became employment-ready for the work environment. Program planners and educational administrators in two-year higher education institutions became the focus of much public criticism because of low student retention and graduation rates when compared to similar statistics that were collected from four-year colleges and universities (Jenkins & Cho, 2012).

Data that were collected from across the nation indicated that less than 62% of technical college students were successful in completing their enrollment preferences and graduating on

time (National Community College Benchmarking Program, 2012). A belief among program planners was that the low retention and low completion rate in two-year technical colleges result from the large number of nontraditional students who enrolled with poor basic skills. However, technical and community colleges offer students with disabilities the chance for hands-on training in the worksite, enabling them to join their peers in the wider work environment.

Other factors that influence low performance and low completion rates include family obligations, part-time or full-time jobs, and time spent commuting to class (Jenkins & Cho, 2012; National Commission on Community Colleges, 2008). Though these factors and other similar factors directly or indirectly influence low completion rates, most of these factors are beyond the control of two-year higher education institutions. Ultimately, the U.S. economy benefits when all students, including students with disabilities, are prepared academically and technically to complete their career goals and enter the world of work as productive citizens (Theobald et al., 2022). Therefore, the establishment of the two-year college, according to research, was an important innovation in higher education because two-year colleges were designed to ensure postsecondary training of skilled workers from previously underrepresented populations (Goldrick-Rab & Kendall, 2014; National Community College Benchmarking Program, 2012).

The national education goal declaration of the Obama Administration brought technical community colleges to the forefront of the national educational agenda with a focus on increased opportunity, assessment, and completion rates for all students, including students with disabilities. When President Obama took office, he repeatedly called for the United States to improve its postsecondary education performance significantly (Bosworth, 2010). President Obama declared that, to stay competitive in the global market, the United States must lead the

world in degree attainment, challenging U.S. citizens to complete at least one year of postsecondary education (Bosworth, 2010).

Community colleges were crucial to President Obama's plan for placing the United States at the forefront of world education. Community and technical colleges enroll more than half of the undergraduate students in the country, providing students, including students with disabilities, credentials, and degrees necessary for job readiness. Furthermore, many community and technical colleges act as a degree stepping stone for four-year universities, playing an important role in baccalaureate degree attainment (Ewell, 2010). Complete College America, a national education advocacy organization, believes that to boost U.S. postsecondary graduation rates significantly, colleges and universities must revamp higher education to meet the educational needs of most students.

In the past, higher education institutions in the United States have approached degree works with an equitable and similar framework; however, Complete College America asserts that colleges and universities can be more impactful when addressing the unique needs of individual students (Complete College America, n.d.). Supporting the initiative of President Obama, in 2011, southern states started joining the Complete College America Alliance of States and were awarded million-dollar grants by Complete College America to promote policy innovations and reforms to increase college completion significantly (Hodges, 2013). Furthermore, President Obama urged community colleges to increase the annual number of graduates and program completers by 5 million students over a 10-year period, an overall 50% increase in current numbers nationwide (Obama, 2009). As expanded upon below in the discussions on accommodations, completion is key when it comes to advanced education. To enjoy the benefits of higher knowledge and skills in the global workforce fully, one must first

graduate (Bosworth, 2010). With performance-based funding, Complete College America programs, and the initiatives of the Obama administration, colleges refocused on improving student retention and progression and increasing overall graduation rates (Barnhart & Stanfield, 2013). With the Complete College initiative, technical colleges were forced to increase efforts regarding student retention to comply with funding requirements.

Manifestations and Needs of Students with Disabilities in College

The literature provided a glance into students with disabilities who attend higher education institutions. In a study investigating the receipt of accommodations during high school versus college, Newman and Madaus (2015b) found that 51% of young adults with disabilities enrolled at a postsecondary level institution within eight years of graduating high school. Of these students, 36% attended a two-year institution or community college (the largest number), followed by 23% who attended a career technical education institution, and 15% who attended a four-year institution (Newman & Madaus, 2015b).

The manifestations and needs of students with disabilities in postsecondary institutions vary as much as the students themselves. According to the National Center for Education Statistics (2016), students with disabilities pursuing postsecondary education reported having one or more of the conditions, which included hearing, visual, deafness, speech, health, or orthopedic impairment. Other reported disabilities are referred to in the research literature as invisible disabilities (i.e., disabilities that are not readily detectable), which include learning, attention, and mental illness (Kreider et al., 2015). Hidden disabilities, such as learning disability and attention deficit/hyperactivity disorder, are some of the most common disabilities of technical college students (Delaney & Hata, 2020). Mbuvha (2019) explained that students with

disabilities encounter academic, attitudinal, and physical obstacles, which may impede academic achievement.

Institutional Accommodations

To ensure equitable learning in an educational environment, the Americans with Disabilities Act of 1990 mandates postsecondary institutions to provide reasonable accommodations for qualified students with disabilities who request accommodations (Gallego & Busch, 2015). Qualified students are students who have self-disclosed and provided documentation to disability services, gaining approval for accommodations at the postsecondary level. A caveat to this provision is that academic adjustments must not profoundly alter program standards, requirements, or recruitment and admission procedures (Americans with Disabilities Act, 1990). Accommodation often includes extended time on exams, audiobooks, note-takers, frequent breaks, accessible building and classroom entries, and seating (Mbuvha, 2019).

Fossey et al. (2015) conducted a study to explore the kinds of individualized reasonable accommodations or modifications and the factors that influence the accommodations' implementation and perceived usefulness. The researchers collected data using qualitative interviews with 25 college students with disabilities, seven specialist disability services staff, and three course leaders in two higher education institutions, a university, and a vocational education and training institute. After analyzing the data using discourse analysis, the study indicated that supporting students with disabilities included, identifying, negotiating, and implementing learning support processes.

Higher education institutions provide many types of individualized reasonable accommodations or modifications, learning tasks, assessments, and learning environments for which the adjustments are intended. Some of the modifications that were useful to students with

disabilities (i.e., extended time to complete assignments) were also institutional support available to all students. Institutional support was provided by disability services and general learning support staff (i.e., tutorial support and study skill development). Further, some institutional-level learning supports, such as supports involving technologies (i.e., smartphones and online tools) and inclusive classroom supports, were useful. Finally, students having a better understanding of their own needs, increased ability to cope, and self-efficacy were identified as markers for effective learning support.

Utilizing a qualitative approach, Mbuvha (2019) conducted a case study to better understand the phenomenon of student support. Mbuvha collected data from 10 purposefully selected student participants using three methods of data collection (observations, focus group interviews, and document analysis). After analyzing the data using interpretive phenomenological analysis, findings indicated that disability services personnel's adherence to the college's disability policies, such as providing computer facilities, braille exam papers and notes, and lending assistive technology, provided the academic support students with disabilities needed to succeed in their studies.

Assistive Technologies

College students with disabilities can be accommodated through provisions such as non-medical helper support from external agencies and assistive technology. Assistive technology devices are designed to level the playing field for students with disabilities and may include any items, equipment, or systems (commercially modified or customized) used to increase, support, or improve the functions of students with disabilities in an educational environment (Assistive Technology Act of 1998). Taylor et al. (2016) conducted a study to examine the types of transformations that may be required for university support for students with disabilities. The

researchers collected data from committee meeting notes. Committees consisted of senior management, student welfare, student disability services, library and computing staff, university registrars, teaching staff, disability coordinators, and student union representatives. After analyzing data using content analysis, the findings indicated that enhanced library services, such as access to printers, scanners, assistance with assistive software, provisions of small group rooms, and individual study carrels, were beneficial to the success of students with disabilities. An example of assistive software includes programs, such as reading assistants for students with dyslexia.

Sense of Belonging and Campus Climate

Accommodations of college students with disabilities are not and should not be limited to lawfully mandated academic supports and assistive technology but may also include social supports that promote inclusion and a sense of belonging and improves the college experience. Social belonging has been identified as a human need that facilitates and promotes favorable mental and physical outcomes. Maslow's (1954) psychological hierarchy places the need for belonging below basic needs like food and safety but above the needs for knowledge, understanding, and esteem, which is supported by Layous et al.'s (2016) indication that a sense of belonging plays a role in academic and social outcomes of college students. Fleming et al. (2017a) conducted a quantitative study to investigate the importance of belonging for students with disabilities pursuing their college degrees.

Fleming et al. (2017a) collected data from 325 students with disabilities receiving services from three large public universities using an electronic survey. After analyzing the data using multiple mediation analysis, results found that students with a higher sense of belonging were more likely to be satisfied because they had a positive perception of the campus climate.

Findings also indicated that campus climate mediated the relationship between belonging and student satisfaction, suggesting that social climate was important as it related to the satisfaction and likely persistence of students with disabilities. Fleming et al. (2017a) asserted that students with or without a disability are more likely motivated to learn and to perform better academically when they feel they are part of a college community.

The findings of a study conducted by Soria (2021) indicated that a lower sense of belonging is directly correlated with negative experiences with campus climate. Soria conducted a quantitative study to explore whether there were disparities in senses of belonging, indirect perceptions of campus climate, and direct perceptions of campus climate between students with and without disabilities. The researchers collected data from the 2018 *Multi-Institutional Study of Leadership Survey*, an international research program that examines the influence of higher education experiences on undergraduates' development. After analyzing the data using factor analysis and *t*-tests, the results suggested that students with any type of disability have a significantly lower sense of belonging and significantly more negative encounters than students without disabilities. Corroborating the results of Fleming et al. (2017a), Soria's (2021) study findings also suggested that campus climate may be a key factor in college students with disabilities' persistence and successful degree completion (Anistranski & Brown, 2021).

Promotion of Self

Like campus climate, promoting self-affirmation and self-efficacy has been identified as influential on students with disabilities' persistence towards attaining their college degrees by fostering a sense of belonging. When utilized as a value-affirmation intervention, the self-affirmation theory asserts that affirmation of oneself can have long-term beneficial effects on the academic performance and degree attainment of members of negatively stereotyped groups, such

as students with disabilities, which may result in reduced achievement gaps (Easterbrook et al., 2021). In a randomized controlled experiential study, Layous et al. (2016) explored the effects of self-affirmation for students who had a personal sense that they did not belong in college. The researchers used a Likert scale questionnaire and writing labs to collect data from 105 introductory psychology students, primarily White males.

Findings indicated that students who felt a low sense of belonging experienced lower grade point averages. In contrast, students who reported a low belonging but affirmed their core values in lab-administered, self-affirmation writing activity experienced gains in grade point averages. Implications of the study suggested that supporting self-affirmation of personal integrity can lessen threats that can undermine performance regardless of the threat's source. Hence, self-affirmation can have positive academic performance effects on acknowledged vulnerable populations like students with disabilities.

Akin to self-affirmation is self-efficacy. While self-affirmation is defined as the act of a person affirming their worthiness and value as an individual for beneficial effect, self-efficacy is defined as a person's self-held belief that they can successfully execute the behavior required to produce a particular outcome (Easterbook et al., 2021; Zakrajek & Bailey, 2019). According to Weatherton et al. (2017), students with disabilities hold a low sense of self-efficacy for learning and performing well in educational contexts, negatively affecting their motivation and learning.

Self-efficacy is grounded in Bandura's Social Cognitive Theory, which postulates that human functioning involves reciprocal interactions between personal, behavioral, and environmental variables. Each of these variables affects and influences the others. Consequently, what students think can affect what they do, and their actions can alter their environment. The results from a study that was conducted by Timmerman and Mulvihill (2015) to better

understand the role of accommodations suggested that students with disabilities must possess a robust sense of self-efficacy to persist in attaining their degrees.

In addition to self-affirmation and self-efficacy, the promotion of self can include self-advocacy. Self-advocacy, a critical component in the fight for civil rights and equality of education for students with disabilities, is the ability of a student with disabilities to speak up for oneself while being aware of one's limitations and strengths (Fleming et al., 2017a).

Fleming et al. (2017b) conducted a quantitative study to examine modifiable factors, including peer support, disability services, faulty teaching, campus climate, and self-advocacy, to determine potential predictors of higher academic performance for college students with disabilities. Using an online survey, the researchers collected data from 325 students with disabilities receiving services from three large public universities. After analyzing the data using SPSS version 22, findings indicated that self-advocacy predicted higher grade point averages for students with disabilities. Self-advocacy can include something as simple as disclosing one's disability or something as complicated as advocating to a faculty member who has not delivered on providing the necessary support. Wright and Meyer (2017) asserted that disability services should explain to students that they are more likely to get what they need from an instructor when they self-advocate and disclose their disability, reducing stigmatization.

In another study that was conducted by Timmerman and Mulvihill (2015), the findings indicated that participants felt that faculty and their peers without disabilities did not understand their need for accommodations. The case study aimed to examine the perception of the accommodations that students with disabilities used to enhance their academic success. Timmerman and Mulvihill collected data from two undergraduate students with disabilities at a medium-sized midwestern university using observations and interviews. The data were analyzed

using the content/thematic data analysis. Timmerman and Mulvihill argued that students with disabilities "need to demonstrate strong self-advocacy skills, a willingness to disclose their disabilities…[and] learn to deal with negative and poorly informed perceptions about using accommodations" by their peers and faculty (p. 1620). Self-advocacy skills are essential in navigating the process of disability determination, documentation, and accommodation requests in light of the barriers to learning and receiving accommodation at the postsecondary level.

Interactions with Faculty

A critical aspect of success for students with disabilities at the postsecondary level involves interactions with faculty, including mentor relationships, advising, and encouraging self-promotion. In a case study examining the efforts of one large Austrian university to support college students with disabilities, Couzens et al. (2015) collected data from 16 participants (i.e., eight students with disabilities and eight university faculty and staff members) using semi-structured interviews. Results indicated that the most effective support came from family and friends, followed by caring and flexible faculty. At the postsecondary level, faculty play a critical role in the academic success of students with disabilities.

Wright and Meyer (2017) found a direct link between the acquisition of accommodations and faculty support. Specifically, faculty's flexibility and empathy directly influenced students with disabilities self-advocacy for the support that they need. Yssel et al. (2016) conducted a qualitative study to investigate college students with disabilities' perceptions and the effects of their relationships with college faculty on their college experience at a mid-sized mid-western university. Using semi-structured interviews, the researchers collected data from 12 students with disabilities registered with the university's disability office, who were 18 years of age and enrolled full-time. After analyzing the data using triangulation and field notes that were taken

during the interviews for additional information, the researchers found that although some students felt that faculty members did not understand their disability, faculty willingness to provide accommodations created a more positive environment and college experience. Hence, students who perceived that their instructors were supportive reported having a greater sense of belonging at school (Organization for Economic Cooperation and Development [OECD], 2017).

Students with disabilities' sense of self influences their self-efficacy, which, in turn, influences motivation, academic performance, and persistence towards graduation. Faculty play a critical role in helping students with disabilities develop a positive sense of self and self-efficacy by helping them master challenging concepts, validating the students' efforts, and designing learning opportunities to apply knowledge and experience success (Jenson et al., 2011). In a qualitative study, Jensen et al. (2011) collected data from 20 students with disabilities, who were documented (i.e., they had disclosed their disability to the college), using focus groups structured for dialogue and real-time data from participant-response devices (i.e., clickers) used to provide a Likert-type response scale. After analyzing the data using thematic analysis, findings suggested that college faculty set the tone for learning and have a major influence on students with disabilities' confidence, motivation, anxiety, stress, and academic success.

Best Practices

College students with disabilities and higher education institutions should work together to ensure the academic success of this underrepresented population. The literature on disability has investigated and identified effective or best practices for both students with disabilities and the institutions that they attend. Barnard-Brak et al. (2018) identified accommodation-seeking strategies that were utilized by academically successful college students with disabilities.

Barnard-Brak et al. conducted a qualitative study to discern the meaning of disclosure for college students with disabilities in relation to the strategies that they invoked while seeking accommodations. The researchers collected data from five students with disabilities who attended a large public southwestern university using semi-structured interviews. After analyzing the data using a technique based on grounded theory analysis, findings indicated that rehearsing or scripting disclosure of one's disability in requesting accommodations and negotiating accommodations with faculty rather than relying on Americans with Disabilities Act compliance created a win-win situation for the students with disabilities and faculty members.

While Barnard-Brak et al.'s (2018) study suggested best practices for students with disabilities, Brown and Coomes (2015) suggested best practices for postsecondary support services and faculty. Brown and Coomes conducted a mixed-method study to explore current and best practices implemented at two-year postsecondary institutions to support students with autism spectrum disorder. The researchers collected data from 146 disability service professionals using a web-based survey. After analyzing the data using parametric tests, the results indicated that many institutions provide the baseline level of academic or reasonable accommodations; however, accommodations that target the limitations of autism spectrum disorders were less frequent. Further, findings indicated the following additional institutional best practices, including promoting equity, providing customized accommodations, educating campus constituents, facilitating transitions, creating and enforcing policies, building relationships, using groups intentionally to promote socialization, being proactive, and addressing functional limitations.

Hsiao et al. (2018) conducted a qualitative case study to determine the process of identifying and implementing effective academic accommodations for a student with a disability

who majored in music, as well as to explore the challenges and successes of cross-departmental collaboration between disability services and an academic department (i.e., the School of Music). The researcher collected data from five participants, which included a music student with attention deficit hypertension disorder, an academic advisor, a disability services specialist, a music instructor, and a peer mentor. The researchers used semi-structured interviews and document analysis of relevant documents, such as case reports, weekly logs, email correspondence, the results of psychological testing, and academic portfolio contents. After analyzing the data using qualitative analysis, findings indicated that crucial elements of success for students with disabilities included the promotion of communication that allows for information exchange among all members involved, students with disabilities' self-advocacy skills and confidence levels, faculty's acceptance of the ability of students with disabilities to succeed, and faculty use of flexible content and assessing outcomes methods.

Many empirical studies on accommodating students with disabilities in the disability literature corroborate Hsiao et al.'s (2018) finding that the faculty's flexibility in content and accessing outcomes methods enhanced the academic success of college students with disabilities. Hsiao et al.'s findings also indicated that Universal Design for Learning is one of the most effective practices for improving the academic success of college students with disabilities. Further research and additional studies have also pointed to Universal Design for Learning as a recurring best practice to address accommodations for students with disabilities.

Cox et al. (2017) conducted a study to examine how students with autism make sense of their postsecondary experiences and respond to potential barriers to academic success; their findings suggested that higher education institutions utilize the principles of Universal Design to distribute resources efficiently while being responsive to a diverse student population. In another

study utilizing an action-based, constructivist, grounded-theory framework to examine the belief and strategies student affairs professionals used to support students with disabilities, Kimball et al. (2016) found that perspectives and best practices that were described by student affairs practitioners and used to support students with disabilities resembled Universal Design principles. Newman and Madaus (2015b) asserted that findings from their study, which examined the receipt of accommodations differences between high school and postsecondary students with disabilities, highlighted the importance of considering Universal Design principles when developing curricula.

West et al. (2016) conducted the final study in this review. These researchers found that students with disabilities perceived the Universal Design for Learning to be valid and comprised strategies beneficial to their educational experience. As illustrated herein, Universal Design for Learning is emerging as the leading framework for accommodating all students, including students with disabilities. Ultimately, Universal Design serves as the ideal practice for mitigating the issue of non-disclosure and supporting all students, regardless of ability or disability.

Expanding Accommodations

Higher education practitioners realize that postsecondary retention strategies should go beyond strategies that offer formal academic accommodations to students with disabilities to strategies that incorporate social factors and self-advocacy (Fleming et al., 2017a). Merely meeting the letter of the law by providing reasonable accommodations for academic instruction and facility accessibility while negating the social integration of students with disabilities does little to improve the campus climate for this student population (Leake & Stodden, 2014). Leading theories of persistence in postsecondary education highlight academic and social integration to create a sense of belonging, a vital factor for student success (Leake & Stodden,

2014). To move beyond reasonable accommodations, higher education institutions have expanded support to promote academic success for all students, particularly underrepresented populations, such as students with disabilities (Kimball et al., 2016).

Guzman and Balcazar (2010) conducted a quantitative study to investigate disability-related perspectives that were held by higher education disability service providers in implementing accommodation standards. Findings indicated that, while some participants had awareness of and sometimes utilized either social or universal approaches in providing accommodation services, participants were more likely to deliver services that were guided by an individual approach based on the student's disability deficit. In a study examining how the top 30 colleges and universities in the United States construct their role in facilitating access for students with disabilities, Lester et al. (2013) corroborated the findings of Guzman and Balcazar (2010).

Lester et al. (2013) conducted a study examining how the top 30 colleges and universities in the United States determined the meaning of disabilities and constructed their role in facilitating access for students with disabilities. The researchers collected data from the publicly available websites of 30 colleges and universities. After analyzing the data using discourse analysis, the study indicated 80% of the sites that the researchers analyzed made at least one explicit reference to the Individuals with Disabilities Education Act of 2004, most often within their mission statement, implying that the institutions' primary interest in serving students with disabilities was to remain in accordance with the federal laws enacted to protect the rights of students.

Unlike other offices designed to provide services or advocacy for students, some disability services offices described their mission as working on behalf of the institution rather

than the students' behalf. A mission of this nature tends to govern who and what kinds of accommodations are allowable, and how these accommodations are incorporated within the classroom. Hence, supporting the idea that delivery of services was most likely guided by an individual approach based on the student's disability deficit versus a socially comprehensive approach.

While simultaneously meeting students' needs, student affairs professionals and educators often act as advocates and social injustice activists in their quest to create inclusive environments for students with disabilities (Kimball et al., 2016). As evident in Kimball et al.'s (2016) study, some colleges and universities are attempting to attack the issue of low graduation rates among students with disabilities by going beyond the accommodations and services that are mandated by law and implementing supports, such as academic coaching, counseling centers, and inclusive postsecondary education programs. Some institutions have also adopted the Universal Design for Learning framework.

Coaching and Counseling

The Council for Advancement Standards in Higher Education identified academic coaching and mental health counseling as functional areas within student affairs (Protivnak et al., 2013). Academic coaching emerged from the positive outcomes of student mentoring experiences; coaches assist students in understanding and navigating the college experience (Capstick et al., 2019). Troiano et al. (2010) investigated the academic success of 262 students with learning disabilities in relation to their use of academic support centers.

The results indicated that students who attended educational support program sessions consistently had higher grade point averages than students who did not participate or did not attend consistently. Further, consistent attendance predicted college graduation in 68% of the

students. DuPaul et al.'s (2017) quantitative study investigated the effectiveness of three support services (i.e., academic tutoring, coaching, and advising) on the semester and cumulative grade point average of college students with attention-deficit hyperactivity disorder and other learning disabilities. Over 5 years, 1,782 full-time self-reporting students' usage of support services and grade-point-average data were collected. Results indicated that students who received coaching support and tutoring obtained overall gains in their grade point average.

Qian et al. (2018) asserted that using a coaching model whereby coaches are paid professional staff can improve academic achievement and increase academic motivation and engagement among students with disabilities. Qian et al. conducted a phenomenological qualitative study to explore the coaching program characteristics that were most valuable to students with disabilities and the perceived benefits of coaching services. Using qualitative interviews, the researchers collected from 39 students with intellectual disabilities who participated in a five-year Transition and Postsecondary Program for Students with Intellectual Disabilities. After analyzing the data using inductive analysis, results suggested that students with disabilities often engaged with coaches when seeking academic support and guidance, opportunities to participate in social events with students with and without disabilities, and discussing future goals. The two most valuable coaching program components were a flexible meeting schedule and an open-door policy where students could drop in without an appointment.

According to Bellman et al. (2015), coaching services increase students' motivation, self-confidence, and self-determination. The qualitative pilot study of 41 students with disabilities pursuing degrees at postsecondary institutions aimed to improve students' executive function through weekly academic coaching sessions. At the conclusion of the study, the data that were collected via online surveys also indicated that coaching services increased the students’

determination to succeed and gains in time management skills, studying, note-taking, organization, prioritization, writing, self-advocacy, and stress management. In a more recent study, conducted over five semesters at one postsecondary institution, Capstick et al. (2019) examined the effectiveness of the Academic Coaching for Excellence programs for academically at-risk students, including some students with disabilities. Likewise, findings from this study indicated that students who participated in coaching programs significantly increased their grade point averages and were most likely to earn at least a 2.0-grade point average.

Campus-based counseling centers are another resource available to students with disabilities in colleges to assist with mental and emotional stress. A national study conducted in 2017 showed that 24% of students stated anxiety and 16% stated depression illnesses that affected their academic work (United Educators, 2019). Data also showed that 81% of the students who make suicide attempts have no known or disclosed mental health issues (United Educators, 2019).

As social and emotional problems become more prevalent in college students' lives, counseling centers help students manage academic, emotional, and social pressures (Protivnak et al., 2013). Murphy's (2017) mixed-method study investigated the experiences of college students with mental health difficulties attending higher education institutions in Ireland. The study examined existing practices of supporting students with mental health difficulties from the perspective of both students and professionals. The participants in the study were 22 institutions that completed a national survey with 14 students and 11 professionals who participated in focus groups and semi-structured one-on-one interviews. Murphy concluded that a "whole campus" approach to meeting students' needs for mental health difficulties combined with specialized support could benefit students with disabilities and higher education institutions.

Inclusive Postsecondary Programs

Historically, postsecondary education has been limited to students who earned a high school diploma and demonstrated a level of readiness. Students with disabilities were viewed as unable to handle the demands and experiences of college life and, therefore, excluded from educational experiences known to lead to independence. Over time, advocacy for equal opportunity, federal court decisions, and the passage of legislation granted students with disabilities access to higher education. Parents' and advocates' fight for equitable education, change in expectations, and academic support for students with disabilities and their right to a meaningful life has gained attention and changed how higher education institutions view students with disabilities.

Further, the Higher Education Opportunity Act of 2008 defined intellectual disability and opened access to funding for students with intellectual disabilities attending certified transition programs known as Transition Programs for Students with Intellectual Disabilities or Inclusive Postsecondary Education programs (Thomas et al., 2020). As aforementioned, the findings of Kimball et al.'s (2016) study indicated that student services practitioners at all levels desired to move beyond "small wins" to campus-wide inclusion of students with disabilities, becoming advocates and social justice activists for this underrepresented population. Hence, educational leaders at colleges and universities recognize their responsibility to include students with disabilities fully and are adopting Inclusive Postsecondary Education programs.

Inclusive Postsecondary Education programs are transition programs within higher education institutions that are designed to engage students with disabilities (Harrison et al., 2019). These certified transition programs promote the academic and social inclusion of students with disabilities (Harrison et al., 2019). Inclusive Postsecondary Education programs' features

and levels of inclusion vary across colleges and universities. The programs follow one of three models: (a) mixed program (typical college experience promoting activities that meet students' individual needs without any instruction), (b) hybrid program (students engage in activities alongside traditional college students while participating in life-skill or vocational training), or (c) substantially separate programs (provide instruction and socializations in courses and activities attended only by students with disabilities) (Thomas et al., 2020).

Inclusive Postsecondary Education programs also emphasize employment. Program participants are encouraged to participate in on-campus internships and/or assisted with job placement after graduating from the program. Moore and Schelling (2015) conducted a comparative case study on Inclusive Postsecondary Education programs utilizing data from the 2009 National Longitudinal Transition Study 2. The study aimed to determine how the employability and income levels among students with intellectual disabilities compared between two types of postsecondary education programs (i.e., integrated and specialized).

Two program directors and 26 total graduates from two types of integrated programs at two colleges completed web-based surveys. Integrated programs allow students to receive individualized services to access college courses and programs. After analyzing the data using thematic analysis, the findings indicated that graduates' employment rates were 73% for integrated programs. The study also revealed that graduates' employment rates were 91% for specialized programs (i.e., students received services but only participated in classes with other students with disabilities). The significant employment outcomes in this study demonstrated the benefits of students with disabilities who attended postsecondary programs compared to students who did not participate in such programs.

In another study examining the postsecondary education supports that were provided by vocational rehabilitation agencies, the results indicated a significant difference in individuals' earning potential versus individuals who did not complete postsecondary education. Miller et al. (2019) conducted a study to examine the status of individuals with intellectual and developmental disabilities who received educational and employment services from a state's vocational rehabilitation system. The researchers used Rehabilitation Services Administration records of cases closed during the federal fiscal years 2006 through 2014. After analyzing the data using a *t*-test and chi-square test, Miller et al. found that the weekly earnings of individuals with intellectual and developmental disabilities who received a college education significantly surpassed individuals who did not (i.e., an average of ~$343.06/week vs. $197.03 /week).

Overall, the persistence of higher education institutions' promotion of inclusiveness through academic and social integration of students with disabilities is evident in the growth of Inclusive Postsecondary Education programs throughout the United States (Gibbons et al., 2015b; Leake & Stodden, 2014). Think College (2019) indicated that nearly 300 transition and postsecondary programs for students with intellectual disabilities existed in 49 states (excluding West Virginia) in the United States. Inclusive Postsecondary Education programs serve as a mechanism to integrate students with disabilities fully into college campus life. However, most programs are limited to certificates and are aimed at students with severe disabilities.

Barriers to Accommodations

Despite the progress of higher education institutions in promoting the full inclusion of students with disabilities, this student population faces many social barriers and often feels marginalized on campus (Leake & Stodden, 2014). Leake and Stodden (2014) asserted that negative perceptions often result in the decision not to seek accommodating services that might

prove crucial to academic success. Newman et al. (2019) found that students with disabilities sometimes minimize their chances of academic success. Using propensity methods, Newman et al. conducted a quantitative study to examine the effect of disability-specific and universally available support receipt on the college perseverance and completion of students with learning disabilities. The researchers collected data from 220 youths who were identified by their school district as receiving special education services during high school and had reported attendance at a two-year or four-year college using the National Longitudinal Transition Study 2.

After analyzing the data using descriptive analysis, findings indicated that students who received support available to all students or disability-specific were more likely to persist and complete two-year or four-year college successfully (Newman et al., 2019). According to the literature, nondisclosure, inadequate transition planning, and social barriers may contribute to the lack of academic progress and explain the lower graduation rates for students with disabilities (Grimes et al., 2017). The following section of the literature review is an exploration of the effects of the decision for nondisclosure, the impact of secondary transition planning, and the self-efficacy of faculty, including the impact of faculty attitude on students with disabilities' decision to disclose.

Nondisclosure

According to the Americans with Disabilities Act of 1990, the caveat for receiving accommodations while enrolled in higher education is that students must disclose their disability (Newman & Madaus, 2015b; Newman et al., 2019). Reasonable accommodations are available, but Stevens et al. (2018) pointed out that students do not receive accommodations because they do not disclose their disability. Nondisclosure is the most common barrier to accommodations for students with disabilities and is the most influential because it may result from other barriers

(Timmerman & Mulvihill, 2015). Although students with disabilities are a rapidly growing subpopulation on the campuses of higher education institutions, many students choose not to disclose and, subsequently, do not receive the supports that are needed for academic achievement (Timmerman & Mulvihill, 2015). According to the National Center for Education Statistics (2016), only 11% of undergraduate students self-reported. In 2017, only 19% of undergraduate students reported having a disability (National Center for Education Statistics, 2017).

Grimes et al. (2015) conducted a case study aimed to identify the number of students with learning challenges who enrolled at an Austrian institution, to determine the characteristics of disclosing and non-disclosing student groups, and to explore factors that predict a student's choice of non-disclosure. The researchers collected data from 2,821 undergraduate and postgraduate students using an anonymous online survey that utilized the non-deficit language learning challenge to avoid the stigmatization of the term disability, encouraging greater participation among disclosed and non-disclosed student populations. The data were analyzed using the dual system estimation methodology, which provides a more accurate population estimate for stigmatized populations, such as students with disabilities. Findings indicated that a significant portion of both disclosed and non-disclosed student populations have two or more learning challenges. Further, younger students (i.e., under 25) with mental health issues were more likely to choose non-disclosure because non-disclosure offered a way to identify as a "traditional" college student rather than a student with a disability.

Shattuck et al. (2017) corroborated Grimes et al.'s (2015) findings in a quantitative study conducted to examine the prevalence and correlation of disability identification and self-efficacy among college students with autism spectrum disorder. The researchers collected data from the National Longitudinal Transition Study 2. Approximately 120 students with autism who attended

a two-year or four-year college participated in the quantitative study. After analyzing the data using linear regression, findings indicated that nearly one-third of college students with autism spectrum identified themselves as having a disability. Hence, the requirement to disclose being on the autism spectrum in order to receive accommodation could result in a large portion of students in need of services being excluded from receiving them. The results of this study have implications for the need of colleges and universities to identify options for reducing stigma by creating services to support the social and academic success of all students without requiring students to disclose their disability status.

In another study, Cox et al. (2017) examined how students with autism make sense of their experiences with higher education. The study participants consisted of nine college students with a formal diagnosis of autism spectrum disorder who completed semi-structured interviews in a familiar setting. Utilizing a constant comparative approach whereby data collection and analyses were conducted interactively, Cox et al. concluded that the students took a pragmatic approach to determine whether and when to disclose their autism diagnosis. Academically, students typically reveal their diagnosis to disability services or faculty on a need base. Several students reported that the only people on campus who were aware of their autism diagnoses were disability services personnel, indicating that oftentimes faculty was not aware of students' disabilities. The study also revealed that the students described having tension in fitting autism into their sense of identity, which impacted their decision to publicly disclose their status or seek formal accommodations.

Available support is vital to students with disabilities; however, many students with disabilities are not compelled to disclose their disability to colleges and universities faculties (Leake & Stodden, 2016). In Grimes et al.'s (2017) study conducted to identify disclosed and

non-disclosed college students and the nature of their accommodations, the findings suggested that some students want to avoid the stigmatized identity that they experienced during high school associated with their disability. Other students choose not to disclose because of the fear of discrimination, a history of bad experiences, and not knowing about the institutional support accommodations (Grimes et al., 2017). Nondisclosure is also perceived as a way to control information and diminish the power of their disability (Pearson & Boskovich, 2019).

Common deficiencies associated with students' disabilities, such as poor self-advocacy and communication skills, may impede the acquisition of accommodations. Unfortunately, because disability services are crucial in promoting academic success, non-disclosure can be detrimental (Newman et al., 2016). Herbert et al. (2014) conducted a quantitative study to examine the persistence of college students with disabilities over 10 years from one university that sought disability support services. The researchers collected data from 546 college students using student information that was obtained from a large composite data set from five offices that were affiliated with the university. After analyzing the data using descriptive analysis and linear regression, results indicated that the difference between the graduation rate of students who initially sought disability support services but did not follow through to receive accommodations, and the graduation rate of students who successfully followed through with the application process, pursued, and received accommodations was insignificant.

The study results then called into question the efficiency and efficacy of the accommodations that were provided to the students who pursued support. Furthermore, the researchers raised the question of what services might be offered beyond the Office of Disabilities, which might account for the persistence and graduation of college students with disabilities. While Herbert et al.'s findings indicated no significant difference between retention

and graduation rates of students with disabilities who received and who did not receive support Grimes et al. (2017), nonetheless, purported that students with disabilities who received accommodations were more successful than students who did not. The influence of outside factors may have just as much of an impact on students with disabilities' academic success as any university-provided accommodations; however, students with disabilities who do not disclose do not receive even the bare minimum of support in or outside of the classroom. Hence, failure to disclose may cause trailing retention with peers and delayed graduation experiences (Newman et al., 2016).

According to O'Shea and Meyer (2016), higher education practitioners can influence students with disabilities' decision to disclose their disabilities. Findings from O'Shea and Meyer's study indicated that students with disabilities were motivated to utilize support services when students were more accepting of their disability. O'Shea and Meyer conducted a qualitative study to explore students with disabilities' motivation to disclose and use available support services. Specifically, the researchers wanted to investigate how students with hidden disabilities related their college experience to their desire to achieve autonomy, competence, and relatedness. O'Shea and Meyer collected data from 11 college students diagnosed with non-visible disabilities from a large university located in the northeast using interviews. After analyzing the data using a combination of the phenomenological approach and the narrative approach, the results indicated that when students with disabilities' need for achieving autonomy, competence, and relatedness were satisfied, they were more likely to disclose their disability and utilize support services.

Non-disclosure may also result from students with disabilities' perception of faculty. Cole and Cawthon (2015) conducted a mixed-methods study to investigate the differences in

psychological attitudes and factors between students with learning disabilities who disclosed and who did not disclose. The researchers collected data from 31 undergraduate students with learning disabilities using the *Attitudes Towards Requesting Accommodations Scale*, the *Self-Determination Scale*, and the *Revised Self-Disclosure Scale* during Phase 1 (quantitative) of the study. During Phase 2 (qualitative) of the study, 15 participants participated in semi-structured interviews.

After analyzing the quantitative data using a one-way fixed effect multivariate analysis of variance and the constant comparative method to analyze the qualitative data, findings indicated that students with disabilities' decision to disclose were represented in their attitude towards accommodations, the student self-determination, and their experience with classmates and faculty. However, the thoroughness of students with disabilities' disclosure seemed to depend on the demeanor or perceived attitude of the faculty members. A student who encountered professors who had positive attitudes tended to disclose more thoroughly than a student who encountered professors who had a negative demeanor. Further, despite negative experiences with professors, positive faculty experiences may help students to continue to disclose and actively seek support.

Regardless of a student's disability, disclosure is often the first and most vital step toward academic success. From receiving accommodations and building a support network, disclosure provides both a touchpoint between the student and faculty and staff, and the basis for receiving necessary academic accommodations inside and outside of the classroom. Disclosure and access to accommodations increase the likelihood of graduation for students with disabilities; conversely, non-disclosure may result in lower grade point averages, lack of retention, and an ultimate failure to graduate or receive any sort of work-ready certification.

Transition Planning

Another potential barrier to accommodation is inadequate transition planning. Research indicated that students with disabilities who transition from high school to college face challenges imposed by the fundamental differences between secondary and postsecondary access to services (National Joint Committee on Learning Disabilities, 2007). The transition from secondary to postsecondary education includes the change in legal frameworks for students with disabilities; at the postsecondary level, students are responsible for disclosure and must actively seek disability-related supports for themselves. Whereas in high school, special education is mandated by the Individuals with Disabilities Act of 2004, and, therefore, schools are required to provide support and accommodations for students with disabilities regardless of disclosure. Colleges and universities fall under the auspices of two civil rights laws (i.e., Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, and the Amendment Act of 2008), and these institutions need not seek out students with disabilities and are only required to provide supports and accommodations to students who actively request them (Newman et al., 2019).

Parental Involvement. Timmerman and Mulvihill (2015) reported that students with disabilities experience shock when they learn that they lose secondary education privileges when transitioning to postsecondary institutions. Transitioning to college can be challenging for several students with disabilities for reasons, such as federal stipulations and poor self-efficacy and self-advocacy. First and foremost are the stipulations of the Family Educational Rights and Privacy Act. After high school, students with disabilities lose their individualized education plans and may lose parental support. According to Family Educational Rights and Privacy Act,

once a student becomes 18 or enrolls in a postsecondary institution, the rights of access to education records and advocacy transfer from parents to students (Sweetland & Glastris, 2015).

Often, for the first time, students must seek and gain approval for needed services without parental involvement (Kulow & Missirian, 2019). Secondly, in high school, based on the mandates of the Individuals with Disabilities Education Improvement Act (2004), the school district is responsible for identifying special needs and serving the student with individualized academic accommodations known as individualized education plans at no cost to the student or parent (Timmerman & Mulvihill, 2015). Newman et al. (2016) suggested that disclosure is critical, and that secondary school personnel and parents should emphasize the importance of disclosing one's disability to access postsecondary disability support and encourage the student to do so. Students with disabilities must also be made aware of access to the type of support that is available to all students, such as tutoring and writing labs.

Documentation. In higher education, individualized education plans no longer apply. Thus, the burden of seeking and acquiring appropriate services and associated costs is placed on the student. Students often do not understand their disability, which prevents their capacity to advocate for needed services and accommodations (National Joint Committee on Learning Disabilities, 2007).

Often the most challenging problem for college students with disabilities is the differences in documentation requirements. Institutions of higher education set their standards for documentation, which may include, unlike secondary requirements, the diagnosis of disability, the date of diagnosis, how the disability affects major activities and academic performance, and the doctor's professional credentials (Kelepouris, 2008; National Joint Committee on Learning Disabilities, 2007). Consequently, students who received services during

high school are often not eligible for postsecondary services because of expired or inappropriate documentation (Herbert et al., 2014). Challenges induced by the inconsistency of documentation requirements between secondary and postsecondary institutions also complicate the transition to college for students with disabilities (National Joint Committee on Learning Disabilities, 2007).

Pre-College Planning. According to Krupnick (2014), 94% of students with disabilities received academic support in high school compared to 17% of students attending college. Likewise, Newman and Madaus (2015b) stated that 98% of students with related disabilities received support services in high school compared to only 24% of students pursuing postsecondary education. Additionally, only 35% of students who received accommodations in high school reported their disability when they attended a postsecondary institution (Newman & Madaus, 2015b). This phenomenon may result from inadequate transition plans, coupled with low expectations of high school counselors and teachers, as well as unavailable postsecondary support services (Francis et al., 2018).

Transition planning should incorporate the skills and knowledge that are needed to promote the ease of transition from high school to college. Newman and Madaus (2015b) asserted that students who received adequate transition planning in high school were more likely to disclose. Moreover, McConnell et al. (2015) reported a gap in research in two areas of transition planning known to enhance post-school outcomes, which included parent involvement and collaboration between institutions.

Francis et al. (2018) proclaimed that this gap is exacerbated in college because higher education institutions do not have formal policies or regulations to govern students' transition into postsecondary education. Furthermore, Newman and Madaus (2016) conducted a quantitative study to determine the effect of transition planning and having a transition plan that

articulated needed postsecondary accommodations that were disability specific, as well as explicitly stated the postsecondary accommodations that were currently available to students with disabilities. The researchers collected data from the National Longitudinal Transition Study-2, consisting of 1,210 youths who reported postsecondary attendance after leaving high school via an interview or survey.

The study results indicated that as many as one-third to one-half of students with disabilities reported that they did not receive transition planning specific to the receipt of accommodations at the postsecondary level. However, after analyzing the data using propensity model analysis, findings also indicated that receipt of transition planning in high school and having postsecondary accommodations specified on the transition plan significantly increased the likelihood that students with disabilities would seek and use disability supports at two-year colleges for those students who did receive transition planning. Further, information on accessing needed services when pursuing postsecondary education can be addressed in a comprehensive transition plan.

Students transitioning from secondary institutions who receive special needs services for a disability to postsecondary education and choose not to self-disclose hinder their postsecondary studies (Pearson & Boskovich, 2019). Therefore, effective transition planning can play a significant role in the academic success of students with disabilities as they begin their postsecondary experiences (Newman et al., 2016). With the availability of new secondary programs and the push for all students with disabilities to be college-ready and career-ready, transition planning procedures are starting to include postsecondary education as a possible next step (Gibbons et al., 2015b).

Students with disabilities who are aware of postsecondary services, disclose their disability, and acquire available services are more likely to earn their degrees (Stevens et al., 2018). Transition planning that fails to address the need to self-disclose as part of self-advocating and failure to promote awareness of available postsecondary services can result in the unpreparedness of students as they embark on their college experience (Francis et al., 2018). Therefore, colleges and universities may need to review their policies and practices to ensure a smooth transition from high school and adequate accommodations for students with disabilities who desire to attain a degree.

Faculty Efficacy and Knowledge

Faculty Efficacy. The final barriers to providing accommodations to college students with disabilities are the faculty's self-efficacy, or the perception of their ability to accommodate the needs of students with disabilities, and faculty knowledge. While teachers with an elevated sense of efficacy believe that they can teach even the most challenging student, different faculty experiences impact their self-efficacy to deliver instruction effectively (Pfitzner-Eden, 2016). Becker and Palladino (2016) found that faculty with low efficacy were more likely to view accommodating students with disabilities as unfair and quickly give up on students with learning difficulties. Hence, an instructor's self-efficacy has implications for negative instructional practices, adversely impacting students' success.

Wright and Meyers (2017) conducted a quantitative study to examine how communication between students needing accommodations and college faculty impacted instructors' self-efficacy. The researchers collected data from 70 postsecondary faculty members using a Likert scale survey. After analyzing the data using *t*-tests and one-way analysis of variance, results suggested that the more that students disclosed their need for accommodations,

the more self-efficacy faculty had in creating and providing the accommodations. This study also suggested that an instructor's lack of self-efficacy in making an accommodation can be perceived as resistance to making the accommodation. As a result, a student may perceive that the instructor is not willing or able to meet his or her needs because the instructor does not believe in the student's ability to succeed in the course, which can negatively impact his or her motivation to succeed. Consequently, when students with disabilities self-disclose or advocate for themselves, an instructor's response may have implications for future self-advocacy and is critical to students' success.

Faculty Knowledge. Despite laws requiring instructors to provide accommodations, some fail to comply due to a lack of understanding of students with disabilities and accommodation laws (Stevens et al., 2018; Wright & Meyers, 2017). Becker and Palladino (2016) conducted a mixed-methods study to assess postsecondary faculty perspectives about teaching and working with students with disabilities while considering the lawful mandates that are instituted by the Individuals with Disabilities Education Act and the Americans with Disabilities Act. The researchers collected data from a randomized sample of 127 faculty members from a large Midwest comprehensive university using the “Faculty Perspectives about Teaching and Working with Students with Disabilities” (i.e., a survey based on selected items from the “Patterns of Adaptive Learning Scales” and the “Accommodation of University Students with Disabilities Inventory.”

After analyzing descriptive quantitative data and anecdotal qualitative data, the results suggested that faculty had experiences working with students with disabilities, particularly learning disabilities, and were willing to accommodate the needs of students with disabilities beyond the scope of reasonable accommodations. However, findings also indicated that despite

the faculty's willingness to go beyond the letter of the law, many faculty members did not show ways or means other than reasonable accommodations (i.e., extended time on exams and alternative testing. Further, the evidence pointed to the need for the implementation of professional development for faculty, allowing them to tap into their positive regard for students with disabilities and offer in-depth and alternative ways of accommodating students that are more beneficial to their academic success.

Faculty awareness and support of students' unique needs are vital elements to helping students with disabilities thrive in higher education. Stevens et al. (2018) indicated a need for postsecondary faculty training on the lawful requirements and preparedness for accommodating students with disabilities. Mbuvha (2019) also purported that postsecondary educators should receive training on teaching and supporting students with disabilities. As encapsulated within this literature review, faculty is a primary resource for the academic success of postsecondary students with disabilities.

Summary

Emerging trends indicated that the progression of the inclusion of students with disabilities into higher education will consist of the establishment and implementation of shared norms; thus, campuses will be barrier-free and welcoming (Leake & Stodden, 2014). Leake and Stodden (2014) predicted that students with disabilities will no longer be marked as a special group in which no one wants to have membership. Instead, they will be accepted and appreciated as students in an environment of diversity (Leake & Stodden, 2014). Couzens et al. (2015) suggested that higher education institutions should find and evaluate effective methods for empowering and supporting students to help them understand the strengths and limitations of their disability, the need to self-advocate and access the supports that they need to succeed in

higher education and beyond. Newman et al. (2019) suggested that there is a need to understand the type of support and professional development that would best equip college faculty and administrators to respond to the needs of students with disabilities to best provide those students access to available support universally.

For decades, colleges and universities have faced the challenges imposed by legislation to promote access, retention, and graduation of students with disabilities. The literature indicated that administrators in higher education are taking measures to support the academic achievement of underrepresented populations; however, these efforts and research are not exhaustive. While some higher education institutions are striving to meet students' needs, many educators in institutions of higher education are content with only meeting the letter of the law (Leake & Stodden, 2014).

Higher education institutions are witnessing a lag in academic achievement among college students with disabilities. Postsecondary practitioners have focused on creating equitable outcomes for all students because of the influx of students with disabilities (Kimball et al., 2016). Nevertheless, students with disabilities continue to underperform compared to their non-disabled peers in postsecondary education (Qian et al., 2018). Grimes et al. (2017) asserted that college students who, for whatever reason, do not disclose their disability or who are undiagnosed become barriers in themselves to acquiring accommodations crucial to academic success. Overall, nondisclosure impedes their ability to obtain their degree and may result from inadequate high school transition planning (Grimes et al., 2017).

The literature also indicated that students with disabilities who transition from high school to college face challenges imposed by the fundamental differences between secondary and postsecondary access to services (National Joint Committee on Learning Disabilities, 2007).

The National Joint Committee on Learning Disabilities (2007) reported that documentation inconsistencies between secondary and postsecondary institutions may hinder the attainment of support services, making the transition from high school to college more difficult for students with disabilities. Despite the transitional challenges and documentation inconsistencies between high schools and colleges, the literature indicated that nondisclosure or limiting access to accommodations may result from other barriers, such as transition planning during high school and college faculty efficacy, beliefs, and behaviors.

More effective support is needed to improve the retention and completion rates of students with disabilities and to address their limitations. Considering the impact of a college degree on employment, earnings, and quality of life, higher education practitioners should better understand the link between accommodation practices and postsecondary outcomes for students with disabilities. Further, colleges and universities need to review their policies and practices to ensure adequate accommodations for students with disabilities who desire to attain a degree to preclude inherent social injustice. Thus, examining shared and distinct accommodation practices that were utilized by technical college educators as a moral and lawful obligation was the focus of this qualitative descriptive case study. To do so, this study explored current practices through the lens of Universal Design for Learning, which, as stated above, is a framework for accommodating students of all levels and abilities, regardless of disclosure in the case of students with disabilities.

Chapter III: Methodology

Students with disabilities are a growing population at colleges and universities (Lombardi et al., 2016; West et al., 2016). However, a problem exists in U.S. colleges and universities. The students with disabilities population have lower retention and graduation rates than non-disabled populations (Fleming et al., 2017b). Students with disabilities who graduate often take longer to obtain their degrees (Ju et al., 2017). Newman et al. (2016) reported that 34% of this subpopulation finished a four-year degree, but it took 8 years for this population to do so. Santos et al. (2019) asserted that postsecondary faculty struggle to meet the variety of needs of an increasingly diverse student population.

As the literature review indicated, there was limited research on the accommodation practices of postsecondary faculty (Santos et al., 2019; Stevens et al., 2018; Turner et al., 2017). Program directors in colleges and universities are mandated by law to provide reasonable accommodation to documented students with disabilities. Stevens et al. (2018) suggested that disability office personnel at each higher education institution determine reasonable and the quality of accommodations. Further research shows that while program planners in disability offices identify adequate support, students do not receive adequate faculty support (Mbuvha, 2019). Stevens et al. (2018) asserted that there are no provisions on how college instructors work with students with disabilities. As a result, there exists a lack of consistent application of accommodations nationwide. Hong (2015) indicated a need to research the effectiveness of lawfully mandated support for college students with disabilities.

The purpose of this qualitative descriptive case study was to explore the instructional practices of technical college educators to support students with disabilities. The data from the

first-person perspective of technical college faculty could help identify shared and distinct practices that are implemented to accommodate students with disabilities.

Research Design

The research design for this study was a qualitative descriptive case study. Qualitative descriptive case studies, unlike other types of qualitative research, are inquiries designed to understand a phenomenon that is difficult to quantify (Baxter & Jack, 2008). The inquiries include specific descriptions generated from interviews, observations, or document analyses (Merriam & Tisdell, 2016). Qualitative research designs enable data collection in a naturalistic setting and can provide a detailed description of the phenomena and the participants' understanding and personal experiences (Billups, 2019).

This qualitative descriptive case study aimed to determine the participants' instructional practices used to accommodate students with disabilities in higher education classes. According to the Universal Design for Learning framework, effective instructional strategies are necessary for the academic success of students with disabilities (Barnard-Brak et al., 2010). A descriptive case study design was selected because this method allowed the researcher to describe the experiences of the technical college instructors in providing guidance and directions for students with disabilities. In addition, the descriptive case study was used to explore individual instructors' distinct instructional practices through the participants' descriptions of accommodations during semi-structured interviews. The findings from this qualitative descriptive case study design may promote a better understanding of the impact of the instructional practices that technical college faculty implement to accommodate students with disabilities.

For this study, several research methods were considered but deemed unsuitable. Grounded theory, which relies on qualitative data to illuminate psycho-social processes of behavior, was eliminated (Foley & Timonen, 2015). Grounded theory was not appropriate for the work herein as this method is designed to allow researchers to develop theories based on observations. This study was not designed to develop a theory based on known knowledge, but rather to first develop an understanding of the given situation (i.e., current accommodations practices in technical college classrooms). Grounded theory forces the researcher to "assume…an inductive stance" to formulate a new theory (Merriam & Tisdell, 2016, p. 31). The purpose of this qualitative descriptive case study was to explore the instructional practices of technical college educators to support students with disabilities.

The narrative research design was considered a possible research design for this study. Narrative research designs are people-focused, illuminating sociological and behavioral aspects of human experiences and often drawing from personal documents, such as letters, memoirs, journals, and oral storytelling traditions. This storytelling approach or narrative design was not selected for this study because this method of research is used best for recording lived experiences, life events, and psycho-social phenomena, engaging with issues such as race, gender, and religion (Greenhalgh, 2016). This study did not focus on personal experience but rather on institutional instructional practices. Moreover, a quantitative methodology was not appropriate for this research study because the methodology cannot account for differences among variables, variances among groups, or outcomes of experiments (Creswell, 2014).

Similarly, mixed methods research was not selected for this study because this method has a quantitative factor, which was insufficient for this research. Although other research designs were considered, a qualitative descriptive case study was the research method chosen. A

qualitative descriptive case study approach was a more appropriate method because it offered a pathway for the researcher to use surveys, interviews, and document analyses to "build towards theory from observations…moving from the general to the particular" (Merriam & Tisdell, 2016, p. 17).

For qualitative research, the use of a descriptive case study as the research design allowed this researcher to study or recognize a given phenomenon and patterns within a natural setting rather than in a closed or controlled environment. The qualitative descriptive research methodology allowed the researcher to understand participants' instructional practices to support students with disabilities. Further, qualitative research was the most appropriate methodology for this study because the researcher was not looking for a specific response from the participants. Instead, the researcher sought to know the various instructional practices participants use to support students with disabilities. The researcher also sought to obtain a rich set of data, and the qualitative methodology allowed the researcher to gain a wealth of data that would not be easily available or attainable using the quantitative methodology (Creswell & Creswell, 2018).

Role of the Researcher

The researcher maintained involvement in the study as an observer. The researcher was an experienced instructor with 25 years of teaching computer information systems in the technical college setting. In this position, the researcher's interest derived from working with students with disabilities and observing their struggles with higher education demands.

The researcher took note of the kinds of issues that reduced progress toward graduation for students with disabilities. As an instrument of data collection for this research study and as an experienced technical college advisor of students with disabilities, the researcher was aware of personal biases that may continue to exist, which were relative to the challenges faced by

technical college faculty and students with disabilities. Thus, the researcher was able to make assumptions that were limited to past experiences and beliefs. To mitigate biases, this researcher strived to stay neutral to the subject matter and manage biases by connecting the data from the Universal Design for Learning Checklist, semi-structured interviews, and details from course syllabi to the research questions and the principles and guidelines of the Universal Design for Learning framework.

Participants

The participants included a purposeful sample of full-time technical college faculty members from six technical colleges in a southern state. Purposeful sampling is useful when "the researcher wants to discover, understand, and gain insight, and therefore, must select a sample from which the most can be learned" (Merriam & Tisdell, 2016, p. 96). In a qualitative research design, sampling is used to help identify and select participants who relate closely to the phenomenon associated with the research study (Palinkas et al., 2015).

Purposeful sampling for this qualitative research study involved identifying instructors with at least five years of teaching experience at the postsecondary level. The use of purposeful sampling allowed the recognition and discovery of information regarding instructional practices for accommodating students with disabilities and instructors' beliefs about the effectiveness of those accommodation practices. Instructors with fewer than 5 years of teaching experience were not selected to participate. In addition, instructors who worked part-time or served as adjunct instructors were also eliminated from the study. No payments were made for participating in the study. However, all participants who completed the study received $10.00 Walmart gift cards as an appreciation for their time and service.

Demographics

Location 1 was a technical college centrally located in a southern state. The student population consisted of 12,783 students who enrolled in day and evening courses; of these students, 230 had disclosed disabilities (Annual AY 2022 Enrollment, 2022). Location 1 offered a wide range of programs, such as practical nursing, welding technology, and other career-focused courses. All programs were staffed with full-time and adjunct faculty, including 227 instructors, with supporting staff members in each department. Of these instructors, 130 were females, and 97 were males (National Center for Education Statistics, 2020).

Location 2 was a technical college southernly located in a southern state. The student population consisted of 2,513. Location 2 enrollment included 144 students who had disclosed disabilities (Annual AY 2022 Enrollment, 2022). This college provided a number of programs, including automotive repair, cybersecurity, and other career-focused classes. These programs were staffed with 53 full-time and adjunct faculty, including 30 male and 23 female instructors (National Center for Education Statistics, 2020).

Location 3 was a technical college southernly located in a southern state. This college had a variety of programs, such as business management and criminal justice technology, among others. All programs were staffed with full-time and adjunct faculty, including 233 instructors, of which 80 were female and 153 were male (National Center for Education Statistics, 2020). The student population at Location 3 consisted of 5,495 students who enrolled in day and evening courses, including 229 students who had disclosed disabilities (Annual AY 2022 Enrollment, 2022).

Location 4 was a technical college southernly located in a southern state. This college maintained several programs, including dental assisting and culinary arts. These programs were

staffed with full-time and adjunct faculty. This faculty was composed of 73 instructors with supporting staff members in each department, including 47 female and 26 male instructors (National Center for Education Statistics, 2020). The student population consisted of 3,659 students who were enrolled in both day and evening courses. Location 4 had 127 students who had disclosed disabilities (Annual AY 2022 Enrollment, 2022).

Location 5 was a technical college northernly located in a southern state. This college had diverse program offerings, such as cosmetology, welding, and medical coding. The college also had 129 instructors, including 82 females and 47 males (National Center for Education Statistics, 2020). Location 5 had a student population of 8,862 students, including 165 students with disclosed disabilities (Annual AY 2022 Enrollment, 2022).

Location 6 was a technical college northernly located in a southern state. This college had a total of 12,630 students who were enrolled, with 534 students having disclosed disabilities (Annual AY 2022 Enrollment, 2022). Location 6 had 189 instructors with supporting staff members in each department, including 101 female and 88 male instructors (National Center for Education Statistics, 2020). The programs offered at this college were varied and included graphic design and economics.

Instrumentation

The instrumentation for this qualitative descriptive case study included three data collection tools. The first tool, the Universal Design for Learning Checklist (Appendix A), was used to collect data on instructional practices that align with Universal Design for Learning principles. The Universal Design for Learning Checklist was adapted from the Montgomery County Public Schools Universal Design for Learning Checklist (2010) and was created using design principles as suggested by Regmi et al. (2016).

These principles include simplicity of questionnaire items, survey feasibility, appropriateness of the target participants, cultural and ethical sensitivity, and avoidance of bias. Adhering to these principles to ensure that the online questionnaire is methodologically sound, the Checklist included 84 Universal Design practices that were divided into the three key principles, including multiple means of representation, multiple means of engagement, and multiple means of action and expression. Paper-based questionnaires were once researchers' preferred method of data collection, and traditional paper-based approaches to administering questionnaires include mailed surveys and telephone and in-person interviews (Ebert et al., 2018; Regmi et al., 2016). However, online surveys, an internet-based survey tool, have become the preferred method of data collection in the digital age (Ebert et al., 2018; Gorrasi et al., 2022). Therefore, the Universal Design for Learning Checklist was administered digitally, allowing the researcher to collect a larger amount of data more efficiently, economically, and within a shorter time frame (Regmi et al., 2016).

The second instrument was an interview guide that was utilized in the semi-structured interviews. The interview guide included nine semi-structured interview questions that explored the instructional strategies that were implemented by technical college faculty to accommodate students with disabilities (Appendix B). As the name suggests, these semi-structured interviews occurred on a one-on-one basis and featured a combination of structured and unstructured interview practices. Semi-structured interviews are exploratory and provide guiding questions while also allowing for and encouraging participants to guide the conversation, accommodating a variety of research goals by combining both open-ended and theoretically driven questions, thereby optimizing data collection (Galletta, 2012).

The semi-structured interview guide was designed with the flexibility to allow for discovery, creating space to follow noteworthy trajectories as the conversation unfolds. The quality of data that are collected during a semi-structured interview is highly influenced by the interviewer's design, preparedness, and sophistication (Newcomer et al., 2015). Therefore, the researcher developed an interview guide to expand on the information gleaned from the Universal Design for Learning Checklist.

The semi-structured interview questions were deliberately focused and used to generate answers to the three research questions, using the words of the target group and being careful not to sound (Newcomer et al., 2015). Furthermore, to counteract the pressure some questions might provoke, causing the participant to feel the need to give socially acceptable responses, the researcher avoided any stigma attached to specific answers and reassured the confidentiality of responses during the interview process. The give-and-take dialogue between the interviewer and the participant allowed flexibility to meander around the topic(s) of the interview protocol (Appendix C). This exchange allowed the researcher to probe participants' responses for clarification, meaning-making, and critical reflection. Table 4 lists the semi-structured interview questions alongside relatable, existing research in the field.

Table 4

Interview Questions and Supporting Research

Interview Question	Supporting Research
How do you accommodate students with disabilities when presenting a lesson?	Barnard-Brak et al., 2018; Capstick et al., 2019; Mbuvha, 2019; Wright & Meyers, 2017
How do you increase the engagement of students with disabilities during the instruction process?	CAST, 2022; Meyer et al., 2014; National Center on Universal Design for Learning, 2014; Rose et al., 2006
What accommodation do you provide to students with disabilities during the assessment process?	Coyne, 2012; Delaney & Hata, 2020; Kings-Sears, 2009; McLaughlin, 2012
How do you integrate multiple intelligences in your program of studies to address students with disabilities?	Couzens et al., 2015; National Center on Universal Design for Learning, 2014; Newman et al., 2019; Thomas et al., 2018
If you wanted to eliminate one of your instructional practices utilized to accommodate students with disabilities, what would it be? Why?	CAST, 2022a; National Center on Universal Design for Learning, 2014
What instructional practice have you found to be most effective with students with disabilities in your classroom?	CAST, 2022a; Mbuvha, 2019; National Center on Universal Design for Learning, 2014
What recommendation do you have for future instructional practices to accommodate students with disabilities in your program of study?	Burgstahler, 2009; CAST, 2022a; Grilful-Friexenet et al., 2017
What recommendations do you have for accommodations to encourage retention in your program of study?	Bradshaw, 2020; Wright & Meyer, 2017; Zeedyk et al., 2019
What recommendation do you have for professional development implemented to faculty to improve accommodating students with disabilities?	Santos et al., 2019; Stevens et al., 2018; Turner et al., 2017

The third instrument was the document analysis form (Appendix D), created by the researcher, which was utilized to examine the participants' course syllabi. The form consisted of three sections, including participant, course name, and evidence of accommodations in the statement of purpose, method of instruction, assignment variations, grading practices, and remediation and enrichment opportunities. Document analysis constitutes the systematic procedure for reviewing and/or evaluating primary evidence and can minimize field research time by allowing the researcher to analyze pre-existing texts to conduct a study. The rationale for creating this form for this study was to record and maintain examples of instructional practices for accommodating students with disabilities included on their course syllabi.

Further, alongside the checklist and interviews, this document analysis served as a means of triangulation to establish credibility and reduce the ethical issues produced by other qualitative methods (Bowen, 2009; Stake, 1995). A wide variety of documents is better for any study; however, the quality of the documents should take precedence over the quantity (Bowen, 2009). Once relevant documents were gathered—course syllabi—the following seven-step process was undertaken: (a) develop an organization and management system; (b) make copies of the originals for annotation; (c) assess the authenticity of the documents; (d) explore the documents' agenda biases; (e) explore background information (e.g., tone, style, purpose); (f) ask questions about the documents (e.g., who produced it? for what purpose? when?); and (g) explore the contents of the documents (O'Leary, 2014).

The document analysis form was used to verify information gleaned from course syllabi and information previously shared in earlier stages of the study. Data collection and analysis required multiple steps, including finding documents, selecting the relevant documents, appraising (or interpreting) said documents, and synthesizing the obtained data (Bowen, 2009).

This process yields data that can then be organized into themes and categories based on content analysis.

The researcher utilized thematic analysis during the data analysis process by organizing the new categories into themes across all the data sources collected for the study (Bowen, 2009). The researcher then analyzed the themes to make sense of the data. This process continued inductively as specific references to themes began to develop. The document analysis findings were compared with the Universal Design for Learning Checklist and semi-structured interviews to explore the nature and extent of instructional practices to accommodate students with disabilities.

The three data collection instruments that were utilized for this study included a checklist, semi-structured interviews, and document analysis. The various pieces of information from the three different data sources combined provide a holistic response to the research questions, illuminating current instructional practices to accommodate students with disabilities. Table 5 restates the main research questions as presented in the introduction and provides an overview of instrumentation to confirm the appropriateness of the research design.

Table 5

Research Design Confirmation Table

Research Question	Instrumentation/Analysis	How will the strategy answer the research question?
What are the instructional practices of technical college faculty to accommodate students with disabilities?	Questionnaire (UDL checklist)	The questionnaire provided a list of current accommodations practices that were implemented to support students with disabilities through the lens of Universal Design for Learning.
	Semi-structured interviews	The semi-structured interviews provided an opportunity to further explore the accommodations faculty currently provided.
	Document analysis	The document analysis engaged with faculty syllabi to assess whether or not accommodations practices or resources for students with disabilities were explicitly provided to students.
How satisfied are technical college faculty with the instructional practices that they implement to accommodate students with disabilities?	Semi-structured interviews	The semi-structured interviews provided an opportunity to further explore the accommodations faculty currently provided, as stated above, as well as provided background on faculty training, resources, and familiarity with accommodations practices.
What recommendation do technical college faculty have for improving their instructional practices for accommodating students with disabilities?	Semi-structured interviews	In addition to illuminating further information regarding accommodations practices, the semi-structured interviews also provided faculty an opportunity to explore avenues for better accommodations practices in the future, including increased faculty training and development.

Data Collection

After receiving approval from the University's Institutional Review Board (Appendix E), the researcher notified the Technical College System to inform of the intent of the study and the researcher's willingness to share the findings (Appendix F); the Technical College System granted approval (Appendix G). College presidents' permission was also sought (Appendix H), and a sample president's approval is shown in Appendix I. A follow-up email was sent to college presidents who did not respond initially (Appendix J). Participants' recruitment began by emailing the instructors to inform them of the purpose of the study and inviting them to participate (Appendix K). The email also contained specifics on the requirements of participation, such as completing the Universal Design for Learning Checklist, participating in the semi-structured interviews, and submitting a copy of a current syllabus for document analysis.

Instructors were asked to respond to the recruitment email within one week of receipt of the invitation. A second recruitment email was sent within one week of the first to encourage additional instructors to participate (Appendix L). If more than 12 instructors responded, a follow-up email was sent thanking instructors who were not selected after the 12 interviews had been conducted (Appendix M). A separate email was sent to the 12 participants who were selected, confirming their participation (Appendix N). The rationale for using 12 instructors in this qualitative descriptive case study was to include a number small enough to generate feedback responses from each participant to provide information about instructors' experiences using instructional practices for accommodating students with disabilities.

Data collection was conducted in three phases, including administering the Universal Design for Learning Checklist, conducting semi-structured interviews, and collecting documents

for analysis. During Phase I of the study, participants were sent a link to a Google form via email, which included the informed consent form (Appendix O). Once the participants agreed to consent, the Google form enabled them complete demographic information (Appendix P), schedule their semi-structured interviews, upload a course syllabus for document analysis, and complete the Universal Design for Learning Checklist by indicating which Universal Design for Learning instructional practices that the participants implemented to accommodate students with disabilities.

During Phase II, the 12 participants engaged in semi-structured interviews. Semi-structured interviews were conducted privately via Zoom. The allotted time for each interview did not exceed 45 minutes. Each participant was interviewed once. Participants were sent an email to confirm the date and time of their semi-structured interviews based on their responses in the Google Form (Appendix Q). The email also included the interview protocol script and the interview questions. The interview protocol was used to guide the interviews and to ensure that critical details about the study were included. Contact information for additional questions and member checking was also provided. This qualitative data collection process included nine open-ended interview questions to uncover as much information about instructional practices as possible.

A reminder email (Appendix R) was sent to each participant a day before the scheduled interview, providing a Zoom link for connecting to the interview. The web conferencing platform recording feature captured the interview for transcribing and later review. At the beginning of the interview, the researcher reminded participants that the interviews were voluntary and that they may stop the interviews at any time. The researcher also reminded the participants of the confidentiality and anonymity of their identities. Further, as interviewers were

active in the research process and should always be aware of their biases, paradigms, and belief systems, the researcher avoided leading participants to preconceived conclusions and using non-verbal language (e.g., nodding or rolling their eyes) to reinforce or discourage specific responses (Corbin & Strauss, 2008).

In Phase III, syllabi were examined through document analysis to determine evidence of instructional practices for accommodating students with disabilities. Participants provided a current course syllabus by uploading it into Google Forms. The course syllabi were from one course that was taught during Fall 2021, Spring 2022, Summer 2022, or Fall 2022. The researcher reviewed syllabi for the fiscal year 2022-2023 to support interview data. The researcher used the document analysis form to record examples of participants' instructional practices that were used to support students with disabilities.

Participants entered their names and institutional email addresses when completing the checklist, but pseudonyms for analysis were generated for confidentiality. The researcher created a table to link the participants' names from the initial checklist form with the corresponding pseudonyms. The participants' names, email addresses, and other identifying factors were deleted from the data spreadsheet after the creation of pseudonyms. Course syllabi were also de-identified by deleting the instructor's name, email address, office location, and phone number and linking the participants' names with their pseudonyms. The researcher used pseudonyms for analysis to code the interview transcripts and course syllabi.

Mitigating Social Desirability Bias

Participants may provide responses that differ from their authentic attitudes, values, or behaviors to be impressive or feel good about themselves, which may result in social desirability bias (Larson, 2019). In face-to-face interviews, impression management (the desire to alter how

the researcher views the participant's reality) is more prone by participants, resulting from socially preferred norms that suggest positive or negative answers to questions (Bergen & Labonte, 2021). For example, respondents may overreport instructional practices while underreporting personal attitudes.

Social desirability bias can have a significant impact on the results of surveys and interviews. However, most researchers do not try to control social desirability bias; instead, this bias is often listed as a limitation of the study (Bergen & Labonte, 2021; Larson, 2019). Researchers who are concerned with controlling social desirability employ four strategies: (a) maintaining participants' anonymity or ensuring confidentiality; (b) modifying questions to neutralize socially acceptable answers; (c) disproving bias, showing that social desirability bias is not a significant factor through the development of scales to identify and measure the bias; or (d) controlling the impact of the bias by including a measure during data analysis to control bias effects (Bergen & Labonte, 2021; Larson, 2019).

To mitigate social desirability bias, the researcher was sensitive to social desirability tendencies in participants. Tendencies may include nervous facial expressions and other suggestive body language, partial responses, and vocabulary unrelated to the study topic. The researcher applied strategies to ensure anonymity and confidentiality, such as assuring that Zoom sessions were private and briefly explaining the confidentiality and anonymity procedures at the beginning of the interview. Further, the researcher probed for information, requested examples or stories, posed questions indirectly, and established rapport with participants through humor, self-disclosure, and a display of respect.

Data Storage and Protection

The electronic data from this study were stored on the principal investigator's password-protected home computer and in the researcher's institutional Google account. Data will be stored for 5 years, after which electronic files will be permanently deleted from all computer devices. The Google Form was created under the researcher's institutional account, which was password-protected and secured with multi-factor authentication. Further, Google Forms did not allow tracking of respondents' IP addresses. Protection during semi-structured interviews was guaranteed by the principal investigator's password-protected Zoom account that was utilized during data collection. IP addresses were not collected during the Zoom interviews.

Data Analysis

A qualitative descriptive case study design was the method used to conduct this study. The data were derived from the Universal Design for Learning Checklist, semi-structured interviews of six technical college instructors, and data that were collected from instructors' syllabi. Data analysis followed a broad content analysis process rather than a formal system, such as constant comparison. Data analysis of the data from the Universal Design Checklist followed a basic frequency count showing how many participants checked the items within the checklist. The frequency counts were then used to determine the percentage of the participants using the specific guidelines from the Universal Design Checklist.

As Creswell and Poth (2018) suggested, this qualitative descriptive case study relied on constant data comparison. This research method included emerging codes and related categories to maximize data comparison and ensure the dependability of study results. Data analysis included Creswell and Poth's strategy for completing comprehensive summaries of participants' responses to interview questions. The researcher transcribed the interviews verbatim to explore

the participants' instructional practices that were utilized to accommodate students with disabilities.

Thematic analysis was used to analyze the data and present themes or patterns related to the data that were obtained on the instructional practices of technical college faculty used to accommodate students with disabilities. The data analysis included a six-step process as Merriam and Tisdell (2016) described, including (a) becoming familiar with the data, (b) generating initial codes, (c) searching for themes, (d) reviewing themes, (e) defining themes, and (f) writing up the findings. The researcher became familiar with the data that were collected from the semi-structured interviews by thoroughly reading the interview transcripts to understand the general ideas and comments of the participants.

While conducting this initial reading of the interview transcript, the researcher noted the overall impression that was generated. Identifying initial codes included using a coding strategy that began with an initial list of codes described by qualitative researchers (Creswell, 2015; Merriam & Tisdell, 2016). This strategy was appropriate for this study because coding allowed the researcher to analyze the data more than once, search for new codes, and to identify themes within the content (Merriam & Tisdell, 2016). The researcher searched for patterns and categories (subthemes) in the data gathered from the semi-structured interviews, exploring similarities in the participants' responses and recognizing patterns and categories in initial codes on the interview transcripts.

These initial codes became the general ideals that the researcher used in generating themes. The researcher reviewed the initial codes, generated initial categories, and organized the data to reduce the high number of pages of information into fewer and more meaningful responses to answer the research questions. This step is known as open coding, meaning no

preset codes were applied (Merriam & Tisdell, 2016). Identifying categories included capturing words, thoughts, and details that supported the research questions. The researcher recorded the initial codes and categories from the data four times to conclude the coding process. The researcher analyzed the initial data and then used the initial findings to guide the collection of further data from the recorded conversations to increase the credibility of the research.

Analysis of the third data collection instrument involved analyzing course syllabi to explore instructional practices for accommodating students with disabilities. The researcher followed the procedures utilized during the coding process of the semi-structured interviews to report findings from the syllabi. This procedure provided the initial codes and the code categories. The researcher utilized thematic analysis during the data analysis process by organizing the new categories into themes across all the data sources that were collected for the study.

The researcher reviewed and analyzed each theme to make sense of the data and to examine how the themes related to each other and the study's overall purpose. Writing up the findings from the semi-structured interviews and document analysis included reviewing the themes to determine if they were useful for answering the research questions. The researcher used Microsoft Word document functions to combine data relevant to each theme. The themes that occurred most often were used to answer research questions (Merriam & Tisdell, 2016). This process continued inductively as specific references to themes developed (Merriam & Tisdell, 2016).

Trustworthiness

Trustworthiness for this research study was established by making sure of the credibility, transferability, dependability, and confirmability of the findings, as Shenton (2004)

recommended. Shenton's (2004) descriptions of each of these concepts followed. Credibility includes the use of well-established research methods, becoming familiar with the organizations in which participants reside, and the culture of organizations before the first data collection begins. Transferability relates to how well findings and conclusions from one study can be applied to other situations and populations. Dependability involves the processes within the study, which should be reported in detail. Confirmability refers to the extent to which the researcher recognizes and admits personal biases.

Credibility

In this study, three data collection instruments, which were administered at six sites, were used to ensure triangulation of findings. The instruments included the Universal Design for Learning Checklist, semi-structured interviews, and document analysis to generate data relative to instructional practices to accommodate students with disabilities. Credibility was established through triangulation and the inclusion of semi-structured interview questions that encouraged participants to describe instructional practices for accommodating students with disabilities. The study was designed to investigate instructional accommodation practices, perceived effectiveness, and improvements through the lens of Universal Design for Learning. In addition, credibility was established by triangulating data and information from three data sources (Shenton, 2004).

Additionally, member checking is critical for validating the data that were collected in semi-structured interviews (Motulsky, 2021). Member checking requires the participants to review a draft of the researcher's analysis or interpretation of interviews for accuracy and may result in obtaining alternative interpretations. Thus, the study participants help the researcher verify the meaning of the data that were collected, reinforcing the trustworthiness of the

researcher's interpretation. Member checking is also an integral part of triangulation, helping to ensure that data analysis conclusions are free of systematic biases or limitations of a specific data collection instrument (Candela, 2019). For member checking, the researcher emailed each participant their interview transcript and asked them to review it for accuracy (Appendix S).

Transferability

Shenton (2004) recommended six parameters for transferability. The location and number of participating school sites included six technical colleges. The requirements for participation in this research study were technical college faculty with at least five years of experience. The number of participants included 12 instructors who volunteered to participate. The three data collection tools used for this research study were the Universal Design for Learning Checklist, semi-structured interviews, and document analysis. The Universal Design for Learning Checklist included 84 items, and the interview protocol for semi-structured interviews consisted of nine open-ended questions. The duration of time for the three phases of data collection was four to six weeks. These parameters were used to ensure transferability.

Dependability

Dependability was achieved by overlapping three data collection methods focused on instructional practices to accommodate students with disabilities. Each data collection method was designed to generate answers to the same three research questions. These three research questions examined the instructional accommodation practices of technical college faculty to assist students with disabilities, technical college faculty's satisfaction with the accommodations that they provided to students with disabilities, and the recommendations technical college faculty have for improving their instructional accommodation practices for students with disabilities. As indicated by Shenton (2004), to address the dependability issue more efficiently,

the study's procedures were developed in detail in order that researchers in the future might be able to replicate the study producing the same results.

Confirmability

The concept of confirmability was the qualitative investigator's comparable concern to objectivity (Shenton, 2004). Confirmability helped the researcher to ensure that the findings from this study reflect the direct experiences of the participants rather than the biases of the researcher. Triangulation was used to ensure confirmability exists throughout the data analysis process. Further, the researcher recognized and admitted bias in the role of the researcher. Even though the researcher has a passion for improving the academic success of college students with disabilities, the researcher maintained objectivity throughout the data collection and analysis processes and reported all findings accurately.

Summary

Colleges and universities are mandated by law to provide reasonable accommodations to documented students with disabilities. However, there is a lack of consistent application of accommodations. Hong (2015) indicated a need to research the effectiveness of lawfully mandated support for college students with disabilities. The purpose of this qualitative descriptive case study was to explore the instructional practices of technical college educators to support students with disabilities. Data that were collected from the first-person perspective of technical college faculty helped identify shared and distinct practices that were implemented to accommodate students with disabilities and how they adapted their instruction to meet the needs of all students. The findings of this study are presented in Chapter IV.

Chapter IV: Results

College students with disabilities are not graduating at the rate of their peers without disabilities despite lawfully mandated accommodations (Kimball et al., 2016). According to Mbuvha (2019), while disability administrators address low graduation rates among students with disabilities, students with disabilities do not receive adequate support from faculty. Yet, the literature indicated that higher education leaders and educators adhere to the lawfully mandated practices (i.e., reasonable accommodations) instituted to provide accessible and equitable education to all students. Subsequently, Wilhelm (2003) warned that legally mandated accommodations do not consistently address the needs of all students. This issue is exacerbated by nondisclosure, which further impedes the ability of college faculty to increase academic success for students with disabilities.

Stevens et al. (2018) asserted that there are no provisions on how college faculty work with students with disabilities. Stevens et al. also purported that no clear documentation shows how college faculty accommodate students with disabilities. A proliferation of literature on faculty perception and behavior towards accommodating students with disabilities exists, but few studies addressed the instructional practices technical college faculty implement for accommodating students with disabilities in their classrooms. Hence, this gap in the research of instructional practices implemented to accommodate college students with disabilities was the focus of this multisite descriptive case study.

Universal Design for Learning principles utilized in instruction maximize learning for all students (CAST, 2022a). Universal Design for Learning transforms one size fits all instruction into diverse, accessible learning that meets the varied needs of students (CAST, 2022a). Through the lens of Universal Design for Learning, the researcher of this current study investigated the

instructional practices in higher education for accommodating students with learning challenges, including students with disabilities.

The researcher employed a qualitative descriptive case study to examine the instructional practices of technical college faculty. The researcher chose a descriptive case study because it facilitated an in-depth understanding of how technical college faculty describe the instructional practices that they used to accommodate students with disabilities. The following research questions guided this study:

1. What are the instructional practices of technical college faculty to accommodate students with disabilities?
2. How satisfied are technical college faculty with the instructional practices that they implement to accommodate students with disabilities?
3. What recommendations do technical college faculty have for improving their instructional practices for accommodating students with disabilities?

In this chapter, the researcher discusses participant selection, data collection, and data analysis. Findings from the data analysis as they related to answering the research questions are also discussed.

Participants

After receiving approval (Appendix E) from Columbus State University's Institutional Review Board, the researcher notified the technical college system in a southern state to inform of the study's intent, the researcher's willingness to share the findings, and to obtain approval for conducting the research (Appendix F). The required application was completed on November 9, 2022, requesting the necessary permissions to conduct the research. The next day, November 10, 2022, the researcher was granted permission to continue the research, stipulating that the

presidents of the six colleges also had to approve (Appendix G). On November 10, 2022, the researcher sent an email with the attached approval letter from the technical college system office to the six technical college presidents (Appendix H). When the first president's approval letter (Appendix I) was received on November 10, the researcher started participant recruitment at that technical college, emailing the instructors to inform them of the purpose of the study and inviting them to participate (Appendix K). A second recruitment email was sent within one week, encouraging additional instructors to participate (Appendix L). A second email was also sent to the college presidents within one week of the first email, requesting approval from presidents who had yet to respond (Appendix J). With each received approval from the college presidents, the researcher sent recruitment emails to instructors at that institution; these emails were followed by a second email within one week of the first contact.

The final round of emails requesting participation was sent on November 22, 2022, and 962 instructors from six technical colleges were contacted. Twenty-seven instructors responded to the study, yielding a response rate of 2.81%. Nineteen of the 27 participants completed all requirements for participation in the study. Between November 22 and December 11, the 19 participants were interviewed via Zoom. Based on the quality of their responses, between December 15, 2022, and January 8, 2023, member-checking emails were sent to 12 participants selected from the 19 (See Appendix S). The purposeful sample for this study included 12 full-time technical college faculty members from six technical colleges in a southern state. All participants had at least five years of teaching on the postsecondary level and had experience accommodating students with a documented disability. Among the participants were 11 females and one male. The group's ethnicity consisted of six Caucasian and six African American

participants. Age, level of education, nor program were used as selection indicators. Table 6 provides other demographics of the participants.

Table 6

Participant Demographics

Pseudonym	Site	Gender	Ethnicity	Program of Study	Years of Experience
Participant 1	F	Female	African American	Arts and Science: Sociology	7
Participant 2	E	Female	Caucasian	Early Childhood Care and Education	27
Participant 3	C	Female	Caucasian	Paralegal Studies	6
Participant 4	D	Female	African American	Marketing Management	25
Participant 5	A	Female	African American	General Core: Humanities	25
Participant 6	E	Male	Caucasian	Natural Sciences	15
Participant 7	B	Female	African American	Computer Information Systems	22
Participant 8	F	Female	Caucasian	Nursing	6
Participant 9	C	Female	African American	Arts and Science: Sociology	14
Participant 10	B	Female	Caucasian	Dental Hygiene	7
Participant 11	A	Female	African American	Cosmetology	9
Participant 12	D	Female	Caucasian	Business Technology	25

Data Collection

Data for this study were collected via three data sources: (a) completion of the Universal Design for Learning checklist, (b) semi-structured interviews, and (c) the analysis of course syllabi using the document analysis form. The participants were sent a link to a Google Form created by the researcher to administer the Universal Design for Learning Checklist, schedule

interviews, and upload a copy of a course syllabus. The participants completed the checklist by selecting all practices they applied to support students with learning changes from a list of 84 instructional practices organized by the three principles of the Universal Design for Learning framework. The Universal Design for Learning Checklist responses were downloaded from Google Forms into an Excel spreadsheet and copied into Microsoft Word. The course syllabi were also collected during this phase. The participants were provided a link in the Google Form to upload a current course syllabus from a course taught during Fall 2021, Spring 2022, Summer 2022, or Fall 2022. Course syllabi were downloaded to Microsoft Word or Adobe.

Semi-structured interviews were conducted individually by the researcher to understand what instructional practices were utilized by technical college faculty to accommodate students with learning challenges. Virtual interviews via Zoom were scheduled according to the availability of the 12 participants. Participants were contacted by email to schedule interview appointments. The interview time duration ranged from approximately 16 to 48 minutes. The semi-structured interviews included nine open-ended interview questions (see Appendix B). The researcher aligned each interview question to the three research questions. An interview protocol script guided the interviews to ensure that pertinent information was provided (Appendix C). All participants were asked the same questions, but some participants were asked follow-up questions or probes based on the participants' response and researcher's discretion.

Zoom recording and transcription features were used to capture the virtual interview for member checking. The researcher reviewed the interview transcriptions, comparing the initial transcriptions to the interview recordings. The researcher made corrections to the words and phrases of the initial transcriptions before sending the member checking email and the corrected transcriptions to participants for review (Appendix S). Participants were asked to respond within

a week of receiving the transcriptions. Eleven of 12 participants responded with no changes. Participant 4 responded with minor changes, noting that "game attempt" should be changed to "game environment" (p. 3, line 81). Participant 4 also argued for changes to her statement about the elimination of the actual testing component, noting that assessments do not truly measure a student's comprehension of information (p. 4, line 141). Furthermore, Participant 4 campaigned for the addition of the following statements: (a) "In technical education, standards are based on industry standards. Assessments are based on those standards. Eliminating the testing component and only utilizing the hands-on component would be most beneficial" (p. 4, lines 141-142); and (b) "I am confident in the student's ability to understand the material when accommodations are implemented" (p. 4, line 149-151). After receiving and acknowledging responses from member checking, analysis of the semi-structured interview transcripts was completed through open coding.

Data Analysis

Following data collection, frequency counts were used to analyze the Universal Design for Learning Checklist data. The researcher conducted a frequency count on each of the 84 instructional practices to determine the percentage of the participants using each item from the Universal Design Learning Checklist. The checklist items with a frequency of 50% or higher were used to answer Research Question 1. The rationale for 50% was based on working with an even number of participants. The comprehensive findings of the Universal Design for Learning Checklist results are available in Appendix T.

Semi-structured interview transcripts were analyzed using a qualitative thematic analysis approach recommended by Merriam and Tisdell (2016). The qualitative thematic analysis approach was a six-step open coding process that began with the researcher reading and re-

reading the transcripts to become familiar with the qualitative data. Familiarization was conducted as an essential first step to allow the researcher to thoroughly understand the data and the context in which they were collected. Familiarization was also important as it allowed the researcher to develop a more nuanced understanding of the data. By reading and re-reading the data files four times, certain hidden nuances of the data were identified, including nuances that would not have been identified on a first reading. The researcher underlined and highlighted words and phrases to gain insight into the instructional practices of technical college faculty that were implemented to support students with disabilities, perceived satisfaction with those instructional practices, and recommendations for improving instructional practices.

The researcher generated a list of initial codes that captured the most salient features of the data. The codes were purely based on the content of the data rather than the Universal Design for Learning framework. This approach was necessary to avoid bias and ensure themes emerged naturally from the data. Each code was assigned a name reflecting the underlying meaning of the text segment. The initial hand coding process generated 177 codes. Next, similar codes were grouped to form 22 categories. The comprehensive findings of the interview results are available in Appendix U.

The categories that emerged during the analysis of the semi-structured interview transcripts provided directions for reviewing the data collected from the course syllabi during document analysis. Open coding was also utilized to analyze the course syllabi provided by the participants. Analysis of the participants' syllabi also followed Merriam and Tisdell's (2016) six-step process. Each course syllabus was reviewed three times. The first reading of the syllabi helped the researcher to become familiar with the course syllabi. During the second reading of the syllabi, the researcher identified the initial codes by highlighting passages in the Word

documents. Documents in PDF format were read, and codes were underlined and highlighted by hand on printed copies. During the third reading, the passages and codes collected from the course syllabi were organized and recorded in a document analysis form (Appendix D), which included participants, course names, and evidence of instructional practices. The researcher reviewed the codes from the document analysis form to search for patterns and categories that aligned to the categories that were generated from the interviews. Appendix V displays the codes, categories, and themes derived from the document analysis of course syllabi.

The Universal Design for Learning Checklist data were already grouped by category according to the three principles of Universal Design for Learning. The data from the checklist were added to the coded data from the interviews and syllabi during triangulation. The researcher grouped similar categories from the semi-structured interviews and the document analysis of course syllabi. The categories were then collapsed to create themes. This process was accomplished by looking for connections and relationships between categories with similar meanings. The themes were examined to ensure that they were relevant to the research questions and study purpose. The themes that were irrelevant or did not directly address the research questions and purpose were modified by having their underlying codes re-grouped into new categories or dropped if unrelated to existing codes. The primary themes were also reviewed to ensure that they met the coherence criterion. Merriam and Tisdell (2016) stated that a theme is coherent if its underlying codes and categories project similar meanings. Ensuring the themes met the coherence criterion involved an intensive exercise of moving codes and categories that could have been more perfectly fit into a theme. Finally, the themes were reviewed to ensure that they were distinct. None of the themes generated shared meanings.

Names were assigned to the reviewed and refined themes. The names assigned were consistent with the meanings of underlying codes, categories, and text segments. Finally, a report of the findings, including the data analysis process and the themes that were obtained, was written.

Findings

Recording the findings from the Universal Design for Learning Checklist, semi-structured interviews, and document analysis included reviewing the themes to determine if they were useful for answering the research questions. The researcher used Microsoft Word document functions to combine data relevant to each theme. Themes that occurred more frequently were used to answer research questions (Merriam & Tisdell, 2016).

Themes and subthemes (or categories) were organized in frequency tables to present the number of occurrences. The themes were organized by research questions to help reviewers navigate through the findings. Direct quotes from the interviews were used to give voice to the participants, enhance readability, and establish conformability. Participants' data were de-identified to ensure privacy and confidentiality, and no direct quotes were taken from course syllabi. Five themes emerged from the data to answer Research Question 1, which explored the instructional practices technical college faculty implemented to accommodate students with learning challenges, including students with disabilities.

The five themes were: (a) multiple means of engagement, (b) multiple means of representation, (c) multiple means of action and expression, (d) technology utilization, and (e) student-focused instruction. Instructor satisfaction was the only theme that emerged to answer Research Question 2 when exploring technical college faculty's level of satisfaction with their instructional practices. Likewise, only one theme emerged from the data to answer Research

Question 3, which determined technical college faculty's recommendations for improving their instructional practices. The theme related to Research Question 3 was *improving instructional practices*. A comprehensive list of themes is listed in Appendix V.

Research Question 1: What are the instructional practices of technical college faculty to accommodate students with disabilities?

The researcher sought to gain insight into how technical college faculty described the instructional practices employed to accommodate students with disabilities. Findings for this research question were generated from Phase 1 (Universal Design for Learning Checklist), Phase 2 (semi-structured interview questions), and Phase 3 (document analysis of course syllabi). Triangulation of results from the Universal Design for Learning Checklist, interviews, and document analysis of participants' course syllabi were used to increase the credibility of the findings for Research Question 1. The following paragraphs discuss the findings generated from each phase.

Universal Design for Learning Checklist Findings. Findings generated from participants' responses on the Universal Design for Learning Checklist indicated that technical college faculty utilized all three principles of Universal Design for Learning. The highest frequency counts on the Universal Design for Learning Checklist for multiple means of representation, with a percentage of 50 or higher, are identified. Table 7 provides checklist items for multiple means of representation, response frequency, and percentage.

Table 7

Universal Design for Learning Checklist Items for Multiple Means of Representation

Checklist Item	*n*	%
I change the size of text or images	9	75
I change the color I used for information or emphasis	9	75
Checklist Item	***n***	**%**
I breakdown complex expressions and highlight how they connect to student's life experiences and prior knowledge	9	75
I use multiple examples to explain critical features	8	67
I provide opportunities for review and practice	10	83
I present key concepts in different forms (e.g., text and illustrations, photograph, video, etc.)	8	67
I highlight new ideas in familiar ideas, contexts, analogies, and metaphors	8	67
I highlight or emphasize key elements in text, graphics, diagrams, formulas, I use multiple examples to explain critical features	7	58
I complement illustrations and diagrams with verbal explanations or enhancements	6	50
I provide detailed prompts for each step in a sequential process	6	50

Note. *n* = frequency, % = percent

Table 8 provides checklist items for multiple means of engagement. The table also includes the frequency and percentage of participants who selected each item. The highest frequency counts on the Universal Design for Learning Checklist for multiple means of engagement, with a percentage of 50 or higher, are identified.

Table 8

Universal Design for Learning Checklist Items for Multiple Means of Engagement

Checklist Item	*n*	%
I give students as much discretion and autonomy as possible by providing choices in such things as the level of perceived challenge, type of rewards or recognition available, context or content used for practicing skills, color, design, or graphics/layouts, etc.	6	50
I design activities so that outcomes are authentic, communicate to real audiences, and are purposeful	9	75
I provide tasks that allow for students to actively participate, explore, and experiment	11	92
I invite students to provide personal responses, evaluation, and self-reflection to content and activities	9	75
I vary the level of sensory stimulation by changing the pace of work, length of work sessions, availability of breaks or time-outs, timing or sequence of activities	6	50
I provide opportunities for collaboration,	10	83
I allow for peer tutoring and support,	9	75
I provide feedback that encourages perseverance, focuses on development of efficacy and self-awareness, and encourages the use of specific supports and strategies in the face of challenges,	8	67
I provide feedback that emphasizes effort, improvement, and achieving a standard, rather than performance	8	67
I provide feedback that is substantive and informative rather than comparative or competitive	9	75
I provide feedback that models how to incorporate evaluation, including errors and wrong answers, into positive strategies for future success	8	67
I involve students, wherever possible, in setting their own personal academic and behavioral goals	6	50
I encourage the construction of virtual communities of learners engaged in common interests or activities	6	50

Checklist Item	*n*	%
I provide feedback that is frequent, ongoing, and presented in multiple modalities	6	50

Note. *n* = frequency, % = percent

Table 9 provides checklist items for multiple means of actions and expressions. The table also includes the frequency and percentage of participants who selected each item. The highest frequency counts on the Universal Design for Learning Checklist for multiple means of actions and expressions, with a percentage of 50 or higher, are identified.

Table 9

Universal Design for Learning Checklist Items for Multiple Means of Action and Expression

Checklist Item	*n*	%
I offer checklists and guides for notetaking	8	67
I provide opportunities for working with materials using hands	6	50
I offer differentiated feedback	6	50

Note. *n* = frequency, % = percent

The Universal Design for Learning Checklist findings indicated that of the 27 items the participants checked, 52% were multiple means of engagement, 37% were multiple means of representation, and 11% were multiple means of action and expression. Notably, 92% of the participants also indicated that they provided tasks allowing students to participate actively, explore, and experiment. Eighty-three percent of participants reported that they provided opportunities for review and practice and opportunities for collaboration.

Semi-structured Interviews Findings. Interview Questions 1 through 4 and 6 were used to generate information to answer Research Question 1. The researcher sought to gain insight into how technical college faculty described their instructional practices to accommodate

students with learning challenges, including students with disabilities. To gather information on the instructional practices of technical college faculty, participants were asked how they accommodate students with learning challenges when presenting a lesson. Each participant was also asked how they increased the engagement of students with learning challenges during the instructional process and what accommodations were provided during the assessment process. Participants' integration of multiple intelligences in their program of study was also explored. Lastly, participants were asked what instructional practices they found to be most effective when working with students with learning challenges in their classroom. Appendix U displays codes, categories, and examples of two participants' quotes derived from interview questions, describing the instructional practices used to accommodate students with learning challenges, including students with learning challenges and instructors' satisfaction and recommendations.

There were 115 codes derived from the interview transcripts relating to the instructional practices of technical college faculty that were implemented to accommodate students with learning challenges. These codes were grouped into 16 categories. Table 10 displays codes, categories, and the frequency of the categories used to answer Research Question 1.

Table 10

Data-Driven Codes and Categories Derived from Interviews to Answer RQ 1

Code	Categories	*n*
Controlled language, different methods, different ways, breakdown, key points, chunks, definitions, start small and grow, terminology	Building Knowledge	47
Relatable scenarios, many methods, relatable examples, different ways, tangible examples, real-world examples, timeless test, different font styles and color, varied teaching styles, scrambled classroom, flipped classroom, provide backstories, connect to prior knowledge, project-based learning, demonstration,	Instructional Strategies	99

Code	Categories	*n*
lecture, lab, practice and review, study guides, provide caption and transcripts, Presentations, case studies		
Collaboration, peer tutoring, group projects, partnering, small group, group work, class discussions, cohort	Group Learning	34
Exemplars, rubric, scenarios, examples	Guided Learning	21
Age and ability appropriate, contextual to student's lives, self-reflection, self-evaluation, personal, sensory stimulation, breaks and time outs	Personalized Learning	21
Positive feedback, frequent feedback, detailed feedback, differentiated feedback, individualized feedback	Effective Feedback	14
Hands-on, different approaches, different keyboards, physical test	Physical Action	35
Artistic opportunities, Drawings, music production, song creation, role playing, art	Artistic Expression	14
Video responses, paintbrush, recordings, presentations	Expression through Technology	7
Films, movies, YouTube, websites, videos, TikTok, talking audio	Use of Digital Media	49
Games, clickers, Kahoot, Solitaire	Use of Gamification	18
PowerPoint, Prezi, Speechify, Ally, MindTap, Blackboard	Use of Application Software	35
Instructor tutoring, one-on-one, individualized instruction	Individualized Instruction	23
Extended time, notetakers, voice recordings, quiet environment, time and a half, translators, accommodation plan, readers, assistive devices, seating arrangement	Reasonable Accommodations	46
Availability, flexibility, build confidence, develop relationships, counseling, make students feel wanted, check-ins, reach out, student comfort, open door, communication	Student Well-being	56
Formative assessments, summative assessments, application assessments, computerized assessments, written assessments, theory-based assessments	Student Assessment	44

Note. n = frequency

Student Well-being. Student well-being was mentioned by all the participants as an essential part of technical college faculty instructional practices that were implemented to accommodate students with learning challenges. The participants described practices that involved building students' self-confidence and self-efficacy, promoting a sense of belonging among students, and creating and fostering open communication between faculty and students 10% of the time throughout the data. In the following statements, Participants 7 and 11 described the impact and the desire to make students feel comfortable. Participant 7 described a scenario where she provided comfort to re-engage a student:

> I had a student who was on the spectrum… and he was having a very hard time one day with the lab. So, what I had to do with him because… he didn't want to interact with anyone that day, I had to pull him aside with just me because I knew that he felt comfortable with me... We worked on the problem while I was sitting next to him to get him back on track. I really had to guide him step by step to get him back focused. (p. 2, lines 70-75)

Participant 11 explained:

> If the student is comfortable, we have student teachers that are working on getting their instructional license for cosmetology... We'll [place] that instructional student with [the struggling student]. That's only if the student is comfortable. We always make sure that we are not doing anything to embarrass or single out students. (p. 3, line 84-88)

Participant 4 expressed the importance of building students' confidence to help engage in the course work and progress towards a satisfactory course completion. Participant 4 shared:

> One time a student was just not engaged in completing the work… through phone contact and reassurance that the student could do [the work] because the student felt overwhelmed, I was able to motivate the student… build up their confidence…. I was able to reassure [the student] that he could do it. He was able to complete the task and do very well in the class. (p. 2, lines 58-63)

Participant 9 advocated for making students feel a part of the campus environment, promoting a sense of belonging. Participant 9 exclaimed:

> Not just making [students] feel wanted on campus, [but] giving them activities, implementing programs to keep them actively engaged and involved. We're not giving them anything, and they are just coming to school and leaving. It's like [we're] taking their money. Make them want to be here. Make them feel important. When I see [students] and I know their names, I'm like, 'Hey Alicia, how are you doing? How is class going? How's your family doing?' I'm big on that because that's what I experienced when I was in technical college and community college. It makes a big difference for the students to know that you care. (p. 8, lines 295-303)

Participants also expressed reaching out to students in need, being available, and the need for open communication. Participant 2 stated that they often perform check-ins with students, saying, "I notice that [you]'re struggling. What can I do to help support you? What do you need?" (p. 3, lines 73-75). Participant 2 also uses technology, including TEAMS (TCSG Early Alert Management System) and Blackboard as points of communication to discuss progress, problems, and other issues with students. These technologies also included a Google form, which students use to inform the participant of any classroom problems or requests for additional help

(p. 2, lines 73-75). Participants emphasized the importance of being available to students. Participant 11 stated:

> It's sort of hard, but you know, we always encourage the student. My door is always open if [the students] really need to come in after class or before class or [the student] needs to talk to me. [The student] can email me. We try to accommodate every student. (p. 2, lines 50-52)

Participant 10 continued, stressing the need for open communication. Participant 10 explained that if students do not communicate their needs, then the instructors cannot provide any additional support. Participant 10 noted that, as an instructor, they always endeavor to make themselves accessible and approachable for students, inviting them to openly communicate when they are struggling or in need of help.

Reasonable Accommodations. Reasonable accommodations, lawfully mandated through institutional disability services, was a response that was also prevalent among the instructional practices that participants described as strategies used to accommodate students with learning challenges. The reasonable accommodations response was communicated 8% of the time throughout the data. Further, 10 of the 12 participants identified instructional practices, such as extended time, quiet testing environments, note taking, and the use of recorders. Participant 7 indicated that she provided extended time for examinations and a quiet testing environment. Participant 7 stated:

> Some students… get extended time on assessments. So, if they do get the extended time, I offer them the ability for their assessments [to be taken] at home… in a comfortable place. They don't have to do them in the classroom, or if they want to do them on

campus, we do have, in our tutoring center, a quiet place for them to do their work as well. (p. 3, lines 105-109)

Participant 8 also held that she typically provided extra testing time for students with special accommodations due to their challenges, such as reading difficulties. Participant 8 stated:

> So, we just try to provide extra time for the students that have their special accommodations due to maybe a reading issue, and the special populations department tells us what those accommodations are… whether they get time and a half on an exam or double time; things like that. So, we follow [these accommodations practices] throughout the whole program for those students. (p. 4, lines 124-128)

Participant 6 concurred, "I also offer these students private examination areas, extended time for exams, and usually those are all recommended anyway on the accommodation forms" (p. 4, lines 140-142). Some participants noted the availability of additional reasonable accommodation, such as readers, interpreters, note-takers, and voice recordings. Participant 6 stated that students were able to have "readers in front of them or… the interpreters there on the other end of the computer" (p. 3, lines 92-94).

Participant 9 noted, "Those that have had to have a note taker or have to have PowerPoints printed out for them, I have that provided" (p. 1, lines 13-14). Participant 10 explained that students were allowed voice recordings in both lecture and lab, depending on what they were discussing. Participants reported providing these and other reasonable accommodations to best support students with disabilities in their classrooms.

Student Assessment. Student assessment was communicated 8% of the time and was mentioned nearly as frequently as reasonable accommodations (44 versus 46 times). The instructional practice of assessing students involved the administration of written, performance-

based, computer-based, formative, and summative assessments. However, there was little to no variation in how students demonstrated their knowledge during the assessment process. Students' expression of knowledge was limited to whatever assessment tool the participant had chosen for all students to demonstrate a given task. Participant 1 informed, "[Testing] is the same across the board, but it's all multiple choice, short answer, and matching. There's a lot of different question formats within the test" (p. 2, lines 59-60). Participant 7 exclaimed, "Mostly everybody does the same type of assessment in my classes, like I say we give them theory as well as application, outside of that, no" variation (p. 4, lines 119-120).

Individualized Instruction. Individualized instruction also emerged from the coded data 4% of the time, and 92% of the participants described using this form of instruction. The participants described spending one-on-one time with students before, during, and after scheduled class hours. Participants indicated that one-on-one sessions were used to demonstrate various concepts, improve engagement, and identify challenges students encountered with course content. Participant 1 explained:

> If I notice a student is having a challenging time with a concept, I will either… talk to [the student] one-on-one or… I will try again to give them some examples that are relatable and give them further instruction. (p. 2, lines 41-44)

Participants also indicated that one-on-one sessions were used when the students struggled to complete a task. Participants used the individualized instructional technique to identify areas where the student did not understand the instructions to reinforce learning. Participant 11 stated:

> [I]f I see a student that is struggling, I will work directly with that student. I will not talk to the students amongst the other students… I may slide a note that say, 'Hey! See me

after class,' and then… talk with that student, and ask the student where they feel that they're missing required techniques. (p. 2, lines 73-76)

Participant 12 expressed the same sentiments. Through one-on-one sessions, instructors can assist struggling students and identify their understanding difficulties. As Participant 12 emphasized, "In the lab, if I see a student off task, I tend to go up to them and say, 'So, are you having any issues. Can I help you with this? Let's see what you got so far.'" (p. 2, lines 52-53) After facing the struggling students, the instructor was able to demonstrate and break down the instructions. Participant 12 further emphasized:

> I'll go and sit beside [the student] and point to the instructions and break down and read [the instructions] … it's more of a trying to get [the student] to understand and break down the sentence, because sometimes the sentences in our books may not be as simple to the student as they could be. (p. 4, lines 144-148)

Participant 4 proclaimed:

> Because students that are struggling usually are quiet, after confirming that the student is at least willing to understand the information, I reinforced and re-engaged the student. I encourage the student to… come and spend one-on-one time with me to make sure that the student fully understands. (p. 2, lines 66-69)

Further, Participant 7 indicated that one-on-one sessions after class were more beneficial because the participants could give undivided attention. Moreover, the students were more open to disclose their struggles privately, unlike in a classroom environment. Participant 7 contended:

> I have found that doing one-on-one with them works the best. With some of my students, I can meet with them after class, and we sit, and they have my undivided attention. They

will [disclose their struggles]. They'll talk. I can ask some questions. But in a classroom environment, they don't even want to have a conversation. (p. 5, lines 181-184)

Instructional Strategies. Instructional strategies category was identified 18% of the time throughout the data. This category was comprised of instructional practices, such as varying teaching styles, using close captions, providing relatable scenarios and examples, connecting to prior knowledge, practice and review, lectures, and providing demonstrations and presentations. Participant 1 used a customized instructional approach in which her examples were based on the backgrounds of the students. If the students came from rural areas, Participant 1 used examples related to agriculture to pass content across:

> Again, I try to put it in their own terms. If I'm talking to students who are in a rural area, I talk about agricultural things. If I'm talking to young students, I try to be hip and popular and… talk about popular people and things like that. (p. 1, lines 28-30)

Participant 5 narrated an experience with a disengaged student who was constantly on her cell phone while she [the instructor] was lecturing. Participant 5 indicated that instead of calling out the student, she decided to use the invention of the cell phone as an example to re-engage the student. Participant 5 stated:

> [The student] was on the phone, and she literally was like trying to talk on the phone while I was teaching, and so I stopped the whole class and kind of spotlighted [the cell phone]; I don't know if this was good or bad, but I brought about the invention of the cell phone into the course, and we talked about the pros and cons of it, which the con was one of the things that [the student] was doing. She found it humorous, and she put the phone down and started listening. (p. 3, lines 68-73)

Participant 8 contended that when dealing with struggling students, she used simple examples to explain concepts:

> I try to give examples. Make it off the topic of nursing and pertaining to something else like a flat tire… or something that makes a little more sense, because it means the same thing. But sometimes they get so intimidated because it's a nursing thing that they… they just get flustered and can't really grasp the [concept]. (p. 3, lines 108-112)

Participant 2 communicated that she connected to students' prior knowledge and used related scenarios to provide multiple representations of the course material (p. 1, lines 13-16). Participant 2 shared:

> I post my PowerPoints and Prezi. I create a lot of my own Prezi to try to bring the language down to maybe a more understandable level, and I try to do a lot with connecting it to prior knowledge. So, maybe giving [students] a scenario related to something that they're familiar with. (p. 1, lines 14-16)

Participants described demonstrating course content as a necessity for visual learners. Participants used demonstrations and encouraged students to repeat the same actions, enabling students to dissect and comprehend instructions. Further, participants indicated that when instructions are demonstrated through visuals, students were able to better understand, as Participant 12 emphasized:

> I think a lot of our students have a little problem comprehending the instructions. So, I may demonstrate it, and then ask them to perform, because a lot of students are visual learners. They want to see it... I'm not saying they cannot [comprehend] but they do have issues reading and following written instructions and it's kind of like a math problem. A

> lot of our students freak out over math problems, but if you break it down to them visually, they'll say, “Oh, yeah! I can see that now.” (p. 2, lines 42-48)

Participants also reported that they offered review and practice of course material to increase student’s comprehension and preparation for exams. Participant 1 contended that she provided next day and Kahoot reviews to promote understanding:

> I use real world examples and try to put it in a language that they understand. And the next day, or the next class period. I review the things that I think are important, and that [students] need to understand. (p. 2, lines 11-13)

Participant 1 continued, “I provide study guides. I provide a Kahoot review and other bonus opportunities, and I try to… give [students] this information over and over [sic] again in different formats, and… use tools that will help them be successful on their test” (p. 2, lines 51-54).

Participants described lecturing as a common instructional practice that was often reinforced by presentation software. Participant 1 stated, “[Students]… have copies of my lectures and PowerPoints” (p. 4, line 124). Participant 6 asserted, “I also have voice-over presentations on our LMR that [students] have access to any time that they want, so that they can hear the lectures as well” (p. 1, lines 40-42). Participant 6 continued, “I give [students] the opportunity to hear it over and over and over again via their recordings of my lectures or reviewing it online with the voiceovers that I have created for them” (p. 5, lines 201-204). Participant 8 asserted, “I pre-record lectures, and I post them on Blackboard, so they're always there” (p. 1, line 20). Participant 10 asserted that she aligned lectures to licensure exams, stating, “I try to put my test for my lectures in the same format as the licensure exam” (p. 2, lines 82-83).

Whether participants favored prerecorded lectures or visual demonstrations, all participants indicated a need to vary instructional activities to communicate course content best.

Building Knowledge. Building knowledge was communicated 8% of the time throughout the data. The participants described instructional practices that incorporated activities, such as using multiple methods of communicating course material, breaking down complex topics for relatability, and building vocabulary through terminology projects to prepare students for future employment. Participant 1 described the use of multiple methods of communicating information. Participant 1 shared:

> I try to use many methods of communicating information. Not only am I talking, but I also have a slide show that has many pictures. I repeat things that I think are important for them to understand. I use real-world examples and try to put it in a language that they understand. And the next day or the next class period, I review the things that I think are important and that [students] need to understand. Well, one of the first things we learn in sociology is theory. One of the theories… most students find trouble grasping at first is symbolic interaction. So… I give them the definition and some examples, …then I try to show them. (p. 1, lines 9-19)

Participant 4 described the importance of understanding foundational terminology to complete projects that required the application of key concepts, "Each course requires a student to understand the terminology, and after the terminology has been understood through reading or through a test or just conversations in the class, the student has to then apply [the terminology] in some way" (p. 1, lines 37-39).

Participants also contended that students' knowledge was built by breaking down complex activities through a chunking approach where the participant broke an entire session

into a series of sub-sessions and took breaks to re-engage struggling students who were off task. Whenever Participant 11 noticed struggling students were off task, she would take 5 to 10-minute breaks before re-engaging the students back to the session. Participant 11 stated:

> So, what we normally do is when we see that students are off task, we stop, we break, and then we come back, and we give out instructions. We need to make sure that [the students are] learning this skill because it is a testing procedure that [they are] going to have to learn. So normally, we'll stop, we'll break, give [the students] 5 or 10 minutes to get themselves together… Everybody needs to be paying attention. Everybody needs to be doing what they're supposed to be doing. (p. 2, lines 62-68)

Participant 3 emphasized the benefits of building knowledge and vocabulary to prepare students for future employment. Rather than having students begin writing full paragraphs, Participant 3 created a terminology project, which allowed students to explore the concepts and Latin roots of words and phrases of the subject. This terminology project gave students foundational knowledge from which to work.

Use of Digital Media. The category, use of digital media, was communicated 9% of the time throughout the data. The participants revealed that they incorporated various technologies to improve student engagement during instructional sessions. Besides technologies like videos and films, participants also used social media to enhance instructional practices and pre-recorded lectures to improve student engagement. The utilization of videos and recorded lectures were common approaches instructors used to engage students. For instance, Participant 7 indicated that she recorded class sessions and distributed the recording to students so that students could go back and watch the recordings later if needed. Students could internalize the content by re-watching the lectures and develop a deeper understanding. Participant 7 stated, “I also record the

session, so that [students] can watch it again. I give them the opportunity to go back and ask questions about the program if they need clarification" (p. 1, lines 26-27).

Participant 8 revealed that she used a slightly different approach. While Participant 7 explained that she recorded the lectures during live classroom sessions and distributed them to students, Participant 8 described using pre-recorded lectures that students could listen to asynchronously during the actual lecture sessions. Participant 8 stated, "I do a scrambled classroom. I pre-record lectures, and I post them on Blackboard, so they're always there. The students can listen to them asynchronously" (p. 1, lines 119-120).

Participant 1 informed that technology played a crucial role in improving the engagement of students with disabilities. Participant 1 stated that she used hand-held computer-based scheduling tools with reminders to enhance student collaboration and engagement. Participant 1 explained, "I don't mind doing Remind and putting in Remind and then giving them a course schedule" (p. 4, lines 121-122).

Apart from technology tools whose scope is only limited to the educational setting, participants also recommended incorporating social media technology to improve student engagement. Participant 5 described how she allowed her students to make videos and post them on TikTok. Participant 5 shared:

> I allow them to make TikTok videos, and they really enjoyed [making the videos]. And they just had to present… [the] invention. They had to elaborate on [the invention]. And so, I introduced the concept using technology because the reading of the material was difficult, but once they were making it personal and breaking it down, the concepts became a lot clearer. (p. 1, lines 35-39)

Use of Applications. The category appeared 6% of the time and consisted of application software such as Speechify, PowerPoint, and Canva. The use of applications in instructional approaches as an effective strategy for improving student engagement was captured in Participant 2's narration of her experience with a student struggling with reading. Upon noticing the student was experiencing difficulties with reading, Participant 2 recommended Speechify, a text-to-speech software that converts written or typed text into speech (McMahon et al., 2021). Participant 2 realized that incorporating assistive technologies, like Speechify, was essential for improving student engagement. Participant 2 stated:

> I had a student who told me she didn't have accommodation. She had not disclosed, but about mid-semester, she said, "I'm really struggling with reading. I had a learning disability in school." So, I said, "Well, here's Speechify. You can go in and let it read to you, and you can slow it down. You can do whatever." Going forward, I'll make that tool available to everyone from the beginning of the semester. (p. 5, lines 173-176)

Participant 4 described a scenario depicting the use of application software to deliver content and provide instructions. In the scenario, Participant 4 also described an assignment given to a student requiring using a presentation software called Canva. Participant 4 shared:

> I had a student that was having some concerns learning how to log into a system, and that system at the time was Blackboard… there was another system… called Canva. Canva is a platform for creating documents like presentations, social media sites, and websites. It's in line with something like Illustrator or Adobe, but it is more friendly. (p. 1, lines 19-24)

Use of Gamification. This category was communicated 3% of the time as an approach some participants used to engage all students. Participant 2 explained that she incorporated hands-on experiential learning and gamification in her instructional practice. According to

Participant 2, Kahoot, an interactive platform that educators use to develop and share interactive quizzes, surveys, and games, is a commonly used technology to improve engagement as students find it interesting (Wang & Tahir, 2020). Other than Kahoot, Participant 2 mentioned tools, such as Google JamBoard, that make sessions exciting and engaging for the students. Participant 2 explained:

> I try to [implement] hands-on experiential kind of learning [through] gamification. My students, even my adult students, love Kahoot. I've done ED puzzle with [students]. We've worked through some Nearpods. So, trying to bring in some tools such as JamBoard or other tools that they can use. I even used Flip. I don't know if you're familiar with it. It used to be Flipgrid. (p. 2, lines 49-52)

Participant 9 also identified Kahoot as a tool she used to engage students. The interactive nature of the platform allowed instructors to improve the engagement of students, particularly those with learning difficulties. Participant 9 indicated that she gave students pop quizzes via Kahoot to encourage participation. Participant 9 stated:

> I give them pop-up quizzes, and I give [students] an extra credit opportunity. It's called the Kahoot. So, what I do I pull things that we've talked about in class during lecture, and I think it's like, usually 10 to 15 questions that I'll ask. (p. 1, lines 33-35)

Participant 8 indicated that she used Clicker to enhance the engagement of students who have anxiety and social phobia. Clicker is a type of classroom response system that allows students to respond anonymously to questions asked by the instructor during interactive teaching-learning sessions (Beard & Nyutu, 2022). By responding anonymously to questions, students' fear of shame that was associated wPerith getting questions wrong were eliminated.

Participant 8 made the following response when she was asked what strategies that she used to engage students with learning challenges:

> I love Clicker. I don't know if you've ever heard of it, but I love it because it is anonymous. I know who has answered, but the class doesn't. They hold up a card. They know if they've gotten it right or wrong. [An incorrect answer] doesn’t shame them, you know, because it doesn't have their name out there. (p. 1, lines 27-30)

Participant 8 declared that Clicker was among the many technologies her institution used to help engage students with learning difficulties. However, a platform, such as Clicker, that provided anonymity was more encouraging to students. Participant 8 commented, "And we do have other games. Clickers is just one example. I really don't like the [games] where [students] individually answer to get a point. I find that kind of game is more discouraging than beneficial" (p. 2, lines 79-81).

Group Learning. Group learning was identified 6% of the time throughout the data. The participants described practices that involved small group activities, such as class discussion, peer tutoring, small groups, and small cohorts. Participants encouraged students to form groups for review and discussion of course material, for peer-to-peer collaboration and learning, to provide support and share common interests, and to improve communication skills. Participant 1 disclosed that she encouraged students to form small groups of four or five for review and discussion. Participant 6 stated, "I very much encourage my students to form academic cohorts. You know, small groups, 4 or 5 students, where they can review and discuss the materials” (p. 2, lines 47-49). It was further noted that students were encouraged to collaborate within small groups to share their common interests and support in learning activities. Participant 6 commented that she provided opportunities for collaboration and allowed for peer tutoring and

support. Participant 6 also encouraged the construction of virtual communities of learners engaged in common interests or activities.

Through partnering, participants found that students understood instructions better. Participant 7 emphasized the benefits of peer tutoring and employed examples of her instruction to make the students feel more comfortable and the course material more engaging. Participant 7 stated, "[For] students with learning challenges, I sometimes, if it's a group project, I'll partner them up with other students to help them understand the instructions better" (p. 1, lines 11-12). Pairing and grouping made students feel comfortable and hence more engaged. Participant 7 reported, "I try to pair them up to make them feel a little bit comfortable answering the questions or, you know, participating… [We pair students for labs.] That's one way we're getting them engaged" (p. 1, lines 46-48). Participant 8 indicated that involvement in group activities is important in improving students' communication and collaboration. Participant 8 stated:

> I also think it's important to do group activities. I always tell [my students] nursing is a team sport, and you must work inter-collaboratively with other departments, other nurses, and physicians. So, I think it's important to understand how to communicate with other people and how to work to try to find solutions. (p. 3, lines 73-76)

Although Participant 8 strongly believed in group activities, Participant 8 acknowledged students' resistance to this practice in the following statement, "A lot of people do not like group work, but that's the reason that I make [the students] do [group work]. I really strongly believe in group work. [Group activities] help [students] and force them to participate" (p. 2, lines 76-79).

Contrary to Participant 8's experience with resistance from students toward group activities, Participant 9 expressed students' realization of the benefits of group activities. Participant 9 stated:

> Unless you have a learning disability where you have to work by yourself, or you have anxiety… you do get a pass, and I do work with you individually… for the most part, [students are] pretty open-minded. They're like, "Oh, yeah! This was amazing… I didn't even know I even needed that group." Now, the groups are like best friends. They still link up after they've finished my class. [Small group activity] is one of the best things you can do for students that have disabilities. (p. 5, lines 179-184)

Participant 6 also supported group activities, describing the benefits of small groups in more detail. Participant 6 explained that students often see their classmates as their peers, if not their friends, and this camaraderie means that students do not want to "be left behind," encouraging them to work well in small groups or pairs with their classmates. Participant 6 noted that working in small groups often encouraged students to be prepared for class and dedicated to the course materials. Participant 6 also said group work was the most successful of their performance engagement strategies.

Participants also recognized institutional support, such as intervention platforms, to assist with student engagement and academic achievement. Participant 5 praised the benefits of having an academic achievement center offering additional student tutoring. Participant 5 noted that, between instructor intervention and center tutoring, struggling students could often identify problem areas and eventually comprehend the material.

Personalized and Guided Learning. The categories of personalized learning and guided learning were equally identified 4% of the time throughout the interview data. Personalized learning included instructional activities, such as contextualizing students' lives, self-reflection, self-evaluation, and sensory stimulation. Participant 4 encouraged student engagement and understanding by appealing to the student's abilities. Participant 4 stated, "Basically, I try to

make sure that each student is learning on their own personal level. So, I may allow students to, not only ask questions, but to physically participate in an activity for understanding" (p. 1, lines 8-10). Participants also revealed that they tried to relate course objectives to relevant experiences of students to increase engagement. Participant 1 expressed: "I'm just trying to present the information in different ways and make it relatable to [students'] real lives" (p. 1, lines 32-33). Participant 10 explained how they used self-evaluation to promote engagement, stating, "We demo a certain topic. The students can practice it for at least a couple of lab times, and then they do a self-evaluation" (p. 2, lines 42-43). Guided learning included using exemplars, rubrics, scenarios, and examples to engage students. Participants used Guided Learning strategies to increase student success while improving engagement. Participant 2 stated:

> What I've done [is] I've provided an exemplar from a previous student. [Students have] got their rubric with very specific directions on it. I've given them exemplars of PSAs that have aired on television-- giving them a description of what a public service announcement is and what the purpose of it is. (p. 1, lines 35-38)

Participant 11 declared, "Normally, what we do is we go by rubrics when… the students are doing their tasks. A rubric can be a haircutting rubric. It can be a chemical texture rubric" (p. 3, lines 94-95). Further, participants also described providing real-world and tangible examples to increase engagement. Participant 1 communicated how she presented information in various ways and made the informational content relatable to students' real lives. Participant 2 described using controlled language to deliver course content to promote a deeper level of understanding and connect to students' prior knowledge by providing scenarios related to something with which students were familiar. Participant 3 shared an assignment where students were required to

choose a previously discussed topic and discuss how the content impacted their personal lives and the real world.

Effective Feedback. The participants' reflections on the effective feedback category were noted 2% of the time throughout the interview data. Participants promoted the benefits of positive feedback as a motivator for struggling students. Detailed, consistent, and differentiated feedback comprised examples, fostered deeper understandings, and increased the chance of a student successfully completing coursework. Participant 4 encouraged and described the benefits of positive feedback, which allowed students to feel confident in their abilities. Participant 4 stated, "I increase the engagement simply by giving positive feedback, information that will allow [students] to feel confident in what they're saying and what they're doing" (p. 2, lines 52-53). Participant 5 suggested that some instructors are not providing feedback while addressing the need for feedback to be differentiated. Participant 5 asserted, "I've noticed that teachers are lax in responding and giving feedback… You gotta [sic] give feedback in different ways" (p. 6, lines 227-228).

Participant 7 reflected on the need for feedback to be detailed, providing examples to help deepen the students' understanding of course material. Participant 7 expressed, "I might give [students] feedback, detailed feedback, if they miss something, and they were you know very far off. I try to give [students] examples in their feedback to help them understand the material" (p. 1, lines 38-40).

Participant 12 expressed that, when students re-do the assignments and re-submit, the instructor can detect where students are struggling and offer personalized support through detailed feedback based on their weaknesses. Participant 12 explained:

> In their production and submissions of their work, if you're grading [assignments] on a routine basis and you're reading the messages that [students] are submitting, then you can kind of see where they're struggling. I try to focus on [their struggle] and try to steer [students] in the right direction before they get too far down the wrong path. (p. 5, lines 162-167)

Participant 12 also noted the need for the feedback to be timely and positively delivered. Participant 12 emphasized:

> You've got to give feedback in a positive manner. It can't be in a negative manner, and I mean, sometimes I see from other points of view that some instructors don't give feedback that I feel like they probably should give… I think feedback is a very strong instructional practice. [Students] need… that feedback, and they need to see that they're improving along the way. (p. 5, lines 183-194)

Physical Action. Physical action was mentioned 6% of the time throughout the data. The physical action category included instructional practices, such as incorporating hands-on activities and providing active participation opportunities. Eight of the 12 participants utilized hands-on activities to accommodate students with learning challenges, including students with disabilities. Participants described the benefits of hands-on activities, which included increased engagement and student comfort level, improved understanding, promoted learning, and enhanced workforce skills. Participant 8 emphasized how hands-on activities heightened the skills of auditory learners. Participant 8 exclaimed:

> I think probably hands-on, doing hands-on [activities]. I think that even if it's someone who completed that learning styles quiz and the results showed that [the student is] an auditory learner, I think that [students] still do well with hands-on because they're going

> to need to do that when they go to clinical. It's all about hands-on. I mean, you have your brain. You have clinical reasoning that you have to do, but it's a lot of hands-on. (p. 5, lines 190-195)

Participant 7 stated:

> Because I teach computer programming, in one of my labs, … what I do is a hands-on demonstration with the students. They participate in helping me design a program. What we do is give them the problem in advance and then we take part in it. I'll give each [student] a part to start implementing and each student will start putting the pieces together. So that helps some of the students understand the material better. (p. 1, lines 21-25)

Participant 11 continued, "The visual and the hands-on, it helps them because I've had students say, 'Oh, God! That's what that question meant.' They saw it. So… I think that hands-on help [students] (p. 5, lines 175-177).

Another benefit of the hands-on approach was hands-on instructional practices that create an environment in which learners feel comfortable. Hands-on allows students to be engaged. The use of hands-on was justified by the statement given by Participant 4. Participant 4 stated:

> Hands-on, one-on-one teaching creates an environment in which students are very comfortable. Being able to sit next to a student who feels intimidated by the learning environment, and then sit next to them one-on-one, eye-to-eye and engage with them on a personal level, I think it's the most engaging component for a student. (p. 5, lines 161-165)

Artistic Expression. Participants also indicated students were given the options to express their knowledge in different ways, which included activities categorized as artistic expression or

expression through technology. Artistic expression (i.e., drawings, music production, song creation, role-playing, and art) was identified 2% of the time. Participant 1 said:

> There's an activity on statuses and roles in sociology, and [students] must act out those roles. There's an assignment where they [must] create a coloring book that's going to socialize children. I'm using kinesthetics. I'm using creative. I'm using, you know organization. All my activities, you know… different ones speak to different intelligences. (p. 2, lines 66-70)

Participant 1 continued:

> One semester, I asked [the students] if they wanted to do a paper or a video. They have a chance to make a video about the topic. And you know a lot of students chose the paper because it was easier. But you know they did have the choice, and often times I have multiple assignments for different units. So, I'll say, "Do you want to do a discussion, or do you want to watch a video?" (p. 4, lines 129-133)

Participant 2 also provided an example of allowing students different ways to express their knowledge; rather than an essay, students were able to design a flyer or create a newsletter on the topic, illustrating their comprehension in multiple and varying ways. Participant 2 informed:

> I incorporate all the different learning styles… visual kinesthetic, like I said, manipulatives are huge, experiencing things is huge… also I try to make sure that I include… artistic opportunities… to draw or produce something, you know, music. I've had them create… a transition song. (p. 4, lines 136-139)

Expression through Technology. Although expression through technology (i.e., video responses, recordings, and presentations) was identified 1% of the time, participants further

indicated that students could express their knowledge and/or present their assignments in various ways through the use of technology. Participant 5 allowed students to utilize popular social media applications to convey course content, stating, "I allow them to make TikTok videos, and they really enjoy that" (p. 1, lines 34-35).

Participant 9 referenced more traditional means of technology used for student expression. Participant 9 explained, "Yes, they have to do a PowerPoint with a minimum of 10 slides or a 5 to 10-minute video. Most of them are like Youtubers or content creators" (p. 4, lines 142-143). When students struggled with the written assignments, Participant 3 offered an alternative, such as a recorded assignment; students who had difficulty writing were allowed to record themselves talking to explain the concepts and subject.

Document Analysis of Course Syllabi Findings

The document analysis of the course syllabi provided by the participants was used to verify the instructional practices of technical college faculty implemented to accommodate students with learning challenges. Findings from the content analysis of participants' course syllabi revealed 54 codes grouped into 12 categories. The codes, categories, and frequencies of the categories derived from the document analysis used to answer Research Question 1 are outlined in Table 11.

Table 11

Inductive Data-Driven Coding for Document Analysis

Codes	Categories	*n*
different font styles, different color, project-based learning, demonstration, lecture, lab, practice and review, presentations, case studies, blended learning, clinicals	Instructional Strategies	138
Collaboration, small group, group work, class discussions, goal setting	Group Learning	93
Rubric, tutoring, feedback	Guided Learning	38
Hands-on, experimentation, Checklist	Physical Action	16
Student presentations, peer reviews	Artistic Expression	10
YouTube, websites, videos, webcam, email, computer, DVD	Use of Digital Media	60
MS Office 365, Blackboard, Respondus,	Use of Application Software	41
One-on-one	Individualized Instruction	1
Extended time recordings, reasonable accommodation plan	Reasonable Accommodations	25
Availability, counseling, social-emotional referral, check-ins, reach out, open door, work ethics, advisement	Student Well-Being	54
Exams, quiz, test, written assessments, theory-based assessments, performance-based	Student Assessment	156

Note. n = frequency

Student Assessment. All course syllabi displayed the use of assessments, including quizzes, exams, theory-based assessments, written assessments, and performance-based

assessments. Students were assessed using written exams or performance-based assessments that could be included in their final grades (Participant 5, p. 5). The choice of assessment tools to evaluate a student's potential was at the instructor's discretion. Instructors also administered written assessments or performance-based final examinations. Students were given additional attempts on assessments. One participant thoroughly explained the requirements and expectations of course examinations while stressing the stipulation for receiving accommodations for special needs (Participant 8, p. 6). Hence, students with disabilities were advised to contact Disability Services for a specialized test environment. In addition to exams, announced and unannounced quizzes and assignments were administered (Participant 6, p. 4).

Student Well-being. Student well-being was also a prevalent part of the instructional practices that were identified from the document analysis of course syllabi, which were submitted by the participants. Participants revealed that special behavior teams were devoted to promoting student safety by proactively coordinating and planning approaches for the identification, prevention, and reduction of threats. Technical colleges also offered counseling and other support services focused on assisting students educationally and personally. A combination of both a professional relationship and the growth process, counseling can empower diverse individuals to accomplish mental health, education, and career goals during one's education. The staff provide one-on-one counseling and group therapy with regard to the educational experience, grief and/or loss, stress management, depression, anxiety, and other mental health/wellness issues. Counseling services are provided through face-to-face sessions or tele-mental health via secure video or phone. Career counseling is also available for students (Participant 5, p. 16).

Instructional Strategies. The codes for instructional strategies included but were not limited to, lectures, terminology projects, demonstrations, terms, and key concepts, and practice reviews. The course content was delivered using different methods of instruction, including lectures, computer programs, class discussions, collaborative learning activities, and videos (Participant 6, p. 4). Several participants mentioned practice exams and reviews multiple times in their syllabi (Participant 2, p. 4; Participant 4, p. 8; Participant 8, p. 4). Preparation for skill exams was expected and supported by the availability of supervised practice and skills labs. Technical college faculty also utilized alternate instruction methods, such as computerized instruction (Participant 8, p. 11).

Group and Guided Learning. The codes for group activities included collaboration, small group, group work, discussions, and goal setting. The syllabus of one participant emphasized the importance of students being responsible for their own learning through setting goals (Participant 5, p. 4). According to Participant 5, student responsibility occurs when students take an active role in their learning by recognizing that they are accountable for their academic success (p. 5). Participant 5 also promoted group work and collaboration through collaborative learning activities (p. 4). One participant showed support for class discussions and expected students to participate and be involved in all class discussions about lectured course material (Participant 10, p. 2). Guided learning through rubrics, instructor's feedback, and tutoring was also prevalent among participant's syllabi. One participant provided mid-quarter progress reports with feedback about student's work ethics performance, which afforded students the opportunity to improve their performance before submission of a final grade (Participant 4, p. 5).

Use of Digital Media and Application Software. The codes for technology utilization included YouTube, websites, videos, email, Microsoft Office 365, Respondus, and Blackboard. Some syllabi noted that for students who did not have access to technology, computer resources were available on the campus during operating hours. Other syllabi noted that students who did not have a webcam built into the computer for online learning could plug in an external webcam with a USB cable. One course required the use of LockDown Browser, a software that prevents students from cheating during online testing, and Respondus Monitor for all exams. Respondus Monitor for testing has a feature that can record the student while taking the exam and save the recording for viewing later (Participant 8, p. 2).

Participant 9 reinforced the laws that govern accessibility to equitable education in her syllabus while revealing the use of technology. Participant 9 noted that her course was designed to comply with Section 508 of the Rehabilitation Act. She noted that in cases where content could not be rendered accessible, students should inform her. An alternate accessible version of the content would be provided to ensure an engaging and accessible learning experience for all students (p. 1). Participant 12 highlighted the use of technology as she explained the delivery of the course and the process for students to communicate with her as the instructor, noting that the online class used Blackboard with MindTap software as the content/book and emphasized the college email as a main point of contact (p. 3).

Physical Action. The codes for physical action included student presentations, checklists, peer reviews, hands-on, and experimentation. Participant 2 mentioned, in her course syllabus, the requirements for students to complete a presentation (Participant 2, p. 6). However, she did not provide any details on the specification for completing the presentation. In line with Participant 2, Participant 3 mentioned the requirement for students to conduct weekly peer reviews multiple

times in her syllabus without revealing any details about completing the task (Participant 3, p. 4). Participant 4 promoted the instructional practice of providing opportunities for students to work with materials using their hands as she explained the course delivery (Participant 4, p. 2).

Triangulation of Research Question 1

Kolb (2012) purported that methodological triangulation increases data fidelity when using multiple data collection methods. Three data sources were used for triangulating the data for this study: the Universal Design for Learning Checklist, semi-structured interviews, and document analysis of course syllabi. Triangulation was established for Research Question 1 by organizing the codes into items repeated throughout the three data sources. In each data source, the themes that emerged were similar. Table 12 shows the categories that were prevalent among all data sources and the number of participant responses.

Table 12

Triangulation Among Data Sources

Theme/Initial code	*n* = 12 UDL	*n* = 12 Interview	*n* = 12 Syllabi
Multiple Means of Representation			
● Change the size of text or images	9	1	12
● Change the color used for information or emphasis	9	1	11
● I breakdown complex expressions and highlight how they connect to student's life experience and prior knowledge	9	4	0
● I highlight new ideas in familiar ideas contexts, analogies, and metaphors	8	6	0
● I provide opportunity for review and practice	10	6	3
Multiple Means of Action and Expression			
● I offer Checklists and guides for notetaking	8	3	1
● I provide opportunities to work with materials using hands.	6	8	0
Multiple Means of Engagement			
● I provide opportunities for students to actively participate, explore, and experiment	11	7	11
● I provide opportunity for collaboration.	10	8	4
● I provide opportunity for peer tutoring and support	9	7	0
● I provide feedback that is substantive and informative rather than comparative and competitive	9	6	3
Total	98	50	44

Note. n = participant

Themes for Research Question 1

The researcher reviewed the categories identified during the data analysis of the Universal Design for Learning Checklist, semi-structured interviews, and document analysis of course syllabi for commonality. The checklist enabled participants to select Universal Design for Learning principles from a list of 84 predefined items. The semi-structured interviews probed participants for descriptions of instructional practices technical college faculty implemented to accommodate students with learning challenges. The document analysis constituted a systematic procedure for reviewing participants' course syllabi for evidence of instructional practices. Five common themes emerged from the three data sources to answer Research Question 1.

The themes for Research Question 1 were: (a) student-focused instruction, (b) multiple means of representation, (c) multiple means of engagement, (d) technology utilization, and (e) multiple means of action and expression. Of the five themes, four — multiple means of engagement, multiple means of representation, multiple means of action and expression, and technology utilization — were aligned to Universal Design for Learning and were apparent across all three data collection points. The other theme—student-focused instruction — was absent from the Universal Design for Learning Checklist but was mentioned in both the interviews and document analysis, indicating a divergent theme.

Overall, while the Universal Design for Learning Checklist and the document analysis reflected that faculty used multiple means of representation most frequently, the semi-structured interviews reflected that faculty used multiple means of engagement most frequently. Results indicated that multiple means of action and expression were utilized least frequently. Table 13 shows the frequency counts of all themes related to instructional practices of technical college

faculty and the number of participant responses to the Universal Design Learning Checklist, semi-structured interviews, and document analysis of course syllabi.

Table 13

Themes Related to Instructional Practices of Technical College Faculty

Theme	Frequency	UDL Checklist Total (%) *n* = 12	Interviews Total (%) *n* = 12	Document Analysis Form Total (%) *n* = 12
Student Focused Instruction	405	NA	12 (100)	12 (100)
Theme	**Frequency**	**UDL Checklist Total (%) *n* = 12**	**Interviews Total (%) *n* = 12**	**Document Analysis Form Total (%) *n* = 12**
Multiple Means of Representation	284	12 (100)	12 (100)	12 (100)
Technology Utilization	193	NA	12 (100)	11 (92)
Multiple Means of Engagement	221	12 (100)	12 (100)	12 (100)
Multiple Means of Action and Expression	82	12 (100)	11 (92)	4(30)

Note. UDL= Universal Design for Learning, *n* = participants, % = percent, NA = not applicable

Theme 1: Student-focused Instruction

Student-focused instruction is student-centered instructional strategies that do not inherently align with Universal Design for Learning practices. When participants were asked about their instructional practices and the effectiveness of said practices, 100% of the participants referenced student-focused instruction during the semi-structured interviews. Findings from the document analysis of the course syllabi, which also revealed that 100% of the participants indicated student-focused instructional practices, corroborating the results from the semi-structured interviews. This theme represented the most frequently used instructional practices as it was referenced 405 times throughout the interviews and document analysis. Student-focused instruction consisted of four categories, which included student well-being,

reasonable accommodations, student assessment, and individualized instruction. Table 14 displays the frequency of each category related to Theme 1 in descending order.

Table 14

Categories Related to Student-Focused Instructional Practices

Category	*n*
Student Assessment	200
Student Well-being	110
Category	***n***
Reasonable Accommodations	71
Individualized Instruction	24

Note. n = frequency

Student-focused instruction concentrated on students' performance and support. This theme encompassed practices that promoted students' well-being and a sense of belonging, reasonable accommodations specified to a documented student's needs, student assessment, and instructional practices that went beyond the call of duties, such as individualized instruction. Student assessment was the most frequently mentioned category because of the vast number of occurrences on the course syllabi. However, establishing students' well-being was chief among Student-focused instruction because this category was mentioned the second most frequently on the syllabi but was the first most mentioned during the semi-structured interviews. Additionally, although every participant declared providing lawfully mandated reasonable accommodations, individualized instruction was offered to students from every participant in the study, indicating that technical college faculty are going beyond the instructional requirements of the law.

Theme 2: Multiple Means of Representation

Theme 2, multiple means of representation, is in direct alignment with the Universal Design for Learning framework. All participants checked at least one attribute related to this

theme on the Universal Design for Learning Checklist. The technical college faculty also frequently mentioned instructional practices that provided students with multiple means of content representation during the interviews and on course syllabi, encompassing two categories: building knowledge and instructional strategies.

When participants were asked about their instructional practices and the effectiveness of said practices, 100% of the participants referenced one or more of the categories related to multiple means of representation during the semi-structured interviews. The document analysis of the course syllabi supported the semi-structured interview findings, revealing that 100% of the participants indicated multiple means of representation as an instructional practice. The theme, multiple means of representation, was the second most frequently referenced theme and was mentioned 284 times. Table 15 displays the frequency of each category related to Theme 2 in descending order.

Table 15

Categories Related to Multiple Means of Representation

Categories for theme: Multiple Means of Representation	*n*
Instructional Strategies	237
Building Knowledge	47

Note. n = frequency

The instructional strategies category was mentioned more than five times as often as building knowledge. Technical college faculty identified using many methods for communicating information, breaking information into chunks, using scenarios, analogies, and examples for relatability, building disciplinary vocabulary, and providing opportunities for review and practice. Technical college faculty often implement such practices, as well as others, without knowing that they were aligned with Universal Design for Learning.

Theme 3: Multiple Means of Engagement

Participants selected items on the Universal Design for Learning Checklist, indicating they provided substantive and informative feedback: (a) opportunities for students to actively participate, explore, and experiment; (b) collaborate; and (c) engage in peer tutoring and support. During the semi-structured interviews, all participants noted implementing instructional practices aligned with multiple means of engagement. Findings from the document analysis of the course syllabi supported the findings from the other data sources, revealing that 100% of the participants incorporated instructional practices that aligned with Theme 3. Theme 3, multiple means of engagement, was the third most frequently referenced theme, with 221 mentions. This theme consisted of four categories, which included group learning, personalized learning, guided learning, and effective feedback, and directly aligned with the Universal Design for Learning framework. Table 16 displays the frequency of each category related to Theme 3.

Table 16

Categories Related to Multiple Means of Engagement

Categories for Theme: Multiple Means of Engagement	*n*
Group Learning	127
Personalized Learning	21
Guided Learning	59
Effective Feedback	14

Note. n = frequency

Group learning was the most frequently mentioned category of instructional practices for multiple means of engagement. The participants described practices that involved small group activities, such as class discussions, peer tutoring, small groups, and small cohorts. Participants encouraged students to form groups to review and discuss course material, to provide support and share common interests, to improve communication skills, and for peer-to-peer collaboration

and learning. Technical college faculty frequently mentioned instructional practices that provided students with multiple ways to engage with course content. Technical college faculty often implemented these practices without knowing that they were aligned with Universal Design for Learning.

Theme 4: Technology Utilization

The use of technology in the classroom is an instructional strategy that inherently aligned with Universal Design for Learning practices. Participants were asked about their instructional practices and the effectiveness of said practices. During the semi-structured interviews, 100% of the participants referenced technology utilization. Results of the document analysis showed that 92% of the participants implemented instructional practices that utilized technology.

Nonetheless, the document analysis of the course syllabi substantiated the semi-structured interview findings. Assistive technology was fundamental to the early development of the Universal Design for Learning framework. However, participants described technology as applications and platforms not explicitly designed as assistive technology, and 12 out of 12 participants mentioned using technology during instructional activities to engage students. Therefore, the researcher determined that technology utilization was a notable theme describing technical college faculty's instructional practices that should be highlighted.

Technology utilization was the fourth most frequently mentioned theme of instructional practices and consisted of three categories, which included the use of digital media, use of gamification, and use of application software. Technology utilization was referenced 193 times by participants. Table 17 displays the frequency of each category related to Theme 4 in descending order.

Table 17

Categories Related to Technology Utilization

Categories for Theme: Technology Utilization	*n*
Use Digital Media	109
Use of Application Software	76
Use of Gamification	18

Note. n = frequency

The category, use of digital media, was the most frequently mentioned category of instructional practices for technology utilization. Participants described creating in-house instructional videos and using YouTube and content-driven professional videos to increase student engagement and provide flexibility for students with learning challenges to review for a better understanding of course content. Participants also described using presentation software like PowerPoint, Prezi, and Canva.

Gamification implemented through platforms like Kahoot and Clickers was commonly used by most participants to engage students. Participants also mentioned using the Blackboard learning management system to distribute content. Blackboard was also used to keep students abreast of their grades, communicate with faculty and classmates, and provide an opportunity for review and response according to students' time.

Theme 5: Multiple Means of Action and Expression

Multiple means of action and expression was the least frequently used category of instructional practices and directly aligned with the Universal Design for Learning framework. When participants were asked about their instructional practices during the semi-structured interviews, 92% referenced Theme 5. While the document analysis of the course syllabi revealed that only 58% of the participants used multiple means of action and expression instructional

practices, results confirmed the Universal Design for Learning Checklist and the interviews findings.

Theme 5 consisted of three categories, including physical action, artistic expression, and expression through technology. Technical college faculty frequently mentioned instructional practices that provided students with multiple means of expressing or acting out content comprehension. Although Theme 5 was the least frequently referenced theme, participants made 82 mentions. Table 18 displays the frequency of each category related to Theme 5 in descending order.

Table 18

Categories Related to Instructional Practices Multiple Means of Action and Expression

Categories for Theme: Multiple Means of Action and Expression	*n*
Physical Action	51
Artistic Expression	24
Expression Through Technology	7

Note. n = frequency

The most frequently mentioned category of instructional practices for multiple means of action and expression was physical action. Physical action was mentioned twice as frequently as the other two categories. The physical action category included instructional practices, such as incorporating hands-on activities and other active participation opportunities. Eight of the 12 participants utilized hands-on activities to accommodate students with learning challenges, including students with disabilities. Participants described the benefits of hands-on activities, which included increased engagement and student comfort level, improved understanding, promoted learning, and enhanced workforce skills.

Research Question 2: How satisfied are technical college faculty with the instructional practices that they have implemented to accommodate students with disabilities?

The purpose of Research Question 2 was to explore how satisfied technical college instructors were with the instructional strategies that they used to accommodate students with disabilities. Interview Question 5 was used to generate answers to this research question. Interview Question 5 asked, "If you wanted to eliminate one of your instructional practices utilized to accommodate students with learning challenges what would it be? Why?" This question was followed up with the probe, "How satisfied are you with the instructional practices that you implement to accommodate students with learning challenges?"

Based on the findings from the semi-structured interviews, 75% of the participants indicated that they were satisfied or very satisfied with the instructional practices that they implemented to accommodate students with learning challenges, including students with disabilities. Twenty-five percent of the participants were neutral or dissatisfied with their instructional practices. Table 19 displays the instructors' satisfaction level, the number and percentage of participants' responses, and a sample quote illustrating satisfaction levels.

Table 19

Instructors' Level of Satisfaction with Instructional Practices

Instructor Satisfaction	Total (%) *n* = 12	Example of Participant Responses
Very Satisfied	6 (50)	"I feel that I'm confident in what I'm teaching… I am confident in the student's ability to understand the material when accommodations are implemented" (Participant 4, p. 4, lines 149-152).
Satisfied	3 (25)	"I think I am doing the very best I possibly can do" (Participant 6, p. 7, line 247).
Neutral	2 (17)	"I feel like its's more out there that we could do to help the students" (Participant 11, p. 5, line 166).
Not Satisfied	1 (8)	"I am not knowledgeable, [I] don't have experience to handle [the disabilities] … sometimes [the students] they get left behind… we just don't have that knowledge or that skill" (Participant 7, p. 5, lines 166-172).

Note. n = participants, % = percent

For Research Question 2, 21 codes were constructed from the interview transcripts relating to the instructional practices that technical college faculty implemented to accommodate students with learning challenges. The codes were grouped into two categories, which included level of satisfaction and need for change. Table 20 displays codes, categories, and the frequency of the categories used to answer Research Question 2.

Table 20

Data-Driven Codes and Categories Derived from Interviews to Answer RQ 2

Code	Categories	*n*
Very satisfied, pretty satisfied, confident in content, doing what supposed to be done, doing the very best, not satisfied, meeting the requirements, meeting the needs, continue current practices	Level of Satisfaction	32
Room to grow, can do more, room for improvement, not versed, open to other methods, don't know, unaware, need new ways, need different ways, not equipped	Need for Change	25

Note. n = frequency

Level of Satisfaction. Participants' satisfaction with the strategies that they implemented was evident throughout the data. Participant 12 acknowledged that she was completely satisfied with the instructional strategies that she implemented. Participant 12 expressed how she felt good because she thought she had given the students every opportunity to learn; however, Participant 12 acknowledged she was open to more effective instructional strategies that she felt existed. Participant 12 proclaimed:

> I feel good. I feel like I give the students every opportunity that I possibly can. I'm sure there's other methods that I can incorporate. I'm sure with all the modern technology, I'm sure there are things [that I can incorporate], but I have to keep in mind a lot of our students are rural students. They may not have the access to technology. They may not have the things that they need… Sometimes they can come to class and get the help but sometimes they can't. So, I have to keep a lot of things in perspective when I'm making assignments and deciding… how to help them. (p. 3, lines 89-95)

Participant 2 was also satisfied with her instructional strategies, part of which entailed using multiple assessment modalities to improve student expression. Participant 2 contended that

she never believed in tests alone as the only way to assess students and allow them to express what they know. Participant 2 explained:

> I'm pretty satisfied with [my instructional practices]. I think it's pretty accurate. I've never been a huge fan of just tests, coming from education where milestones or CRCT, or whatever you took, was the judge. I know that's not the best judge of how well a student is prepared. But I'm pretty satisfied. I think I'm happy that I have balanced assessments. (p. 4, lines 127-128)

Participant 4 expressed her high satisfaction with the instructional strategies that she had implemented. Participant 4 knew her approach was effective because students were more successful, particularly in practical assessments. Participant 4 stated:

> I am very satisfied with [my instructional practices]. My practices have been successful over the years. Students tend to understand the practical side more so than the actual assessment side through my student learning outcome objectives that [students] take every year. My outcomes, generally, are on the positive. So, I would say that I'm very successful. (p. 3, lines 112-115)

Participant 5 had an average level of satisfaction, indicating that her overall goal is to reach every student in the classroom:

> I would say 5 [out of 10]. I hope overall, like that I'm reaching everybody that's my goal as a seasoned teacher, I still want to walk to that classroom and reach everybody. Because I know, my course is difficult. Humanity is difficult and I just want to make it where I'm reaching them. And I observe and I watch and I make modifications based on that. I feel like I'm that person that is doing what we're supposed to do. I'm a research

> teacher. So, I'm always looking for ways to make my class better. And in turn, that's why I feel very satisfied with what I'm doing. (p. 4, lines 135-138; p. 5, lines 159, 173-175)

Participant 8 indicated that she was highly satisfied with her instructional approaches. This participant believed that her instructional strategies were working perfectly because she had not received any negative evaluations or complaints about accommodation of students with disabilities. Participant 8 stated, "[My instructional practices have] worked really well for me. So far, I have not had anybody say anything on my course evaluations as far as you know having a disability and I didn't accommodate them" (p. 4, lines 142-143). Participant 8 also indicated that her satisfaction came from the positive evaluation report that she received from an accreditor during a re-accreditation visit:

> I have an open-door policy. That's one thing that my students really love. We just had our reaccreditation visit and that's one of the things that the accreditor said when they had a meeting with the students is that they love that we are all very accessible to them. (p. 4, lines 144-146)

Need for Change. Even though most of the instructors were satisfied or very satisfied with the instructional practices that they implemented to accommodate students with disabilities, seven of the 12 participants agreed that there was room for improvement and a need for change. Another divergent thought, indicating a need for change that originated from interview question 5 was noninstructional concerns, including the need to eliminate testing. Additional noninstructional concerns included nondisclosure issues and structural inequality in the technical college system. Table 21 presents internal and external factors that need to change to aid with the improvement of technical college instructional practices, the number and percentage of participants' responses, and a sample quote.

Table 21

Need for Change—Internal and External Factors

Factor	Total (%) *n* = 12	Example of Participant Quotes
Room for Improvement	7 (58)	"I don't even know what all resources I even have available… My school has a disability department and… they're really good with helping people who have a diagnosis, but I don't know exactly what there is in terms of people who don't" (Participant 3, p. 5, lines 198-199).
Test Elimination	5 (42)	"I would eliminate the actual testing component. Assessments do not truly measure comprehension of information" (Participant 4, p. 4, lines 136-137).
Structural Inequality	5 (42)	"The reason why I'm emphasizing teaching faculty and even teaching administrators, it's to get rid of all the administrators that have been so far removed from a classroom that they won't remember it anymore" (Participant 6, page 8, lines 313-316).
Nondisclosure	2 (16)	"Unless they report the disability, we never know… now it's too late" (Participant 7, page 5, lines 177-178).

Note. n = participants

Theme 6: Instructor Satisfaction. The two categories, level of satisfaction and need for change, were grouped into one theme. Hence, only one theme was extracted from the data to answer Research Question 2: instructor satisfaction. Theme 6 suggested that instructors generally were satisfied with the instructional strategies that they used to accommodate students with disabilities. However, Theme 6, instructor satisfaction, did not lack discrepant cases where participants expressed their dissatisfaction with the current instructional practices that were implemented to accommodate students with learning challenges.

***Discrepant Cases*.** A majority, 75%, of the participants were either satisfied or highly satisfied with their strategies to accommodate students with disabilities. A few discrepant cases emerged. The first discrepant case was Participant 11, expressing her dissatisfaction with the Curriculum Board's decisions. Some of the decisions directly affected her choice of instructional and accommodation strategies. Participant 11 felt that the Curriculum Board members sometimes made decisions unaligned with students' needs:

> I'm a part of the curriculum board with the Cosmetology [Department], and we have a lot of older people that are making decisions on how [and] what the student learn and how we teach what we teach to the students, and I feel that they are not in touch with what's out there that could really help students. (p. 4, lines 117-120)

Participant 3 expressed her dissatisfaction with the test banks that were used at her institution as part of standardized assessment. Participant 3 described the numerous occasions during which she had run into problems with students because of relying on test banks. Participant 3 said:

> I hate [the assessment instructional practices] because it relies on test banks. I run into the problem of where it wants a capital letter, and somebody isn't using the capital letter. So, it's marking [the response] wrong. And then I had students [asking], "why did I get [the question] wrong,' and I'm like, 'you didn't. It's this system." [The system is] stupid. (p. 3, lines 116-119)

Participant 7 indicated that her instructional and accommodation strategies were limited due to her lack of training in working with students with disabilities. Participant 7 explained:

> I'll give myself about a 2… because every day I deal with the student with a [different] disability that I am not knowledgeable of and don't have the experience to handle. I'm

> doing more research now on how I can help these students. [Many students with disabilities] don't communicate with me when they are struggling, and I'm trying to figure out what is going on with them… sometimes [my students] get left behind. I just don't have that knowledge or that skill. (p. 5, lines 165-171)

Research Question 3: What recommendations do technical college faculty have for improving their instructional practices for accommodating students with disabilities?

Research Question 3 sought to explore technical college faculty's recommendations for improving their instructional practices for accommodating students with learning challenges, including students with disabilities. Interview Questions 7 through 9 generated answers to Research Question 3. Participants were asked about the recommendations they had for future instructional practices to accommodate students with learning challenges to gain insight into how they would improve their instructional practices. Each participant was also asked what recommendations they had for instructional accommodations to encourage retention in their program of study. Finally, participants were asked what recommendations they had for professional development, which could be implemented for faculty to improve accommodating students with learning challenges.

There were 41 codes derived from the interview transcripts relating to recommendations technical college faculty had for improving their instructional practices that were implemented to accommodate students with learning challenges. These codes were grouped into two categories. Table 22 displays codes, categories, and the frequency of the categories used to answer Research Question 3.

Table 22

Data-Driven Codes and Categories Derived from Interviews to Answer RQ 3

Code	Categories	*n*
Mandatory PD, training, multiple intelligence training, personal learning communities, staff development, coping with mental health workshops, how to teach, best practices, new learning processes, what to look for, recognize signs of disability	Professional Learning	44
Transcription technology, artificial intelligence, digital learning tools, MindTap, technology tools, move with the times, statewide systematic program, social media, meta tools, virtual technology	Modern Technology and Resources	30
Be proactive, support without students asking, address need before known, approach teaching in multiple ways, mandate UDL. Feedback, hands-on, engagement, small group, flexible	Make Course UDL Friendly	30
Nondisclosure, language barriers, students left behind, theory test elimination, fairness, equity, underprepared students, undiagnosed students, far-removed decision makers	Non-instructional Concerns	19

Note. n = frequency

Professional Development. The most frequently mentioned category was professional development. This category was identified 35% of the time throughout the interview data as a recommendation for improving instructional practices. Faculty is a primary resource for the academic success of postsecondary students with disabilities (Wright & Meyer, 2017). While in this current study, technical college faculty indicated the use of instructional practices beyond the scope of lawfully mandated practices; findings showed that participants unanimously identified professional development as a need for instructional improvement. Participant 2 stated, "I think just as a faculty, we need [additional] staff development on what's available [to support students with disabilities]" (p. 5, lines 178-179).

Participant 2 also pointed out the antiquated instructional practices still utilized in college classrooms today while proposing professional development on Universal Design for Learning and evidence-based facts about disabilities' impact on higher education students. Participant 2 noted that many instructors are not familiar with Universal Design for Learning and may not realize how often students with disabilities were enrolling in their courses. Participant 2 argued that education and training in these areas could benefit instructors and students.

Participant 5 related the importance of technical college faculty having the skills required to teach a diverse population of learners in the following statement:

> You can't just be one-dimensional in teaching… I gotta [sic] get all the different types of learners, and some can hear it. They do well. Some have to see it. Some got to hear and see. But I gotta [sic] be able to [teach] all of [the knowledge, concepts, and skills]. Yeah, stay on your game as far as the research is concerned. And look for different ways to implement into the course effective teaching methods. (p. 6, lines 202-206)

While some technical colleges have implemented training on the Universal Design for Learning principles and on working with and supporting students with disabilities, participants indicated that training was not required. However, Participant 7 indicated that disability professional development should be mandated. Participant 7 asserted:

> The professional development that we have is not mandatory; it's voluntary. If you want to take it, you can. I say all the instructors need to take at least one professional development class on disability, how to engage with students, how to use the tools, and how to implement UDL, not something that is just voluntary. (p. 5, lines 193-197)

Participant 4 expressed the need for mental health training and other educational and societal issues that impact higher education. Participant 4 stated:

> [We need] intense training on the mental and physical abilities of students. Just additional training for not only the student, but for the area of study or trends that may be happening, concepts, world activities, or events that may be occurring in society. Those things affect not only the student but the faculty member as well. So, being abreast of things that may occur or that are happening would be very beneficial. (p. 6, lines 213-217)

Participant 8 advocated a need to know more about the institutional process of qualifying accommodation for students with disabilities. Participant 8 advocated for instructor awareness concerning how student accommodations are determined and how this knowledge might shape the nature of the instructional supports provided. Participant 8 also championed individualized plans for students rather than catch-all accommodations. Participant 7 agreed that many disabilities were difficult or impossible to recognize. Participant 7 asserted:

> [Because] right now, we're just doing it by ear, we're scaling through the process. We're just trying to figure it out… we know the basics. But how do I really know that this student is having difficulties… not just personal difficulties, but a learning disability, because those are hidden abilities to recognize. (p. 6, lines 221-225)

Participant 10 and Participant 12 indicated that technical college faculty needed more pedagogical educational training to teach effectively. Participant 10 explained that technical college faculty received no formal education training but were content specialists, noting her struggles in teaching her first year.

Participant 12 corroborated, stating:

> I took some education courses, so I was aware of [different learning styles]. But I've been around instructors in technical education that don't know the different learning styles…

> [I]f you're not aware of them, you're oblivious to them… [Y]ou think this is the only way to present something, and you need to know there's other ways… and some students are going to need the other ways in order to be successful. (p. 6, lines 201-205)

Noninstructional Concerns. The second most frequently identified category was noninstructional concerns. Noninstructional concerns were communicated 24% of the time throughout the data as a recommendation for improving instructional practice. This category included nondisclosure, student unpreparedness, institutional inequity, and overemphasizing theory testing. Nondisclosure is the most common barrier to accommodating students with disabilities (Timmerman & Mulvihill, 2015). Participant 8 advocated a need for the institution to promote self-disclosure in the following statement. Participant 10 explained:

> Even if a student had any kind of IEP throughout K12 that does not follow them. So, unless [students] self-disclose, which a lot of times they want to put that behind them; the instructors have no idea that there's a problem, that there's a need for any kind of intervention, or any extra help that we may be able to provide and or alter. I feel like that's a big lack... I think there should be more push for students to self-disclose because it doesn't hurt anything to know. (p. 5, lines 169-176)

Participant 12 stressed concerns relating to the impact of nondisclosure on the instructor's ability to provide effective learning strategies and support. Participant 12 stated, "Because some of [the students] don't disclose, and we don't know. So, we're just going by what our observation is of the student, and we're trying to incorporate the best learning that we can with the student" (p. 2, lines 59-61). Although nondisclosure is perceived as a way for students to diminish the power of their disabilities, keeping their disabilities hidden is detrimental to the academic success of students with disabilities (Newman et al., 2016; Pearson & Boskovich, 2019).

Participant 11 suggested providing instructional practices for accommodating students with disabilities to all students, providing a possible solution to nondisclosure. Participant 11 stated:

> So, like we're saying, bigger fonts, more in-depth teaching. For our visual learners as well as our hands-on learners, we normally just do it across the board now. Because we have a lot of students, I think they are somewhat embarrassed about their learning disabilities, and they don't usually tell us. It's very rare that the student outright tells us that they're having issues or they have a learning disability. (p. 1, lines 15-19)

Another concern that was raised related to students' levels of preparedness. Transition planning that fails to address the need to self-disclose as part of self-advocating and failure to promote awareness of available postsecondary services can result in the unpreparedness of students as they embark on their college experience (Francis et al., 2018). In this current study, Participant 8 noted that many students enter the classroom unprepared and unsupported by their college core curriculum, and, therefore, many instructors must work with students who have a deficit in knowledge and ability. Participant 10 expressed similar sentiments. Participant 10 stated:

> I wish we could have more of an entrance, not necessarily an exam, but kind of a way for the students to come in and demonstrate that they are able to complete on a broad scale before they get into a rigorous program and then find out they're not able [to complete the program]. I feel like, especially with the Technical College System, the way we have to accept students is extremely broad so that you eliminate any bias. And so, anybody can get into a program because of our selection [process]… but they may not be equipped to do the skill that we need them to do. (p. 2, lines 131-138)

Participant 10 recommended prescreening students to help better prepare them for program expectations. Participants also identified various disadvantages that were associated with traditional assessments. The first disadvantage of standard tests was cited by Participant 10, who argued that they are sometimes unreliable as they failed to consider the effect of factors other than lack of knowledge of course content on the final assessment score. According to Participant 10, such factors included anxiety, which may affect a student's final score, but does not necessarily imply the student lacked knowledge of core course content. Participant 10 stated:

> If I didn't have to give tests, I would not give tests because students have so much anxiety. The test is something that's formalized. But because our students do have to take a licensure exam, tests are necessary. If I could have students do projects more [frequently], I think they would all do better. (p. 3, lines 107-110)

Participant 5 also indicated that not every student is comfortable taking tests. “I would say [eliminate] test taking because everybody's not a test taker” (p. 4, lines 151-152). Participant 7 indicated that, given an opportunity, she would also eliminate traditional assessments from the curriculum and implement alternative modalities, although she did not give specific references to the alternative modalities. Participant 7 related:

> One of the practices that I would eliminate is how I assess students. Just giving them a theory test and application test. I would love to implement different methods and alternatives for them to be assisted as well. But with this online challenge, I just need to find the tools where it will not hinder any of the other students. (p. 5, lines 158-161)

State of the Art Technology and Resources. State of the art technology and resources included responses from 67% of the participants. Participant 7 identified artificial intelligence (AI) as an important technology that, according to her instructional experience, has been

effective in assisting students with disabilities to become more engaged. Participant 7 referred to "meta tools", which she claimed have been used to improve engagement among students with disabilities. Participant 7 stated:

> I would love to offer AI because that really engages [students with disabilities] if we had the funding to get those tools. I've been watching how they're using the meta tools to engage with students with disabilities. The other students also become more engaged. I'm seeing more of the four-year universities starting to implement [AI], and I'm hoping one day that the technical college system will allow us to implement [AI] in our classes as well. (p. 6, lines 200-205)

Participant 1 reported:

> Sometimes we don't know all that technology that is [available], but I've noticed that the learning management system has gotten better about videos… So, I would just say to make sure that your course is updated, and you know, check to make sure and look at the technology and the tools that you have and use them to the best of your ability. (p. 3, lines 106-116)

Participants also indicated concern for structural inequalities. Structural inequalities included: (a) exclusion of instructors' input by administrators making decisions that impacted teaching and learning, (b) lack of institutional support and resources, and (c) poorly designed online courses. Participants implied that technical college leaders needed to address these inequalities to improve retention and the academic success of students with learning challenges. Participant 11 suggested that administrators' failure to listen to instructors was a factor that created some of the inequity that might exist. Participant 11 proclaimed:

> We wanna [sic] to do a lot of things because we're in the classroom with these students. But you know the higher up… and the people on the curriculum [board]… are not listening to what we could do to help the students more. (p. 5, lines 170-172)

Participant 5 provided a narrative of an incident where she reached out for help from disability services and the inadequacy of the response that she received. Participant 5 explained:

> I need to have access to people who can give me resources for people with these challenges. To have someone on that campus that this is [their] job to handle and that will help me have a team, not just me, working single handily with whatever problems may come up own. (p. 7, lines 262-265)

Participant 7 explained her thoughts as they related to retention regarding online learning. Participant 7 noted that students should remain in the physical classroom until better online instruction strategies and modalities were available.

Make Course UDL-Friendly. Findings from this study in relation to the recommendation of technical college faculty to improve their instructional practices revealed that 58% of the participants recommended making courses Universal Design for Learning-friendly. Participant 7 stated that one-on-one engagement, project-based learning, and continuous feedback were successful practices that they would continue to use in instruction. Participant 1 stated, “I think that you need to update continuously your courses for accessibility, for relatability, and for effectiveness, not only for students with learning challenges. We [must] keep our courses accessible for readers and things of that nature” (p. 3, lines 108-110). Participant 2 explained:

> I think, in general, we need to have a better understanding of proactively meeting needs. Like I said, I'm doing two sessions, one on video, and one on UDL [Universal Design for

> Learning]. I think addressing the needs before we know they're there because a lot of students don't declare. [Students with disabilities] want to go in with a clean slate. They don't want to declare. So, I think it's important to get everybody on board in understanding that there are tools that you can make available... making sure that we're not waiting for an accommodation form from our disability coordinator, making sure we've got tools in our toolbox to meet the needs of the students [with disabilities]. (p. 5, lines 168-172)

Participant 6 called for statewide reform that would enable instructors to meet the needs of all students, regardless of disability. Participant 6 asserted:

> Find out what's out there, review it, vest, and then utilize it statewide. I think that would be a good recommendation, something that we could do here in [this southern state] that you know would not be financially cost prohibitive for any particular institution but something that we could do systematically and… see how that could help our students, and it wouldn't be just for students with a disability or our specific accommodation needs, This would be something that students could do kind of on their own or outside of the normal classroom period. (p. 8, lines 300-313)

Theme 7: Improving Instructional Practices. Only one theme was extracted from the data to answer Research Question 3, improving instructional practices. Theme 7 gave the researcher insight into technical college faculty's recommendations for improving their instructional practices. Theme 7 comprised four categories, including professional development, non-instructional concerns, state of the art resources, and make courses UDL-friendly. Table 23 displays the frequency of each category related to Theme 7 and the percentage of participant responses in descending order.

Table 23

Categories for Improving Instructional Practices

Category	Frequency of Response	Participant (%) $n = 12$
Professional Development	44	12 (100)
Non-instructional Concerns	30	10 (93)
State of the Art Technology and Resources	30	8 (67)
Make Course UDL-Friendly	19	7 (58)

Note. n = participants, % = percent

The most frequently mentioned recommendation was professional development. Professional development was mentioned 44 times, and 100% of the participants agreed that professional development was needed to improve teaching and provide efficient support to students with learning challenges, including students with disabilities. Participants acknowledged that they needed to gain the knowledge required to teach a diverse population of learners. Participants 10 and 12 indicated that technical college faculty were content specialists and needed more pedagogical educational training to teach effectively. They also recommended technical college faculty receive mental health training and training in the instructional processes for identifying and accommodating students with disabilities. Participants believed professional development in working with students with disabilities should be mandated.

Participants expressed non-instructional concerns, such as nondisclosure, which limited their ability to provide adequate support. Participant 8 advocated for the institutional promotion of disclosure to help students gain the support and interventions needed for academic success. Participants also suggested prescreening students before taking upper-level courses to help mitigate student unpreparedness. Participants also indicated the need for more resources and support from the administration. Participants expressed that colleges needed to utilize more modernized technologies, such as artificial intelligence. To better assist students with disabilities,

participants recommended that further exploration of the availability of modernized technology should be pursued.

Participants also described recommendations for supporting students with learning challenges aligned with the Universal Design for Learning framework. Participant 2 suggested that technical college faculty should better understand how to meet students' needs proactively. Because students often choose not to declare their disability, Participant 2 recommended that faculty address the needs before awareness. Participant 5 suggested that instructors should be equipped to meet the needs of all students regardless of ability or disability. Universal Design for Learning integrates instructional practices and tools to provide a holistic learning experience proactively for a diverse population of students, irrespective of disclosure (Boothe et al., 2018). Overall, participants recommended that institutional leaders adopt a tool that ensures technical college faculty have the means to address the needs of all students.

Summary

This study aimed to investigate the instructional practices in higher education for accommodating students with disabilities. The chapter includes the findings, with a description of the participants, data collection, and data analysis processes. Participants included 12 instructors from six technical colleges in one southern state. Data collection resulted from three instruments, which included the Universal Design for Learning Checklist, semi-structured interviews, and document analysis form of course syllabi. Data analysis included open coding. Descriptive findings were provided by the research question and supported by tables. Seven themes emerged from the semi-structured Interviews and were constructed by the researcher from the data analysis.

The seven themes were aligned to the instructional practices that technical college faculty implemented to accommodate students with disabilities, instructor's level of satisfaction with

their practices, and recommendations to improve their practices. All participants mentioned the seven themes. Triangulation between the three sources (i.e., the Universal Design for Learning Checklist, semi-structured interviews, and document analysis form of course syllabi) occurred to substantiate the findings for the instructional practices that technical college faculty implemented to accommodate students with disabilities.

Three research questions guided the current study. Research Question 1 explored the instructional practices that technical college faculty implemented to accommodate students with disabilities. Participants described implementing instructional practices that aligned with and diverged from the three principles (i.e., multiple means of representation, engagement, and actions and expressions) of the Universal Design for Learning framework. All participants described practices that aligned with the multiple means of representation, such as using multiple means of communicating course content, changing the size of text, and providing the opportunity for review and practice. All participants reported using multiple means of engagement, such as peer tutoring, collaboration opportunities, and providing substantiated feedback. One hundred percent of the participants also reported implementing practices that aligned with multiple means of action and expressions, such as providing opportunities for students to work with their hands. Findings from all three data sources substantiated these findings.

Participants described providing practices that diverged from Universal Design for Learning principles. One such practice was the implementation of lawfully mandated reasonable accommodations, such as offering extended time on tests or providing a quiet testing environment. However, the participants focused more on the students' comfort and well-being. They took extra care to make students feel wanted and cared for, creating a safe, welcoming environment that reduced embarrassment and shame. One-on-one instruction was mentioned by

75% of the participants. Participants viewed this method of instruction as an effective tool to engage students that were off task. One-on-one instruction increased students' comfort and reduced the intimidation of the learning environment. Additionally, all participants reported the use of technology to help engage students. Technologies utilized were non-assistive technology, including software applications, such as Canva and PowerPoint, social media (i.e., Tik Tok and YouTube), and gamification.

Research Question 2 explored the satisfaction level of technical faculty with their instructional practices that were designed to accommodate students with disabilities. The findings indicated that instructors generally were satisfied, except for a few documented discrepant cases. The results showed dissatisfaction with curriculum board decisions about instructional practices that did not align with students' needs. Participants also felt that they lacked the knowledge and skills to provide adequate accommodation to students with disabilities, which may have negatively impacted this student population's academic performance. As standardized tests were also a sore spot for participants, several participants recommended the elimination of theory-based examinations. Because of nondisclosure and institutional inequalities, faculty indicated a need for change.

Research Question 3 explored the instructors' recommendations for improving their instructional practices for accommodating students with disabilities. Technical college instructors should possess the skills to teach a diverse population of learners. Technical college faculty should update their instructional practices because antiquated practices are still being used. Instructors recommended that workshops and training programs on accommodating students with disabilities be availed to them. Specifically, instructors need training on how to

deal with mental health issues, modernized technology (i.e., artificial intelligence), and on how to meet the needs of all students regardless of abilities or disability.

Participants also expressed non-instructional concerns that could aid in improving instructional practices. Instructors desired a better understanding of student backgrounds. Students need to be better prepared before transitioning from high schools. Prescreening students, promotions of student disclosure, and timely institutional support were also recommended. Chapter V provides a summary of the study, limitations of the study, recommendations for future research, implications of the study, and dissemination of the findings.

Chapter V: Conclusions

Summary of the Study

Higher education institutions are placing increasing emphasis on enrolling, supporting, retaining, and engaging a diverse population of students. The National Center for Education Statistics (2016) reported that approximately 2.2 million documented students with disabilities were enrolled in higher education institutions. Considering that only 19% of college students disclosed their disabilities, this number does not reflect the number of undocumented and undiagnosed students with disabilities (NCES, 2017).

According to Santos et al. (2019), 96% of higher education classrooms contain a student with a disability. Unfortunately, students with disabilities are not graduating at the rate of their non-disabled peers (Kimball et al., 2016). The failure of students with disabilities to earn their college degrees negatively impacts the students' future and the retention rates of colleges and universities (Gibbons et al., 2015b; Kimball et al., 2016). Many possible factors contribute to this phenomenon, including issues related to the instructional practices of technical college faculty. This study was designed to explore the instructional practices that technical college faculty implemented to accommodate students with learning challenges, including students with disabilities.

A succinct overview of the literature provided support for this multi-site descriptive case study. A review of the literature included a historical overview of relevant empirical studies and articles related to issues that impact college students with disabilities' academic success. The foundation for this research covered academic sources from previous research and articles on students with disabilities. The literature also focused on human rights laws that have promoted

access to higher education; inclusive practices, services, and accommodations provided by higher education institutions; and perceived barriers to accommodations.

Effective teaching can minimize the need for accommodations and disclosure (Womack, 2017). However, little information was found about the instructional practices that postsecondary educators implemented. Many factors affect technical college students' learning abilities and academic progress. Universal Design for Learning principles utilized in instruction maximize learning for all students and has been identified as a best practice (CAST, 2022b).

This study employed the Universal Design for Learning framework as a lens to explore the instructional practices of technical college faculty that were implemented to accommodate students with disabilities. A range of postsecondary educators intentionally and successfully incorporated the principles of Universal Design for Learning in instructional practices to support and increase academic achievement. By comparing the instructional practices of technical college faculty to the Universal Design for Learning framework, the researcher was able to determine which instructional strategies aligned and diverged with the Universal Design for Learning principles. The research questions that guided this study included:

1. What are the instructional practices of technical college faculty to accommodate students with disabilities?
2. How satisfied are technical college faculty with the instructional practices that they implement to accommodate students with disabilities?
3. What recommendations do technical college faculty have for improving their instructional practices for accommodating students with disabilities?

The significance of this study was to determine the instructional practices that were implemented by technical college faculty to accommodate students with disabilities to promote

academic achievement and retention, which is vital to educational leaders, faculty, and staff. The researcher employed a qualitative descriptive case study to examine the instructional practices of technical college faculty. The researcher chose a descriptive case study because it facilitated an in-depth understanding of how technical college faculty described the instructional practices they used to accommodate students with disabilities.

The participants for this study consisted of a purposeful sample of 12 full-time technical college faculty from six technical colleges in a southern state. All participants had at least five years of teaching experience at the postsecondary level and had worked with at least one student with a disability. The instrumentation used to collect and triangulate the data included the Universal Design for Learning Checklist, semi-structured interviews, and a document analysis form to report data from participants' course syllabi.

Analysis and Discussion of Research Findings

The data were analyzed following data collection. The data from the Universal Design for Learning Checklist were analyzed using frequency counts. Data from semi-structured interviews and the document analysis form were analyzed using frequency counts and thematic analysis through open coding. The findings were used to answer the three research questions that guided this study.

Research Question 1

What are the instructional practices of technical college faculty to accommodate students with disabilities? This research question explored how technical college faculty described their instructional practices implemented to accommodate students with learning challenges. All three data sources, the Universal Design for Learning Checklist, semi-structured interviews, and document analysis of course syllabi, were used to answer Research Question 1.

Frequency counts from the checklist revealed that technical college faculty employed the strategies from the three principles of the Universal Design for Learning framework. Findings from the Universal Design for Learning Checklist also showed that participants checked *multiple means of engagement* items 52% of the time, *multiple means of representation* 37% of the time, and *multiple means of action and expression* 11% of the time. Notably, 92% of the participants indicated that they provided tasks that allowed students to participate actively, explore, and experiment. Eighty-three percent of participants indicated that they offered opportunities to review and practice and opportunities for collaboration.

Codes generated from participants' responses to the interview questions were viewed through the lens of the Universal Design for Learning framework to magnify the instructional practices that technical college faculty implemented to accommodate students with disabilities. This examination helped determine how participants' instructional practices aligned with or diverged from Universal Design for Learning principles. From the data, five themes emerged. Four of the themes aligned with the principles of Universal Design for Learning: (a) multiple means of representation, (b) multiple means of engagement, (c) multiple means of action and expression, and (d) technology utilization. One theme diverged from the Universal Design for Learning principles: student-focused instruction.

Codes generated from the analysis of participants' syllabi were also viewed through the lens of the Universal Design for Learning framework to magnify the instructional practices of technical college faculty implemented to accommodate students with disabilities. This examination also helped determine how participants' instructional practices aligned with or diverged from Universal Design for Learning principles. Similar to data that were collected from the semi-structured interviews, five themes emerged in the data from the course syllabi. The

themes which aligned with the principles of Universal Design for Learning, included: (a) multiple means of representation, (b) multiple means of engagement, (c) multiple means of action and expression, and (d) technology utilization. However, one theme diverged from Universal Design for Learning: student-focused instruction. Triangulation of the three data sources strengthened the findings for Research Question 1. The instructional practices of technical college faculty were identified as Universal Design for Learning-aligned supports and Universal Design for Learning-divergent supports. The Universal Design for Learning-aligned instructional practices that technical college faculty implemented to accommodate students with disabilities included:

- Theme 1, multiple means of representation, included, but was not limited to, (a) lecturing; (b) using many methods to communicate information; (c) demonstration; (d) using scenarios, analogies, or examples for relatability; (e) incorporating activities to build vocabulary; and (f) using transcription and close captions for videos.
- Theme 2, multiple means of engagement, included, but was not limited to, (a) the use of small group activities and peer tutoring; (b) providing opportunities for collaboration and discussion; (c) using exemplars and rubrics; and (d) providing frequent, substantial, and differentiated feedback.
- Theme 3, multiple means of action and expression, included, but was not limited to, (a) providing hands-on activities, (b) incorporating activities that promoted artistic expression, and (c) providing checklists and guided notetaking.
- Theme 4, technology utilization, included, but was not limited to, (a) using PowerPoint and Prezi for presentation, (b) using Kahoot and Clickers for gamification,

(c) using Blackboard and Ally, and (d) other technologies to improve the interactive engagement of students.

While the Universal Design for Learning-aligned themes demonstrated practices aligned with Universal Design for Learning principles, the remaining theme demonstrated divergent practices. One theme was identified as Universal Design for Learning-divergent support: student-focused instruction. Despite the incorporation of time variations and social-emotional support within the ideology of the Universal Design for Learning framework, the practices that characterized Theme 5, student-focused instruction, were more robust and deserving of a separate category based on the participants' descriptions.

Student-focused instruction included instructional strategies highlighting individual performance, one-on-one support, and lawfully mandated accommodations. Student-focused instruction strategies included but were not limited to creating an environment to promote students' sense of belonging, providing counseling, giving one-on-one instruction, providing a quiet testing environment, granting extended time, and administering practical and theory-based assessments. While providing a sense of belonging and methods for assessments, which aligned with Universal Design for Learning principles, this theme embodied two categories that diverged from Universal Design for Learning. The two categories were reasonable accommodations and individualized instruction. McGuire et al. (2003) contended that accommodations, such as taking exams in a quiet setting with extended time, are retrofitted, reactive arrangements. These types of arranged supports based on biomedical understanding and professional documentation are known as reasonable accommodations.

Unlike reasonable accommodations, Universal Design for Learning includes proactive and not reactive principles. Universal Design also transforms one size fits all instruction into diverse,

accessible learning that meets the varied needs of students (CAST, 2022a). Hence, courses are proactively planned and designed to help alleviate the need for individualized or one-on-one instruction. Because two of the four categories of student-focused instruction did not adhere to the Universal Design for Learning framework, this theme was determined to be a Universal Design for Learning-divergent practice.

Although data from this study indicated that technical college faculty incorporated Universal Design for Learning-aligned supports in their instructional practices, only two participants revealed being familiar with the framework or intentionally implementing Universal Design for Learning principles. Kimball et al. (2016) indicated that higher education practitioners unknowingly implemented Universal Design for Learning framework attributes. By intentionally approaching teaching and learning through the lens of Universal Design for Learning, postsecondary educators can improve the educational outcomes for a diverse group of learners by considering the three central principles of Universal Design for Learning in the design of instructional goals, methods, classroom materials, and assessments (Rose & Strangman, 2007). Findings from this study indicated that technical college faculty were open to new approaches to teaching and learning that would improve the success rates of their students.

Research Question 2

How satisfied are technical college faculty with the instructional practices that they implement to accommodate students with disabilities? The second research question was intended to explore the satisfaction level of instructors with their instructional practices designed to accommodate students with disabilities. The findings indicated instructors generally were satisfied. Most participants explained that they were satisfied with their aptitude to convey the State's content requirements, with several noting that they "were doing [their] best" and were

confident in their abilities. Although 75% of the participants were satisfied or very satisfied with their instructional practices, they indicated a need for change. Participants noted dissatisfaction mainly regarding a lack of administrative support and/or qualifications and training for teaching students with disabilities.

Some discrepant cases were documented. The first discrepant case was Participant 11, expressing her dissatisfaction with the curriculum board's decisions. Some of the decisions directly affected her choice of instructional and accommodation strategies. Participant 11 felt that the board of curriculum members sometimes made decisions that did not align with students' needs. Participant 3 expressed her dissatisfaction with the computer-generated standardized testing that was used at her institution as part of standardized assessments. Participant 3 described the numerous occasions during which she had encountered problems with students because of relying on standardized tests.

Supporting Participant 3's assertion, other participants also identified various disadvantages associated with traditional assessments. Participant 10 noted the first disadvantage of traditional or theory-based tests, arguing that these tests were sometimes unreliable as they failed to consider the effect of a variety of factors other than lack of knowledge of course content on the final assessment score. According to Participant 10, such factors included anxiety, which may affect a student's final score, but does not necessarily imply the student lacked knowledge of core course content.

Participant 7 indicated that, given an opportunity, she would eliminate traditional assessments from the curriculum and implement alternative modalities. Participant 7 also indicated that her instructional and accommodation strategies were limited due to her lack of

training in working with students with disabilities. Participant 7 acknowledged that as a result of her inability and lack of resources, some students were left behind, indicating academic failure.

Based on data collected from the semi-structured interviews, technical college faculty are highly satisfied with the instructional practices they implemented to accommodate students with disabilities. However, some participants indicated frustration with student nondisclosure, lack of institutional support, professional development for accommodating students with disabilities, and general resources. Cox et al. (2017) found that students typically reveal their diagnosis to disability services or faculty on an as-need basis. Further, several students reported that the only people on campus who were aware of their diagnoses were disability services personnel, indicating that instructors were often not aware of a student's disabilities even if the administration was. As indicated in this current study, technical college students tended not to disclose their disabilities. Participant 8 communicated:

> Even if a student had any kind of IEP throughout K12, that does not follow them. So, unless they self-disclose, which [many] times they want to put that behind them. The instructors have no idea that there's a problem, that there's a need for any kind of intervention or any extra help that we may be able to provide and or alter. (p. 5, lines 169-176)

Wright and Meyers (2017) asserted that faculty instructional accommodation practices play a vital role in the academic achievement of students with disabilities. However, although this group is a rapidly growing subpopulation on higher education institutions' campuses, many students choose not to disclose and subsequently do not receive the support needed for academic achievement (Timmerman & Mulvihill, 2015). Participant 12 shared concerns caused by nondisclosure, stating:

> Because some [students with disabilities] don't disclose, and we don't know. So, we're just going by what our observation is of the student, and we're trying to incorporate the best learning that we can with the student when we observe them (p. 2, lines 59-61).

When faculty are not aware of students' disabilities, they are helpless to provide the support that students need for academic attainment. Findings from this study indicated that nondisclosure is a barrier to technical college faculty's ability to provide adequate instructional practices to accommodate students with learning disabilities. Mole (2013) found that the philosophy of Universal Design for Learning benefits every student in the classroom, promotes an inclusive learning environment, and goes beyond the teacher-centered approach. In this current study, technical college faculty indicated that a possible solution to the issue of nondisclosure could be creating an environment of inclusion regardless of a student's ability or disability, suggesting that courses could be redesigned to become Universal Design for Learning-friendly.

Research Question 3

What recommendations do technical college faculty have for improving their instructional practices for accommodating students with disabilities? The third research question was intended to explore the instructors' recommendations for improving their instructional practices for accommodating students with disabilities. Instructors recommended that workshops and training programs on accommodating students with disabilities be made available to them; institutions actively address structural inequities, such as nondisclosure, implementation of state-of-the-art technology to better support all students, and implementation of the Universal Design for Learning principles.

Participant 5 related the importance of technical college faculty having the skills that were required to teach a diverse population of learners. Participant 2 pointed out the antiquated instructional practices that are still utilized in college classrooms while proposing professional development on Universal Design for Learning and evidence-based facts related to disabilities' impact on higher education students. Participant 7 exclaimed that disability professional development should be mandated.

Participant 4 expressed the need for mental health training and training on other educational and societal issues that impact higher education. Participant 8 advocated for the need to know more about the institutional process of qualifying accommodations for students with disabilities. Several participants revealed that, although technical college faculty may be skilled in their content area, faculty lacked the pedagogical educational training required to teach effectively.

This current study's findings align with Meyer et al.'s (2014) ideology on teaching. According to Meyer et al., the commonality of teaching has caused some individuals to feel that teaching is easy and that anyone can teach. Further, individuals tend to assume that someone who teaches a subject knows everything about that content and has nothing else to learn (Meyers et al., 2014). Participant 5 stated, "Professional development needs to be focused on how to teach students because you can be the smartest engineer, but do you know how to convey that to the students" (p. 7, lines 249-250). As the participants noted, teaching is separate from any content area, meaning knowing content does not mean an individual can teach.

Participants also identified non-instructional concerns, including nondisclosure, student unpreparedness, and institutional inequity. Findings from this study indicated that these noninstructional concerns might be barriers to technical college faculty's ability to provide

adequate instructional practices to accommodate students with disabilities. Nondisclosure is the most common barrier to providing accommodations for students with disabilities (Timmerman & Mulvihill, 2015). Nondisclosure impedes students' ability to obtain their degrees and may result from inadequate high school transition planning (Grimes et al., 2017). Participants 8 and 12 stressed concerns caused by nondisclosure and the limitations nondisclosure places on the instructor's ability to provide needed support. Participant 11 suggested providing instructional practices for accommodating students with disabilities to all students, providing a possible solution to nondisclosure.

Another noninstructional concern that participants raised was related to students' levels of preparedness. Transition planning that fails to address the need to self-disclose as part of self-advocating and failure to promote awareness of available postsecondary services can result in the unpreparedness of students as they embark on their college experience (Francis et al., 2018). In this current study, Participant 8 noted that many students enter the classroom unprepared and unsupported by their previous college core curriculum instruction, and, therefore, many instructors must work with students who have a deficit in knowledge and ability. Participant 10 pointed to the admissions policy that allowed any student to attend. Participant 10 recommended pre-screening students to make them aware of program expectations and better informed for choosing their program of study.

Despite laws requiring instructors to provide accommodations, some failed to comply because they lacked an understanding of the type of disabilities that impact college students and did not have the training that was needed to support this population of students (Stevens et al., 2018; Wright & Meyers, 2017). While considering the lawful mandates instituted by the Individuals with Disabilities Act and the Americans with Disabilities Act, Becker and Palladino

(2016) suggested that faculty have experiences working with students with disabilities, particularly learning disabilities, and be willing to accommodate the needs of students with disabilities beyond the scope of reasonable accommodations. In this current study, technical college faculty displayed a willingness and concerted effort to meet the needs of students with disabilities. However, while technical college faculty indicated the use of instructional practice beyond the scope of lawfully mandated practices, findings also indicated that participants unanimously identified professional development as a need for instructional improvement. Participant 5 stated:

> [After] COVID, I had 10 people in a class; six of them were autistic. I'm not a special education teacher; it was quite difficult. These were very smart, all young black men, but autism was there…they had challenges… I was drained after each course, but it was some of the smartest men. I just had to find ways to get them. They had no sense of humor…but they were smart… They were engaged, and you know what I find about each and every one of them, if I talked about video games or presented a lesson towards that, I had every last one of them. So that was difficult because when I reached out to find information or find [*sic*] a team to help, they came at the end of the semester…So I had to do it on my own. So having that resource that's really important. (p. 7, lines 266-275)

Findings from Becker and Palladino's study also pointed to the need for the implementation of professional development for faculty, allowing them to tap into their compassion for students with disabilities and offer in-depth and alternative ways of accommodating these students, which are more beneficial to their academic success.

Faculty is a primary resource for the academic success of postsecondary students with disabilities. Synonymous with the literature, participants in this current study recommended that

technical college faculty receive professional development on the types of disabilities, how to teach, and how to be better prepared to accommodate students with disabilities. Participant 7 requested:

> Give us some workshops, bring in professionals, [and] bring in speakers. Bring in people who have dealt with these different scenarios with students…The training would look like how to recognize a student who is being challenged right now…if somebody came in and said, 'Hey, if a student is doing this, this is the type of disability they have, this is what you need to do to handle this situation.' (p. 6, lines 218-230)

As support services evolve, higher education institutions will need to better understand students' needs to support full engagement in the education process among students with disabilities (Couzens et al., 2015). Participants also indicated a need for mandated professional development on the principles of Universal Design for Learning, which promotes the full engagement of students in the educational process.

Moreover, while learners may require accommodations within the higher education context, there are essential equity concerns about the effectiveness of accommodations, the nature of a student's difficulties, and the attitudes and perceptions of faculty toward providing accommodations (Couzens et al., 2015). Similar to Couzens et al.'s (2015) assertion, concern for non-instructional issues, such as structural or institutional inequalities, student unpreparedness, and nondisclosure. Participant 11 suggested that decision-makers were far removed from the classroom and did not listen to the instructors. Therefore, students were not receiving the advanced resources that can help improve academic achievement. Participant 6 showed his dissatisfaction with decision-makers, proclaiming that students were being set up for failure when they did not have the resources that they needed to succeed.

By law, U.S. colleges and universities are required to provide accommodations to qualifying students. However, the accommodations' determination and quality are left to each institution's disability office and faculty (Newman et al., 2016). Findings from a study conducted by Mbuvha (2019) indicated that, while disability offices provide adequate support, students did not receive adequate faculty support. Contrary to Mbuvha's findings, Participant 5 provided a narrative of an incident where she reached out for help from disability services and the inadequacy of the response that she received. Participant 7 shared thoughts on retention as it related to the increase in online courses and how the institutions' need for money was overshadowing the need to improve their online program to increase student success.

Provision for the use of modernized resources was another recommendation. The recommended use of state-of-the-art technology included responses from 67% of the participants. Participant 7 identified artificial intelligence as an important technology that, according to her instructional experience, has been effective in assisting students with disabilities to become more engaged. Participant 7 referred to "meta tools", which she claimed have been used to improve engagement among students with disabilities. Findings from this study in relation to the recommendation of technical college faculty to improve their instructional practices also revealed that 58% of the participants recommended making courses Universal Design for Learning-friendly. Participant 5 called for statewide reform that would enable instructors to meet the needs of all students, regardless of disability.

Limitations of the Study

A limitation was the number of technical colleges in the state that were represented in the study. Of the technical colleges in a southern state and an insurmountable number of faculty who provide instruction to students with disabilities, only 12 instructors from six technical colleges

participated in the study. With time constraints and the inability to evaluate on a larger scale, the small sample size within one state's technical college system could influence the evaluation outcomes. The lack of diversity among the disciplines that participated in the study was also a limitation.

While some programs were more conducive to hands-on activities, others were not. An intentional selection of disciplines may avoid skewed results. Another limitation was the possibility of social desirability bias. Faculty members usually want to portray flexibility, empathy, and the ability to make accommodations but may not display these behaviors in the classroom. Responses may also be based on what the faculty thought was suitable rather than what they do or believe. Social desirability may have caused instructors to embellish responses and omit detrimental practices that were utilized during instruction. The researcher's limited knowledge of the Universal Design for Learning framework may have also presented limitations. However, the information that was obtained in this study could provide some enlightenment into the instructional practices of technical college faculty for accommodating students with disabilities.

Recommendations for Future Research

Based on the input from participants and findings from the study, the following recommendations were made for future research. Future research could include a larger number of participants from each participating technical college to generate insights from more than two representatives in a selected location and the inclusion of more disciplines. If possible, researchers could interview participants from a variety of higher education institutions, including but not limited to, two-year colleges and four-year universities, especially institutions in which

students with disabilities have been unsuccessful in completing the coursework that fulfills requirements for graduating.

The participants mentioned the need for pedagogical training, as they viewed themselves as content specialists. Further research could examine how this mindset impacts current instructional strategies. Future studies might also consider how student nondisclosure impacts an instructor's ability to provide effective learning strategies and support. Furthermore, considering the recent COVID-19 pandemic, additional studies could investigate how the online student experience differs from face-to-face instruction in relation to the principles of Universal Design for Learning.

Future research might also include students with disabilities in the data collection process. Interviewing students with disabilities could uncover many issues that need to be addressed to increase the retention rate of students with disabilities in higher education institutions. Investigating the perception of technical college students with disabilities to determine the effectiveness of accommodation practices of technical college faculty is another suggested future research opportunity. In addition to conducting interviews, data collection could include instructional observations to generate data on both faculty and students with disabilities in the classroom setting. Further, future research could consider the transition of students with disabilities from secondary to postsecondary education, including the impact (or lack thereof) of transitional planning and parental support on the academic achievement of students with disabilities.

Implications of the Study

This research that investigated accommodations provided to technical college students with disabilities implies that students with disabilities in higher education are being left behind

by their peers without disabilities (Santos et al., 2019; Stevens et al., 2018; Turner et al., 2017). Findings imply that faculty need additional institutional support and resources and desire access to modernized technology, such as artificial intelligence. Further, findings from the study imply that technical college students would benefit from the implementation of Universal Design for Learning principles into courses.

The findings also imply that professional development may be vital to helping technical college faculty develop instructional strategies to better support students with learning challenges. Colleges and universities could train faculty in accommodation laws and support to build self-efficacy among faculty, which, according to the research, could help to promote disclosure. Mole (2013) recommended that disability services staff become experts in Universal Design for Learning concepts to design and encourage responsive social policy. Disability services staff could also focus on implementing professional development and collaborative training on Universal Design for Learning principles. Social supports, such as Universal Design for Learning, promote inclusion, a sense of belonging, and academic achievement for students with disabilities.

This qualitative research has implications for identifying consistent and best instructional practices that positively impact the academic achievement of college students with disabilities. Such best practices aligned with and diverged from the Universal Design for Learning framework, illuminating some of the limitations of the framework. As Universal Design for Learning has been established as a best practice that is effective in promoting academic success among college students with learning challenges, and findings from this study indicated that technical college faculty unknowingly utilize UDL strategies. Study results have implications that technical college faculty's instructional accommodation practices can be effective in

promoting academic success among students with learning challenges, including students with disabilities.

Dissemination of the Findings

The findings from this study will be disseminated through online publication, according to established procedures of Columbus State University. A copy of the abstract will be available online for interested readers to review. Findings from this study will also be shared with the institutional effectiveness personnel of the technical college system and the presidents of the six participating colleges. A copy of the abstract will be retained to disseminate to other researchers who might request a copy for information only or for conducting future research on instructional practices for accommodating college students with disabilities and other related topics in higher education.

Conclusion

In the process of selecting a problem to meet the dissertation requirement of this doctoral program, issues related to instructional practices of technical college faculty became apparent as a topic for investigation because higher education institutions are placing increasing emphasis on enrolling, supporting, retaining, and engaging a diverse population of students. Low performance and increasing dropout rates among students with disabilities became an educational issue in technical colleges.

The researcher, who served 25 years as a technical college instructor, witnessed these dynamics firsthand. Faculty face the unique challenges of their growing diverse student population because of the enrollment increase among students with disabilities in higher education institutions. These challenges are magnified when students with disabilities fail to earn their college degrees, which directly impacts retention rates. The literature indicated that higher

education administrators and instructors adhered to the legal mandates and support all students' academic achievement; however, students with disabilities are nonetheless graduating at a lower rate than their peers without disabilities (Kimball et al., 2016; Kudor & Accardo, 2018; Mbuvha, 2019; Santos et al., 2019; Stevens et al., 2018). A gap in the existing literature revealed the inconsistency of accommodations that are provided to students with disabilities. Thus, the researcher of this study sought to determine which instructional practices technical college faculty provided to students with disabilities and how those supports aligned with or diverged from the best practice Universal Design for Learning framework.

The review of instructional accommodation practices contributed to the existing body of literature by revealing technical college faculty's instructional practices that were implemented to promote college completion among students with learning challenges. Several of these practices aligned with the guiding principles of Universal Design for Learning, including multiple means of engagement, representation, and multiple means of action and expression. The volume of Universal Design for Learning strategies that technical college faculty utilized in the classroom, whether knowingly or unknowingly, indicated the prevalence of Universal Design for Learning practices in accommodating students with disabilities and supporting students of different learning styles.

Although the researcher of this study did not consider the long-term success of said accommodations, the findings supported prior research that argues for Universal Design for Learning as a best practice in accommodating students with disabilities. Furthermore, the results indicated that technical college faculty were willing and able to incorporate the necessary instructional practices, which allowed students with disabilities to succeed at a postsecondary level. These results illustrated that technical college faculty were willing to diversify

instructional practices in order to accommodate students with disabilities, including modernizing instruction to include available technologies. The emergence of non-aligned supports also suggested that the Universal Design for Learning framework was limited in some areas, including environmental-based accommodations, such as individualized instruction or reasonable accommodations.

Faculty members are the central point for the academic success of students with disabilities. The findings from this study indicated a significant professional development need for faculty, in addition to a general lack of institutional support and resources. Future, current technical college faculty are experiencing a deficit regarding the knowledge and tools necessary to meet the needs of students with disabilities and enable them to succeed in meeting the goals and objectives of their college courses and the eventual completion of their graduation requirements. Based on the input from participants and the findings from the study, recommendations for future research also include increasing the number of faculty participants, diversifying the programs/disciplines, and including other types of higher education institutions. Incorporating the perspectives of students with disabilities, considering instructional observations, and investigating the transition of students with disabilities from secondary to postsecondary education were also recommended.

This research study provided professional growth by illuminating the process of conducting qualitative research, with all the ambiguities, inconsistencies, and surprises this method of inquiry embodies. Moreover, the opportunity to interview other technical college instructors was a professional growth experience that enlightened this researcher about addressing the needs of students with disabilities in technical colleges. This study, designed to explore the instructional practices that technical college faculty implemented to accommodate

students with disabilities, could also support professional growth in the teaching and learning process for all students. After receiving the doctoral degree, this researcher will seek opportunities to contribute information from this study to a broader population to enhance instructional practices in technical colleges.

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Appendices

Appendix A

Universal Design for Learning Checklist

Universal Design for Learning Checklist (Part 1)

Provide Multiple Means of Representation

1. Choose all that apply.

- I change the size of text or images
- I change the amount of speech or sound
- I change the contrast between background and text or image I change the color I used for information or emphasis
- I vary the speed or timing of video, animation, sound, simulations, etc. I change the layout of visual or other elements
- I use text equivalents such as captions or speech-to-text software (e.g. voice recognition) for spoken language
- I use visual symbols for sound effects or alerts
- I use descriptions (text or spoken) for all graphics, video, or animation I use touch/tactile graphics for key visuals
- I use physical objects and models to teach abstract concepts
- I pre-teach vocabulary and symbols such that they connect to student's life experiences and prior knowledge
- I breakdown complex expressions and highlight how they connect to student's life experiences and prior knowledge
- I provide support for vocabulary and symbols within the text (e.g., hyper-links or footnotes that provide definitions, explanations, illustrations, connections to previous knowledge.
- I decode text for students by providing automatic text to speech programs
- Whenever possible, I make key information in English also available in first languages (e.g., Spanish) for English Language learner students and in American Sign Language for students who are deaf
- I provide definitions and pronunciations for key vocabulary words in students' first languages
- I provide electronic translation tools or links to multilingual glossaries on the web
- I present key concepts in different forms (e.g. text and illustrations, photograph, video, etc.)
- I complement illustrations and diagrams with verbal explanations or enhancements
- I help students to organize material in advance using methods, such as "Know, What to Know, Learned" and concept maps
- I highlight or emphasize key elements in text, graphics, diagrams, formulas
- I use outlines, graphic organizers, unit organizer routines, concept organizer routines, and concept mastery routines to emphasize key ideas and relationships
- I use multiple examples to explain critical features
- I provide detailed prompts for each step in a sequential process
- I provide interactive models that guide exploration and inspection
- I allow for multiple entry points to a lesson and optional pathways through content I chunk

information into smaller elements

- I provide checklists, organizers, sticky notes and electronic reminders for tasks I provide opportunities for review and practice
- I provide templates graphic organizers, concepts maps to support note-taking
- I highlight new ideas in familiar ideas, contexts, analogies, and metaphors

Universal Design for Learning Checklist (Part 2)

Provide Multiple Means of Action and Expression

2. Choose all that apply.

- I vary the requirements for rate, timing, size, and range of motor action required to interact with instructional materials, physical manipulatives, and technologies
- I vary requirements for physically responding to or indicating selections among response types alternatives (e.g. marking with pen and pencil instead of a mouse)
- I provide opportunities for working with materials using hands I provide opportunities for working with materials using voice
- I provide opportunities for working with materials using a single switch (one step) I provide opportunities for working with materials using a joystick
- I provide opportunities for working with materials using a keyboard or an adapted keyboard
- I ensure that students have access to keyboard commands for required mouse actions I ensure that I provide various forms of switch (power-up, operate) options
- I make available alternatives to traditional keyboards
- I provide customized overlay for touch screens and keyboards
- I allow students to provide products using multiple media, such as text, speech, drawing, illustration, design, physical manipulatives (e.g., blocks, 3D models), film or video, multimedia (e.g., web design, story boards, comic strips), music, visual art, sculpture
- I provide opportunities for students to create models that demonstrate the same outcomes but use differing approaches, strategies, skills, etc.
- I offer differentiated feedback (e.g., feedback that is accessible because it can be customized to individual learners.)
- I model for students or demonstrate examples of the process and product of goal- setting
- I offer guides and checklists for scaffolding student's goal-setting
- I embedded prompts into material that reminds students to stop and think before acting
- I utilize peer coaches or mentors that model think-alouds of the tasks-related process I offer guides for braking long-term goals into reachable, short-term objectives
- I utilize graphic organizers and templates for collecting data and organizing information
- I offer checklists and guides for note-taking
- I provide guided questions for students to self-monitor knowledge gain
- I provide representations of progress (e.g., before and after photos, graphs and chars show progress over time)
- I offer templates that guide students' self-reflection on quality and completeness I differentiate models for students' self-assessment strategies

Universal Design for Learning Checklist (Part 3)

Provide Multiple Means of Engagement

3. Choose all that apply

- I give students as much discretion and autonomy as possible by providing choices in such things as the level of perceived challenge, type of rewards or recognition available, context or content used for practicing skills , color, design, or graphics/layouts, etc.
- I allow students to participate in the design of classroom activities and academic tasks
- I involve students, wherever possible, in setting their own personal academic and behavioral goals
- I vary activities and sources of information so that they can be personalized and contextualized to students' lives, socially relevant, age and ability appropriate for different racial, cultural, ethnic, and gender groups
- I design activities so that outcomes are authentic, communicate to real audiences, and are purposeful
- I provide tasks that allow for students to actively participate, explore, and experiment
- I invite students to provide personal responses, evaluation, and self-reflection to content and activities
- I vary the level of novelty or risk by using charts, calendars, schedules, visible timers, cues, etc., that can increase the predictability of daily activities and transitions.
- I vary the level of novelty or risk by offering options that can maximize the unexpected, surprising, or novel in highly routinized activities
- I vary the level of novelty or risk by providing alerts and previews that can help students anticipate and prepare for changes in activities, schedules, and novel events
- I vary the level of sensory stimulation by changing the presence of background noise or visual stimulation, noise buffers, optional headphones, number of features or items presented at one time
- I vary the level of sensory stimulation by changing the pace of work, length of work sessions, availability of breaks or time-outs, timing or sequence of activities
- I differentiate the social demands required for learning or performance, the perceived level of support and protection, the requirements for public display and evaluation
- I prompt or require students to explicitly formulate or restate goals
- I make use of hand-held or computer-based scheduling tools with reminders
- I utilize prompts or scaffolds that allow students to visualize desired outcomes
- I differentiate the degree of difficulty or complexity within which core activities can be completed
- I provide opportunities for collaboration
- I provide variation in the degree of freedom for acceptable performance
- I emphasize on process, effort, improvement in meeting standards as alternatives to external evaluation, performance goals and competition.
- I allow for peer tutoring and support

- I encourage the construction of virtual communities of learners engaged in common interests or activities
- I provide feedback that encourages perseverance, focuses on development of efficacy and self-awareness, and encourages the use of specific supports and strategies in the face of challenges
- I provide feedback that emphasizes effort, improvement, and achieving a standard, rather than performance
- I provide feedback that is frequent, ongoing, and presented in multiple modalities I provide feedback that is substantive and informative rather than comparative or competitive
- I provide feedback that models how to incorporate evaluation, including errors and wrong answers, into positive strategies for future success

Only one response required. Please do not submit multiple responses.
Thank you for participating in this survey!

Appendix B

Semi-Structured Interview Questions

These questions will be used by the interviewer for the semi-structured interviews. The interviewer's use of these questions will provide in-depth data on how technical college instructors implement instructional practices for accommodating students with learning challenges.

1. How do you accommodate students with learning challenges when presenting a lesson?
2. How do you increase the engagement of students with learning challenges during the instruction process?
3. What accommodation do you provide to students with learning challenges during the assessment process?
4. How do you integrate multiple intelligences in your program of studies to address students with learning challenges?
5. If you wanted to eliminate one of your instructional practices utilized to accommodate students with learning challenges, what would it be? Why?
6. What instructional practice have you found to be most effective with students with learning challenges in your classroom?
7. What recommendation do you have for future instructional practices to accommodate students with learning challenges in your program of study?
8. What recommendations do you have for accommodations to encourage retention in your program of study?
9. What recommendation do you have for professional development implemented to faculty to improve accommodating students with learning challenges?

Appendix C

Semi-structured Interview Protocol

The following interview protocol script will be used to guide the interviews to ensure that pertinent information, such as critical details about the study and contact information for additional questions and member checking, is shared.

1. Recognition that the semi-structured interview will be recorded through notes and audio, as well as transcribed,
2. Consent from the interviewer to participate in the study through Columbus State University's Institutional Review Board,
3. An opportunity for the interviewer and interviewee to provide an introduction,
4. An overview of the research and purpose of the identified data collection tool,
5. Provide questions for the semi-structured interview but remain flexible,
6. Follow up with probe questions as necessary, and
7. Provide contact information for additional questions and member checking.

Appendix D

Document Analysis Form

The researcher will use the Document Analysis Form to record examples of participants' instructional practices used to support students with learning challenges.

Participant	Course Name	Evidence of Instructional Practices for Accommodations
Participant 6	BIOL 2114	Additional office hours (availability), exam (17), final exam (2), quizzes (3), lecture (14), groupwork, discussion (12), videos. Bold text Availability for additional counseling Varied learning environment Disclosure encouragement Social emotional referrals Implementation plan for disclosed students Counseling to encourage retention Work ethics training Conducive learning environment Lecture notes availability Recordings Breaks Multiple means of representation Collaboration YouTube Rubric Project=based learning (2) Blackboard
Participant 12	BUSN 1190	MindTap, Video (16), computer training (11) Work ethics training Student success services for additional help Free academic support Tutoring services for academic learning Blackboard Spontaneous visits to the instructor as needed Small groups learning environment Advocacy for academic success and retention Student advisement for retention Life lab support services Career counseling Disabilities and Special population referrals
Participant 7	CIST 2362	Teacher Availability for conferences, counseling (3), final exam (3), Labwork, practical test, test (4) Blackboard (5), theory test Referrals for additional learning support

		Lecture notes for review Outlines of required learning materials Multi-media presentations Tutoring services for struggle students (8) Student support services for additional help writing lab referrals – Academic Enhancement counseling services referrals safety promotions special population referrals transitioning assistance Intervention referrals One-on-one instruction Work ethics training Productive learning environment
Participant 11	COSM 1010	Blended learning, Discussion, Exam (2), Final exam (2), online-objective exams (2), performance-based exam (2), written exams (2), Labs (2) Lecture Internships Clinicals Different learning modalities Interactive tutorials Computer assisted instructions Written or online assessments Performance based learning Invite students to actively set goals Promote student accountability Promote active participation Encourage use of institutional resources Encourage use of institutional accommodations Provide work ethics training Promote career development Offer tutoring Retrain for employment proficiency
Participant 10	DHYG 2089	Lecture notes, presentation, quiz (3), pop quiz, exam (5), final exam Outlines PowerPoints Paper assignments Class discussions Breaks Tutoring Online sessions In person sessions Blackboard

		Promote safety Promote student wellbeing Invite students to participate in academic goals-setting Retrain for employment proficiency
Participant 2	ECCE 2115	Project based learning (2), quiz, test (2) exam, make, exams, work, webcam (7), computer (2), Respondus (5), tutoring, practice exam, websites, work ethics, project Retrain for employment proficiency, Blackboard, final exam Video (2) Practice exams Exams Encourages disclosure Websites Blackboard Student presentations
Participant 3	PARA 1100	Writing assignments, final exam, research assignment Exams, Microsoft Office 365, MS Teams, tutoring (4), counseling (5), health and safety, definitions (2), peer review (7), test, final, counseling (5) Terminology project Class discussions (28) Black board Guidelines and Rubrics Positive learning environment Promotes increased engagement Provide alternative learning versions Provide engaging learning experiences Open discussions to give students a voice Email Reading assignments Quizzes (15) Videos (5) Work ethics training Retraining for employment proficiency Promotes safe learning environment
Participant 5		Research project (5), written objective exam, online exam, performance-based exam, final exam, tests, discussion, research paper Blended environment Promote active participation in goal-setting (2) Promote accountability. Promote career planning Provide work ethic training Blackboard Tutoring Retrain for employment proficiency

		Encourage disclosure
Participant 4		Lectures, health and safety(2), health (2), MS Word Demonstration, exam (13) Hands-on Experimentation Blackboard Video Rubric Case studies Projects (2) Extended time Tutoring Additional support Encourages disclosure Practice reviews (9) Safe environment (3) Discussion boards (2) Terms and key concepts (8)
Participant 8		Labs (6), MS Office 365, Webcam (4), Technology, counseling Blackboard (4) Websites Lectures (14) Discussions Small group (17) Demonstration (17) Practice quizzes Clinical experiences Review (18) Respondus(5) Exams (18) Work ethics training Breaks Promote safe environment Alternate instructional method Computerized instruction DVDs Videos Practice skill Checklists Resubmission Retakes Retraining for employment proficiency
Participant 9		Readings, exam, discussion, quiz (3), midterm exam (6), final exam, health and safety (2),

		Discussions Cultural relevance Trending topics Pop quizzes Blackboard Tutoring Retraining for employment proficiency
Participant 1		Discussions (10), quiz (2), final exam (2), lit review Application journal Research assignment Resubmission Do over (4) Retraining for employment proficiency

Appendix E

IRB Approval

COLUMBUS STATE UNIVERSITY

Andrea Ingram [Student] <ingram_andrea1@columbusstate.edu>

Exempt Approval: Protocol 23-016

CSU IRB <irb@columbusstate.edu> Mon, Nov 7, 2022 at 1:39 PM
To: "Andrea Ingram [Student]" <ingram_andrea1@columbusstate.edu>, "Jennifer L. Brown" <brown_jennifer2@columbusstate.edu>
Cc: CSU IRB <irb@columbusstate.edu>, Institutional Review Board <instituional_review@columbusstate.edu>

Institutional Review Board
Columbus State University

Date: 11/7/2022
Protocol Number: 23-016
Protocol Title: The Improving the Academic Success of Technical College Students with Disabilities: A Multisite Descriptive Case Study
Principal Investigator: Andrea Ingram
Co-Principal Investigator: Jennifer Brown

Dear Andrea Ingram:

The Columbus State University Institutional Review Board or representative(s) has reviewed your research proposal identified above. It has been determined that the project is classified as exempt under 45 CFR 46.101(b) of the federal regulations and has been approved. You may begin your research project immediately.

Please note any changes to the protocol must be submitted, using a Project Modification form, to the IRB before implementing the change(s). Any adverse events, unexpected problems, and/or incidents that involve risks to participants and/or others must be reported to the Institutional Review Board at irb@columbusstate.edu or (706) 507-8634.

If you have further questions, please feel free to contact the IRB.

Sincerely,

Sammy Kanso, Graduate Assistant

Institutional Review Board
Columbus State University

*** Please note that the IRB is closed during holidays, breaks, or other times when the IRB faculty or staff are not available. Visit the **IRB Scheduled Meetings** page on the IRB website for a list of upcoming closures. ***

Appendix F

Letter to the Technical College System

Date

Dear Administrator,

I am a doctoral candidate at Columbus State University, and I am completing a study to fulfill requirements for graduation. The title of my study is *Improving the Academic Success of Technical College Students with Disabilities: A Multisite Descriptive Case Study*. The purpose of the research study is to explore the instructional practices implemented by technical college educators to accommodate students with learning challenges.

I will interview instructors at eight of your colleges: Central Georgia Technical, West Georgia Technical College, South Georgia Technical College, Albany Technical College, Chattahoochee Technical College, and Wiregrass Technical College. The Technical College System of Georgia was selected because instructors have years of experience in teaching students with learning challenges at the technical college level. The interviews will be used to generate information on instructor's instructional practices in accommodating students with learning challenges. Instructors will be asked to complete the Universal Design for Learning Checklist, participate in a semi-structured interview, and submit a copy of a current syllabus for document analysis.

Participation in this research will be voluntary and confidential. At the end of this study, it would be a pleasure for me to disseminate my findings to the Technical College System Disabilities Services Department and participating colleges. The findings may be useful for improving the retention rate and academic success of technical college students with learning challenges.

For questions, please contact me by phone (229-942-9518) or email (ingram_andrea1@columbusstate.edu).

Sincerely,

Andrea Ingram
Doctoral Candidate, Columbus State University

Appendix G

System Approval Letter

<LOGO>

[redacted]
Governor

[redacted]
Commissioner

November 10, 2022

Ms. Andrea Ingram
207 Maple Street
Americus, GA 31719

Dear Ms. Ingram:

The [redacted] has received the forms and documentation related to your intended dissertation research study entitled *"Improving the Academic Success of Technical College Students with Disabilities: A Multisite Descriptive Case Study"*. We have reviewed the summary of your research, and the IRB approval letter from Columbus State University.

In accordance with the [redacted] IRB process, as well as the documents you submitted to [redacted] with regard to the parameters and intent of your study, we authorize you to continue with the research project at the following technical colleges:
[redacted] Technical College, [redacted] Technical College, [redacted] Technical College, [redacted] Technical College, [redacted] Technical College, and [redacted] Technical College.

This approval is contingent upon your receipt of approvals from the college presidents of the above listed institutions. The following stipulations apply to this authorization. Your research should be conducted at times that do not interfere with the schedules of the faculty. No [redacted] resources may aid you in your research.

Please make it clear to participants that the study is a personal venture associated with your doctoral studies independent of [redacted] and that participation in the study is strictly voluntary.

A copy of this letter will be emailed to the IE Leadership at the six colleges included in your study. If you have any questions, please do not hesitate to contact me. I may be reached at [redacted]

Sincerely,

[redacted]
Executive Director Accountability and Institutional Effectiveness

cc: [redacted]

[redacted]

Appendix H

Email to College Presidents

Date

Dear President (Name),

I am a doctoral candidate at Columbus State University and am completing a study to fulfill the requirements for graduation. The title of my study is Improving the Academic Success of Technical College Students with Disabilities: A Multisite Descriptive Case Study. The purpose of the research study is to explore the instructional practices implemented by technical college educators to accommodate students with disabilities.

I am requesting permission to interview instructors at South Georgia Technical College. Your college was selected because your instructors have years of experience in teaching students with disabilities at the technical college level. I would like to interview instructors to gather information on their instructional practices in accommodating students with disabilities. Instructors will be asked to complete the Universal Design for Learning Checklist, participate in a semi-structured interview, and submit a copy of a current syllabus for document analysis.

Participation in this research will be voluntary and confidential. At the end of this study, it would be a pleasure for me to disseminate my findings to the Technical College System Disabilities Services Department and participating colleges. The findings may be useful for improving the retention rate and academic success of technical college students with learning challenges, including disabilities.

The TCSG Institutional Review Board (IRB) requires approval letters from the college presidents to complete the application process. If I am granted permission to conduct this study, please promptly send me a written response to attach to my TCSG IRB application, as time is of the essence. For questions, please contact me by phone (229-942-9518) or email (ingram_andrea1@columbusstate.edu).

Sincerely,

Andrea Ingram

Doctoral Candidate Columbus State University

Appendix I

Sample President Approval Email

[redacted]
President

November 10, 2022

To Whom It May Concern:

Please note that Ms. Andrea Ingram, Graduate Student at Columbus State University, has the permission of [redacted], to conduct research at our [redacted] campus and our [redacted] campus for her study, "Improving the Academic Success of Technical College Students with Disabilities: A Multisite Descriptive Case Study."

Ms. Ingram will interview select instructors at SGTC to gather information on their instructional practices in accommodating students with disabilities. Instructors will be asked to complete the Universal Design for Learning Checklist, participate in a semi-structured interview, and submit a copy of a current syllabus for document analysis.

Ms. Ingram has agreed to keep the instructor's identity confidential and instructor participation in the study will be completely voluntary. Ms. Ingram has also agreed to provide my office a copy of any aggregate results.

If there are any questions, please contact my office.

Sincerely,

_____
President

[redacted]

Appendix J

Follow-up Email to College Presidents

Date

Dear President,

I am following up on an email I sent last Thursday, requesting approval to conduct my research study at your school. As mentioned in the previous email, I am a doctoral candidate at Columbus State University and am completing a study to fulfill the requirements for graduation. The title of my study is Improving the Academic Success of Technical College Students with Disabilities: A Multisite Descriptive Case Study. The purpose of the research study is to explore the instructional practices implemented by technical college educators to accommodate students with disabilities.

I am requesting permission to interview instructors at your college to gather information on their instructional practices in accommodating students with disabilities. Instructors will be asked to complete the Universal Design for Learning Checklist, participate in a semi-structured interview, and submit a copy of a current syllabus for document analysis.

Participation in this research will be voluntary and confidential. At the end of this study, it would be a pleasure for me to disseminate my findings to the Technical College System Disabilities Services Department and participating colleges. The findings may be useful for improving the retention rate and academic success of technical college students with learning challenges, including disabilities.

The TCSG Institutional Review Board (IRB) has granted me permission to conduct my study contingent on your approval. I have attached a copy of the letter for your review. Please promptly send me a written response to attach to my TCSG IRB application, as time is of the essence. For questions, please contact me by phone (229-942-9518) or email (ingram_andrea1@columbusstate.edu).

Sincerely,

Andrea Ingram

Doctoral Candidate Columbus State University

Appendix K

Initial Recruitment Email

Date

Dear Instructor,

I am inviting you to participate in a qualitative study to support my research as a doctoral candidate at Columbus State University. The title of my study is *Improving the Academic Success of Technical College Students with Disabilities: A Multisite Descriptive Case Study*. The purpose of the research study is to explore the instructional practices implemented by technical college educators to accommodate students with learning challenges.

You were selected for this study because you have years of experience in teaching students with learning challenges at the technical college level. I would like for you to provide information on your instructional practices in accommodating students with learning challenges. You will be asked to complete the Universal Design for Learning Checklist, participate in a semi-structured interview, and submit a copy of a current syllabus for document analysis.

The data that are collected will be used to complete requirements for graduation purposes at Columbus State. Your participation in this research will be voluntary and confidential. At the end of the study, all participants will be given $10 Walmart gift cards as incentives for their time and service. I would love for you to complete the study, but if you choose to leave before the study ends, you may do so without penalty.

If you are willing to participate in this study, please let me know by email within one week of receipt of this email. In your response, please include the number of years you have been teaching at the postsecondary level.

For questions, please contact me via telephone (229-942-9518) or email (ingram_andrea1@columbusstate.edu).

Sincerely,

Andrea Ingram
Doctoral Candidate, Columbus State University

Appendix L

Follow-up Recruitment Email

Date

Dear Instructor,

This email is a follow up to the invitation you received inviting you to participate in a qualitative study to support my research as a doctoral candidate at Columbus State University. The title of my study is *Improving the Academic Success of Technical College Students with Disabilities: A Multisite Descriptive Case Study*. The purpose of the research study is to explore the instructional practices implemented by technical college educators to accommodate students with learning challenges.

It is important for me to hear from you immediately in order to begin phase I of the study. As noted in the previous email, the data that are collected will be used to complete requirements for graduation purposes at Columbus State University. Your participation in this research will be voluntary and confidential. At the end of the study, all participants will be given $10 Walmart gift cards as incentives for their time and service. I would love for you to complete the study, but if you choose to leave before the study ends, you may do so without penalty.

If I do not hear from you within one week from receipt of this email, I will assume that you are not interested in participating. For questions, please contact me via telephone (229-942-9518) or email (ingram_andrea1@columbusstate.edu).

Sincerely,

Andrea Ingram
Doctoral Candidate, Columbus State University

Appendix M

Rejected Participant Thank You Email

Date

Dear (Participant Identifier)

This email is a follow up to the invitation you received inviting you to participate in a qualitative study to support my research as a doctoral candidate at Columbus State University. The title of my study is *Improving the Academic Success of Technical College Students with Disabilities: A Multisite Descriptive Case Study*. Thank you for your willingness to participate in my study. However, I have reached the maximum number of participants, and your service will no longer be needed. Thank you for your willingness to participate.

Sincerely,

Andrea Ingram

Doctoral Candidate, Columbus State University

Appendix N

Participant Thank You Email

Date

Dear (Participant Name)

Thank you for your willingness to participate in my study. A link to the Google Form is enclosed. The Google Form includes the consent form required to participate in the study. Once you have consented, you will be asked to complete the Universal Design for Learning Checklist. The form will also include a schedule for semi-structured interviews and a link to upload a recent course syllabus.

Please respond to the request to consent, complete the Google Form according to prompts, select a date and time for your semi-structured interview, and upload your syllabus. A follow up email will be sent to confirm the preferred date and time of your semi-structured interview, along with interview questions, the interview protocol, and the link for connecting to the Zoom meeting.

If you have any issues with completing the form or uploading your syllabus, please contact me via phone (229-942-9518) or email (ingram_andrea1@columbusstate.edu).

Thank you for volunteering to participate in this research study.

Sincerely,

Andrea Ingram
Doctoral Candidate, Columbus State University

Appendix O

Informed Consent

You are being asked to participate in a research project conducted by Andrea Ingram, a student in the College of Education and Health Professions at Columbus State University. This student-led project is supervised by Dr. Jennifer Brown.

I. Purpose:

The purpose of this project will be to explore the instructional practices implemented by technical college educators to accommodate students with learning challenges.

II. Procedures:

This study will be divided into three phases: 1) Completing the Universal Design for Learning Checklist, which will take approximately 20 to 30 minutes; 2) Participating in the semi-structured interview that will not exceed 45 minutes; and 3) submitting a copy of a current course syllabus for document analysis, which will take approximately one minute. The participant's total time commitment to the study from the beginning to the end of their involvement, including member checking, will not exceed 90 minutes.

1. Participants will select a link to a Google form within the recruitment email to complete the consent form, answer demographic questions, schedule semi-structured interviews, upload a course syllabus, and complete the Universal Design for Learning Checklist.
2. Participants will be sent an email to confirm the date and time of their semi-structured interview based on their responses in the Google Form.
3. Participants will receive a reminder email that will be sent a day before the scheduled interview, providing a Zoom link for connecting to the interview.
4. Participants will engage in semi-structured interviews via Zoom that will not exceed 45 minutes.
5. Each interview's audio will be transcribed using Zoom live transcript.
6. Participants will engage in member checking to determine the accuracy of their transcript.
7. Data will be manually coded by searching for patterns and categories in the data gathered from semi-structured interviews and document analyst, exploring similarities in the participants' responses, and recognizing patterns and categories in initial codes on the interview transcripts and course syllabi.

The data could be utilized for future research projects.

III. Possible Risks or Discomforts:

There are no possible risks or discomforts that are expected from participating in this study. The PI will provide her email address and phone number to minimize frustrations that may arise from working with technology and provide technical support if needed.

IV. Potential Benefits:

The potential benefits to the participants as a direct result of this project will be increased awareness of the need of instructional practices to improve the academic success of students with learning challenges and becoming acquainted with the Universal Design for Learning framework.

Improve instruction and the academic success at technical college level for students with learning challenges, such as making the instructional process more accommodating and promoting obtainment of skills and credentials that lead to positive social change and a higher quality of life will be a potential benefit for the practitioner community.

V. Costs and Compensation:

There are no costs associated with this study. Participants who complete all three phases of the study will be given a $10 Wal-Mart gift card.

VI. Confidentiality:

The electronic data from this study will be stored on the PI's password-protected home computer and in the PI's CSU Google account. Data will be stored for five years and, after which, the electronic files will be deleted permanently from all computer devices.

The Google Form will be created under the PI's CSU student account, which is password-protected and secured with multi-factor authentication. Further, Google Forms does not allow tracking of respondents' IP addresses. Protection during semi-structured interviews will be guaranteed by the PI's password-protected Zoom account that will be utilized during data collection. IP addresses will not be collected during the Zoom interviews.

Participants will enter their names when completing the checklist, but pseudonyms for analysis will be generated for confidentiality. The PI will create a table to link participants' names with their pseudonyms. The participants' names and email addresses will be deleted from the data spreadsheet after creating the pseudonyms. The PI will use pseudonyms to code the interview transcripts and course syllabi. Course syllabi will be de-identified by deleting the instructor's name, email address, office location, and phone number, and linking the participants' names with their pseudonyms.

VII. Withdrawal:

Your participation in this research study is voluntary. You may withdraw from the study at any time, and your withdrawal will not involve penalty or loss of benefits.

For additional information about this research project, you may contact the Principal Investigator, Andrea Ingram, at (229) 942-9518 or ingram_andrea1@columbusstate.edu. If you have questions about your rights as a research participant, you may contact Columbus State University Institutional Review Board at irb@columbusstate.edu.

I have read this informed consent form. If I had any questions, they have been answered. By selecting the *I agree* radial and *Submit*, I agree to participate in this research project.

- ○ I agree.
- ○ I do not agree.

Appendix P

Participant Demographic Survey

What is your First Name?

What is your Middle Initial?

What is your Last Name?

What is your gender?

- Male
- Female

What is your Ethnicity?

- Caucasian
- African American
- Latino
- Asian
- Other:

Have you ever worked with students with disabilities at the postsecondary level?

- Yes
- No

How many years of experience do you have working with students with disabilities at the postsecondary level?

- 1 year
- 2 years
- 3 years
- 4 years
- 5 years
- 5+ years

What is your employment status?

- Full-Time
- Part-Time (Adjunct)

In what program do you teach?

What is your institutional email address?

Appendix Q

Semi-structured Interview Notification

Date

Dear (Participant Name)

This email is meant to confirm the date and time for your semi-structured interview, according to the information you provided.

Setting: Zoom

Date:

Time:

Please see the attached interview protocol script and interview questions. A follow-up email will be sent a day before your scheduled interview. The email will include the link for connecting to the Zoom meeting.

If you have any questions or need to change this scheduled interview, I will be glad to make accommodations. Please contact me via phone (229-942-9518) or email (ingram_andrea1@columbusstate.edu).

Again, thank you for volunteering to participate in this research study.

Sincerely,

Andrea Ingram
Doctoral Candidate, Columbus State University

Appendix R

Semi-structured Interview Reminder

Date

Dear (Participant Name)

This email is a reminder of the date and time of your semi-structured interview.

Setting: Zoom

Date:

Time:

The Zoom link is below:

[Zoom link]

If you have any difficulties connecting, please contact me by phone (229-942-9518) or email (ingram_andrea1@columbusstate.edu).

Again, thank you for volunteering to participate in this research study.

Sincerely,

Andrea Ingram
Doctoral Candidate, Columbus State University

Appendix S

Member Checking Email

Date:

Participant's Name,

Thank you for participating in my study, *Improving the Academic Success of Technical College Students with Disabilities: A Multisite Descriptive Case Study*. I have attached a transcription of your interview for Member checking. Member checking will allow you to review your responses for accuracy of thought and data quality. You can verify, clarify, or elaborate on your answers to the nine interview questions. Only worry about sentence structure or grammar if a statement doesn't reflect your intended response. Once you have reviewed your transcription, please email the document to ingram_andrea1@columbusstate.edu.

If any corrections need to be made, I will make the corrections and resend the corrected transcription.

Please send corrections to the transcription by (Date).

Sincerely,

Andrea Ingram
Doctoral Candidate, Columbus State University

Appendix T

Universal Design for Learning Checklist Items Frequency Counts

Universal Design for Learning Principle	*n*	%
Multiple Means of Representation Checklist Item		
● I provide opportunities for review and practice	10	83
● I change the size of text or images	9	75
● I change the color I used for information or emphasis	9	75
● I breakdown complex expressions and highlight how they connect to student's life experiences and prior knowledge	9	75
● I use multiple examples to explain critical features	8	67
● I present key concepts in different forms (e.g. text and illustrations, photograph, video, etc.)	8	67
● I highlight new ideas in familiar ideas, contexts, analogies, and metaphors	8	67
● I highlight or emphasize key elements in text, graphics, diagrams, formulas, I use multiple examples to explain critical features	7	58
● I change the amount of speech or sound	2	17
● I change the contrast between background and text or image	5	42
● I vary the speed or timing of video, animation, sound, simulations, etc.	2	17
● I change the layout of visual or other elements	4	33
● I use text equivalents such as captions or speech-to-text software (e.g. voice recognition) for spoken language	4	33
● I use visual symbols for sound effects or alerts	0	0
● I use descriptions (text or spoken) for all graphics, video, or animation	5	42
● I use touch/tactile graphics for key visuals	1	8
● I use physical objects and models to teach abstract concepts	4	33
● I pre-teach vocabulary and symbols such that they connect to student's life experiences and prior knowledge	2	17
● I provide support for vocabulary and symbols within the text (e.g., hyper-links or footnotes that provide definitions, explanations, illustrations, connections to previous knowledge.	5	42
● I decode text for students by providing automatic text to speech programs	1	8
● Whenever possible, I make key information in English also available in first languages (e.g., Spanish) for English Language learner students and in American Sign Language for students who are deaf	1	8
● I provide definitions and pronunciations for key vocabulary words in students' first languages	2	17
● I provide electronic translation tools or links to multilingual glossaries on the web	1	8

Universal Design for Learning Principle	*n*	%
● I complement illustrations and diagrams with verbal explanations or enhancements	6	50
● I help students to organize material in advance using methods, such as "Know, What to Know, Learned" and concept maps	3	25
● I use outlines, graphic organizers, unit organizer routines, concept organizer routines, and concept mastery to emphasize key ideas and relationships	3	25
● I provide detailed prompts for each step in a sequential process	6	50
● I provide interactive models that guide exploration and inspection	1	8
● I allow for multiple entry points to a lesson and optional pathways through content	1	7
● I chunk information into smaller elements	4	33
● I provide checklists, organizers, sticky notes and electronic reminders for tasks	5	42
● I provide templates graphic organizers, concepts maps to support notetaking	5	42
Multiple Means of Engagement Checklist Item		
● I design activities so that outcomes are authentic, communicate to real audiences, and are purposeful	9	75
● I provide tasks that allow for students to actively participate, explore, and experiment	11	92
● I invite students to provide personal responses, evaluation, and self-reflection to content and activities	9	75
● I vary the level of sensory stimulation by changing the pace of work, length of work sessions, availability of breaks or time-outs, timing or sequence of activities	6	50
● I provide opportunities for collaboration,	10	83
● I allow for peer tutoring and support	9	75
● I provide feedback that encourages perseverance, focuses on development of efficacy and self-awareness, and encourages the use of specific supports and strategies in the face of challenges,	8	67
● I provide feedback that emphasizes effort, improvement, and achieving a standard, rather than performance	8	67
● I provide feedback that is substantive and informative rather than comparative or competitive	9	75
● I provide feedback that models how to incorporate evaluation, including errors and wrong answers, into positive strategies for future success	8	67
● I give students as much discretion and autonomy as possible by providing choices in such things as the level of perceived challenge, type of rewards or recognition available, context or content used for practicing skills, color, design, or graphics/layouts, etc.	6	50
● I allow students to participate in the design of classroom activities and academic tasks	4	33

Universal Design for Learning Principle	*n*	%
● I involve students, wherever possible, in setting their own personal academic and behavioral goals	6	50
● I vary activities and sources of information so that they can be personalized and contextualized to students' lives, socially relevant, age and ability appropriate for different racial, cultural, ethnic, and gender groups	3	25
● I vary the level of novelty or risk by using charts, calendars, schedules, visible timers, cues, etc., that can increase the predictability of daily activities and transitions.	4	33
● I vary the level of novelty or risk by offering options that can maximize the unexpected, surprising, or novel in highly routinized activities	2	17
● I vary the level of novelty or risk by providing alerts and previews that can help students anticipate and prepare for changes in activities, schedules, and novel events	3	25
● I vary the level of sensory stimulation by changing the pace of work, length of work sessions, availability of breaks or time-outs, timing or sequence of activities	2	17
● I differentiate the social demands required for learning or performance, the perceived level of support and protection, the requirements for public display and evaluation	3	25
● I prompt or require students to explicitly formulate or restate goals	1	8
● I make use of hand-held or computer-based scheduling tools with reminders	2	17
● I utilize prompts or scaffolds that allow students to visualize desired outcomes	0	0
● I differentiate the degree of difficulty or complexity within which core activities can be completed	3	25
● I provide variation in the degree of freedom for acceptable performance	2	17
● I emphasize on process, effort, improvement in meeting standards as alternatives to external evaluation, performance goals and competition.	2	17
● I encourage the construction of virtual communities of learners engaged in common interests or activities	6	50
● I provide feedback that is frequent, ongoing, and presented in multiple modalities	6	50
Multiple Means of Actions and Expressions Checklist Item		
● I offer checklists and guides for notetaking	7	58
● I offer differentiated feedback	6	50
● I provide opportunities for working with materials using hands	6	50
● I vary the requirements for rate, timing, size, and range of motor action required to interact with instructional materials, physical manipulatives, and technologies	4	33
● I offer guides and checklists for scaffolding student's goal setting	4	33

Universal Design for Learning Principle	*n*	%
● I vary requirements for physically responding to or indicating selections among response types alternatives	3	25
● I provide opportunities for working with materials using voice	3	25
● I provide opportunities for working with materials using a single switch	2	17
● I provide opportunities for working with materials using a keyboard or an adapted keyboard	3	25
● I ensure that students have access to keyboard commands for required mouse actions	3	25
● I make available alternatives to traditional keyboards	1	8
● I provide customized overlay for touch screens and keyboards	0	0
● I allow students to provide products using multiple media, such as text, speech, drawing, illustrations, design, physical manipulative (e.g., blocks, 3D models), film or video, multimedia (e.g., web design, story boards, comic strips), music, visual art, sculpture	5	42
● I provide opportunities for students to create models that demonstrate the same outcomes but use differing approaches, strategies, skills etc	5	42
● I embedded prompts into material that reminds students to stop and think before acting	2	17
● I utilize peer coaches or mentors that model think-alouds of the tasks-related process	2	17
● I offer guides for breaking long-term goals into reachable, short-term objectives	4	33
● I utilize graphic organizers and templates for collecting data and organizing information	1	8
● I provide guided questions for students to self-monitor knowledge gain	5	42
● I provide representations of progress (e.g., before and after photos, graphs and charts show progress over time)	1	8
● I offer templates that guide students' self-reflection on quality and completeness	2	17
● I differentiate models for students' self-assessment strategies	2	17

Appendix U

Inductive Data-Driven Coding for Semi-Structured Interviews

Codes	Categories	Themes	Examples of Semi-structured interview Quotes	Participant	Page/Line
Controlled language, different methods, different ways, breakdown, key points, chunks, definitions, start small and grow, terminology	Building Knowledge	Multiple Means of Representation	"I try to use many methods of communicating information."	Participant 1	1/9
			"Break down and read and then I will try to point to the particular main key point."	Participant 12	4/144-145
Relatable scenarios, many methods, relatable examples, different ways, tangible examples, real world examples, timeless test, different font styles and color. varied teaching styles scrambled classroom flipped classroom, provide backstories, connect to prior knowledge, Project-based learning, demonstration, lecture, lab, practice and review, study guides, provide caption and transcripts, Presentations, case studies	Instructional Strategies		"I use real world examples."	Participant 1	1/11
			"…giving them a scenario related to something they are familiar with"	Participant 2	1/15-16
			"I create a lot of my own Prezi."	Participant 2	1/14
			"I give them review guides."	Participant 6	2/49
Collaboration, peer tutoring, group projects, partnering, small group, group work, class discussions, cohort	Group Activities	Multiple Means of Engagement	"We actually work through problems together"	Participant 2	1/24
			"I found that students understand from another peer."	Participant 7	1/29-30
Exemplars, rubric, scenarios, examples	Guided Learning		"I've provided an exemplar from a previous student. They've got their	Participant 2	1/36

Codes	Categories	Themes	Examples of Semi-structured interview Quotes	Participant	Page/Line
			rubric with very specific directions on it."		
			"we go by rubric when the students are doing their tasks."	Participant 11	3/94-95
Age and ability appropriate, contextual to student's lives, self-reflection, self-evaluation, personal, sensory stimulation, breaks and time outs	Personalized Learning		"I like that, we do self-evaluation on the students… we have them do that because it's almost like they're grading themselves to see if they feel like they're up to par."	Participant 10	5/152-153
			"…students are off task, we stop, we break, and then we come back."	Participant 11	2/63
Positive feedback, frequent feedback, detailed feedback, differentiated feedback, individualized feedback	Effective Feedback		"I increase the engagement simply by giving positive feedback."	Participant 4	2/52
			"I might give them feedback detail feedback on if they miss something."	Participant 7	1/39
Hands-on, different approaches, different keyboards, physical test	Physical Action	Multiple Means of Action and Expression	"I like to use a lot of hands-on labs."	Participant 7	1/40-41
			"… different type of keyboard or a mouse sometimes that helps with students with their learning disabilities."	Participant 7	3/88
Artistic opportunities, Drawings, music production, song creation, role playing, art	Artistic Expression		"The role-playing activity… It's about role expression, and we're talking about how you behave in the cafeteria versus… a job interview."	Participant 1	2/73-75
			"I try to make sure that I include you know artistic opportunities. You know, to draw or produce something, you know music."	Participant 2	4/138-139

Codes	Categories	Themes	Examples of Semi-structured interview Quotes	Participant	Page/Line
Video responses, paintbrush, recordings, presentations	Expression through Technology		"I allow them to make TikTok videos."	Participant 5	1/34
			"So, in every class that I teach, I have a presentation [assignment]"	Participant 10	1/31
Films, movies, YouTube, websites, videos, TikTok, talking audio	Use of Digital Media	Technology Utilization	"They need the transcripts and things of that nature, and I try to use YouTube."	Participant 1	3/84-85
			"So, I will guide them to different websites, YouTube videos to help them with the program."	Participant 7	1/31
Games, clickers, Kahoot, Solitaire	Use of Gamification		"I provide a Kahoot review and the other bonus opportunities."	Participant 1	2/52
			"We do games. I love Clickers."	Participant 8	1/26-27
PowerPoint, Prezi, Speechify, Ally, MindTap	Use of Application Software		"They also have copies of my lectures and PowerPoints."	Participant 1	4/124
			"I also send the students a PowerPoint…"	Participant 10	1/16
Instructor tutoring, one-on-one, individualized instruction	Individualized Instruction	Student Focused Instruction	"We try to accommodate every student, so basically one-on-ones with that student."	Participant 11	2/52-53
			"More one-on-one, sitting by them, help them dissect the lab instructions."	Participant 12	2/42
Extended time, notetakers, voice recordings, quiet environment, time and a half, translators, accommodation plan, readers, assistive devices, seating arrangement	Reasonable Accommodations		"I will make whatever accommodations… whether it be sitting directly in front of me, so that they can actually see my lips when I speak when I teach."	Participant 6	1/16-18
			"I've had students at have had visual needs, being	Participant 9	1/11-12

Codes	Categories	Themes	Examples of Semi-structured interview Quotes	Participant	Page/Line
			able to take notes, having a tutor."		
Availability, flexibility, build confidence, develop relationships, counseling, make students feel wanted, check-ins, reach out, student comfort, open door, communication	Student Well-being		"I try to pair them up to make them feel a little bit comfortable answering the questions."	Participant 7	2/46-47
			"Making them feel wanted on campus giving them activities, implementing programs or to keep them actually actively engage."	Participant 9	8/295-297
Formative assessments, summative assessments, application assessments, computerized assessments, written assessments, theory-based assessments	Student Assessment		"The vast majority, of my assessments, are written assessments."	Participant 6	5/165
			"You know we have our formal assessment of the unit exams."	Participant 8	2/57-58
Very satisfied, pretty satisfied, confident in content, doing what supposed to be done, doing the very best, not satisfied, meeting the requirements, meeting the needs, continue current practices	Level of Satisfaction	Instructor Satisfaction	"I'm pretty satisfied."	Participant 2	4/125
			"I feel very satisfied with what I'm doing."	Participant 5	5/174
Room to grow, can do more, room for improvement, not versed, open to other methods, don't know, unaware, need new ways, need different ways, not equipped	Need for Change		"Definitely room for improvement"	Participant 6	2/244
			"Just unaware of all the things that I probably could be doing"	Participant 12	4/134-135
Mandatory PD, training, multiple intelligence training, personal learning communities, staff development, coping	Professional Development	Improving Instructional Practices	"Professional development needs to be focused on how to teach students, because you can be the smartest engineer, but do you know how to	Participant 5	7/249-250

Codes	Categories	Themes	Examples of Semi-structured interview Quotes	Participant	Page/Line
with mental health workshops, how to teach, best practices, new learning processes, what to look for, recognize signs of disability			convey that to the students"		
			"I would like to [say]… all of the instructors need to take this at least one professional development class on disability."	Participant 7	5/195
Transcription technology, artificial intelligence, digital learning tools, MindTap, technology tools, move with the times, statewide systematic program, social media, meta tools, virtual technology	Modern Technology and Resources		"I would like say technology, transcription technology."	Participant 1	3/99
			"Mind tap… I'm telling that [it] would help anyone"	Participant 11	6/216-217
Be proactive, support without students asking, address need before known, approach teaching in multiple ways, mandate UDL. Feedback, hands-on, engagement, small group, flexible	Make Courses UDL Friendly		"We need to have a better understanding of proactively meeting needs"	Participant 2	5/168
			"You can't just be one dimensional in teaching…I gotta get all the different types of learners, and some can hear it they do well, some have to see it some got to hear and see. But I gotta be able to all of it."	Participant 5	6/202-203
Nondisclosure, language barriers, students left behind, theory test elimination, fairness, equity, underprepared students, undiagnosed students, far-removed decision makers	Noninstructional Concerns		"Provide a more structured environment with better assessment, because I don't think it's [core classes] challenging the students enough, and when they come into the nursing program, it's shell shock for them"	Participant 8	6/231-232
			"So, unless they self-disclose which a lot of times they want to put that behind them the instructors have no idea that there's a problem"	Participant 10	5/170-171

Appendix V

Themes Derived from Document Analysis Related to RQ1

Codes	Categories	Themes
different font styles, different color Project-based learning, demonstration, lecture, lab, practice and review, presentations, case studies, blended learning, clinicals	Instructional Strategies	Multiple Means of Representation
Collaboration, small group, group work, class discussions, goal setting	Group Activities	Multiple Means of Engagement
Rubric, tutoring, feedback	Guided Learning	
Hands-on, experimentation, checklist	Physical Action	Multiple Means of Action and Expression
Student presentations, peer reviews	Artistic Expression	
YouTube, websites, videos, webcam, email, computer, DVD	Use of Digital Media	Technology Utilization
MS Office 365, Blackboard, Respondus,	Use of Application Software	
one-on-one,	Individualized Instruction	Student-focused Instruction
Extended time recordings, reasonable, accommodation plan	Reasonable Accommodations	
Availability, counseling, social emotional referral, check-ins, reach out, open door, work ethics, advisement	Student Well Being	
Exams, quiz, test, written assessments, theory-based assessments, performance-based	Assessing Students	