RESEARCH ARTICLE

PERCEPTIONS OF STEM FACULTY ON TRAINING NEEDS TO SUPPORT STUDENTS WITH DISABILITIES IN DISTANCE LEARNING

Johnson Omosule and Beverly Barksdale

……………………………………………………………………………………………………....

Manuscript Info	*Abstract*

There is a need to understand how science, technology, engineering, and mathematics (STEM) faculty and support staff perceive the benefits of training in improving their ability to provide accessible services to students with disabilities (SWD). The purpose of this qualitative phenomenological study was to explore how STEM academic faculty and support staff perceive their training requirements for accommodating SWD in distance learning classrooms. The researcher explored the perceptions of faculty and staff based at a community college in the northeastern United States. The population for this research was community college educators and support staff. A purposive sampling strategy was used to recruit participants. A sample of 10 participants was recruited for interviews. The findings of this study could be used to support the virtual classroom experience created by distance learning in STEM courses. The findings may illustrate differences between STEM faculty and personnel offering disability services concerning perceptions of how learning needs for SWD and training needs for staff and faculty are met. The findings could illuminate how effectively STEM faculty address the needs of students with varying degrees of abilities in nontraditional learning contexts. The results could also help to understand the perspectives of those who work in disability services on the topic of how various trainings might help fulfill the needs of SWD pursuing their education at a distance. The social justice implications of this study aim were to influence and improve the policies and practices on STEM education for SWD, ensuring that social justice principles are embedded in educational strategies and interventions. This study contributes to the broader goal of creating a more inclusive and equitable society.

……………………………………………………………………………………………………....

Introduction:-

Asthenumberofsciences,technology,engineering,andmathematics(STEM)programs increases, the number of programs taught through distance learning also increases (Mohr- Schroeder et al., 2019). Y. Li et al. (2020), Turner et al. (2022), and Vielma and Brey (2020) indicated the importance of research on STEM education, with a systematic review of trends in STEM education supporting the importance of further research involving school policy and curriculum. Based on these studies, the aim of the current study was to help understand the preparation of STEM faculty to instruct students with disabilities (SWD) through distance learning curricula in higher education. The general problem this qualitative phenomenological study addressed is the need to understand how STEM faculty and

Corresponding Author:- Johnson Omosule

support staff perceive the benefits of training in enhancing their ability to provide accessible services to SWD. Specifically, the study explored the perspectives of STEM faculty and support staff on the advantages of such training in making their service delivery more effective and inclusive for SWD in distance learning environments.

STEM fields are often at the forefront of innovation and progress in the modern world (Townley, 2020). The demand for STEM professionals has surged with the ever-increasing reliance on technology and scientific advancements. Consequently, higher educational institutions are expanding their STEM programs to meet this demand (Hadzieva et al., 2021). The growth of STEM programs is a response to the needs of a rapidly changing job market (Hadzieva et al., 2021; Masalimova et al., 2022). As these programs expand, it becomes increasingly important to develop a comprehensive understanding of the experiences and challenges faced by SWD in STEM fields to ensure that they have equitable access to these opportunities.Thismodeofeducationhasbecomeincreasinglypopularduetoitsflexibilityandaccessibility, allowing students to learn from any location and at their own pace. For example, distancelearningenablesSWDtoaccesscoursematerialsandparticipateinclasseswithoutthe physical barriers that might exist in traditional classroom settings.

TheCOVID-19pandemicacceleratedthisshift,makingdistancelearningmoreprevalent (Taylor et al., 2020). However, this shift brought the need to adapt and ensure that SWD are included (Ali, 2021). The increasing adoption of distance learning in STEM education necessitates a deeper examination of how faculty perceive their need for training to support and accommodate SWD in online STEM learning. STEM education is characterized by its rigor and reliance on technology, such as robotics and complex concepts, such as data simulation and coding. Despite offering immense potential for students, it can also present unique challenges, especially for those with special needs. These challenges may include accessibility issues, the need for adaptive technologies, and adjustments to teaching methods (Petretto et al., 2021).

Therefore, it is crucial to explorehow STEM academicfaculty and support staff perceive their training needs for accommodating SWD in distance learning classrooms. Their perception of these needs could directly impact the effectiveness of the adopted training programs, and the qualityofsupportprovidedtoSWD.Understandingtheviewsofthesestakeholderscouldhelp identify gaps in current training approaches and programs and develop plans to enhance the inclusivity and accessibility of STEM education.

Teacherpreparationis vitalinaddressingtheneedsofSWDinbothSTEManddistance learning. For example, educators must be well-equipped to provide inclusive and accessible instruction by incorporating universal design for learning (UDL) principles, using assistive technologies, and differentiating instruction to meet diverse learning needs. This preparation could ensure that all students, regardless of their disabilities, fully participate and succeed inSTEM courses delivered through distance learning platforms (Copur-Gencturk et al., 2020; Petretto et al., 2021). According to Blizak et al. (2020), exploring the experiences of STEM faculty in their preparation for teaching SWD through distance learning can help identify gaps and areas for improvement. The aim of the current research was to fill these gaps by providing insightsintothespecifictrainingneedsandchallengesfacedbyfaculty,ultimatelycontributing to the development of more effective and inclusive training programs. This insight can inform the development of more effective teacher preparation programs that empower educators to create accessible and equitable learning experiences.

The curriculum should be designed to accommodate the diverse needs of students, including those with disabilities. This claim is important in understanding how STEM faculty perceive the existing levels of staff preparation and if it meets or does not meet the needs of SWD in distance learning (Asgari et al., 2021; Grynyuk et al., 2022). Therefore, the current study's findings may inform curriculum developers and policymakers to create more inclusive and accessible educational materials and resources. The significance of this qualitative phenomenological study lies in its potential to bridge existing research gaps. Although a wealth ofresearchonSTEMeducationanddisabilityaccommodations exists,suchasbyThurstonetal. (2017), L. Smith and Rayfield (2019), and C. Smith (2020), the specific context of distance learning remains an underexplored area. This study addressed this gap by investigating the experiences and perceptions of STEM faculty at the forefront of this educational shift.

STEMFacultyBiasesandRoleofTraininginReducingTheseBiasesinDistanceLearning for Students With Disability

Diversity in STEM fields fosters inclusiveness and social justice and is also a catalyst for innovationandprogress.Adiverseworkforcebringsarangeofperspectivesandapproaches thatfoster creativity and problem-

solving. Therefore, the STEM community and society should ensure that SWD have equal opportunities to pursue STEM careers (Chun et al., 2024). The findings of this study could contribute to the broader goal of increasing diversity in STEM by addressing the unique challenges SWD faces in a distance learning context. By examining the experiencesandperceptionsofSTEMfacultyregardingtheirtrainingneedsforaccommodating these students, I aimed to identify specific barriers and effective strategies for creating more inclusive learning environments.

Understanding these faculty experiences and perceptions is crucial for developing targeted interventions that enhance the accessibility and inclusivity of STEM education, thereby promoting greater diversity within these fields. The COVID-19 pandemic disrupted education worldwideandacceleratedtheadoptionofdistancelearning(Turneretal.,2022).Aseducational institutions transition to a post-pandemic landscape, it is essential to reflect on the lessons learned during this period. STEM education is no exception, and understanding how educators have adapted to distance learning and accommodated SWD is crucial in shaping the future of STEM instruction (Ayeni et al., 2024).

Inclusion is not merely a buzzword in education but a fundamental principle (Schmader et al., 2022). Creating inclusive learning environments is an ethical imperative. It ensures that every student, regardless of their abilities or situation, has an equal opportunity to learn and thrive(Pradhan&Naik,2024).ThisstudycouldshedlightonhowSTEMfacultycan contribute to the creation of such environments in the context of distance learning. Sound educational policies should be grounded in evidence and understanding of the educational landscape. The findings of this study can serve as a valuable resource for policymakers, enabling them to make informed decisions that support SWD in STEM distance learning environments. Effectivepolicies can lead to systemic changes that benefit these students and the STEM community. Therefore, as STEM programs expand and distance learning becomes increasingly prevalent, so does the study of teacher perceptions regarding their training needs for students with special needsinSTEMdistancelearning(Selco&Habbak,2021).Thisresearch,throughthebetterment of teacher preparation, may potentially foster inclusive and accessible learning environments in STEM education.

BackgroundoftheStudy

In the realm of higher education, STEM fields are known for their academic rigor, complex problem-solving, and reliance on technology (Wahono et al., 2020). Although STEM programs offer tremendous opportunities for students, it is crucial to address the biases and stereotypes that faculty may hold regarding SWD. According to Morgan (2020), these biases can significantly impact the experiences and success of SWD in STEM fields, creating an environment that may not be as inclusive and equitable as it should be. Biases and stereotypesare often deeply ingrained in societal and cultural contexts (Marinucci et al., 2023). Faculty members bring their implicit biases and preconceived notions to their teaching roles (Morgan, 2020). Biases are often shaped by societal norms, cultural beliefs, and media representations (Schmader et al., 2022). SWD may be subject to detrimental stereotypes in popular media, contributing to misunderstandings about their abilities and potential (National Science Foundation,2020).Forinstance,theportrayalofpeoplewithdisabilitiesashelplessordependent may influence faculty perceptions.

Many STEM faculty members may also have limited personal experience with individuals with disabilities (National Center for Science and Engineering Statistics [NCSES], 2023).Thislackoffamiliaritycanleadtomisconceptionsandbiases.Itisessentialtorememberthat not all disabilities are visible, and many students may have hidden disabilities, such as learning disabilities or mental health conditions (NCSES, 2023). Related to this lack of familiarity, another source of bias and stereotype among STEM faculty is unconscious bias. Uninformedbias,alsoknownasimplicitbias,referstobiasesthatpeopleholdwithout cognizant awareness (Schmader et al., 2022). According to Schmader et al. (2022), these biases can influence decisions and actions, often without individuals realizing it. Understanding the experiences and perceptions of STEM faculty is crucial, as faculty members may unconsciously hold biases that affect their interactions with SWD. These biases can influence how faculty implement training and accommodations, directly impacting the effectiveness of inclusive education practices. Aligned with the purpose of this research, examining these biases could provide insights into how training programs may be improved to better equip faculty in supporting SWD in distance learning environments.

ThecompetitivenatureofSTEMfieldscanalsofosterstereotypesthatequatesuccess with specific traits, such as high intelligence, self-sufficiency, and resilience. SWD may not always fit these stereotypes, leading to potential biases from faculty (Starck et al., 2020).

Although these biases and stereotypes may not be intentionally harmful, they can create significant challenges for SWD in STEM education (Storage et al., 2020). Storage et al. (2020) explained that STEM faculty members may assume that a student with a disability cannot meet thedemandsofaSTEMprogram,leadingtoloweredexpectations,lessencouragement,oreven discouragement.

The predispositions noted above have an impact on faculty biases on SWD. Understandingtheimpactoffacultybiaseson SWDiscrucialforrecognizingtheurgencyof addressing these issues. The consequences of these biases can be profound and broad(Copur-Gencturketal.,2020).SWDwhoencounterbiasedorstereotypicalattitudesfromfaculty mayinternalizetheseperceptions,leadingtonegativeself-esteemandasenseofnotbelongingin STEM fields. According to Copur-Gencturk et al. (2022), this bias can deter students from pursuing STEM careers or even remaining in their programs. Additionally, when faculty members hold biases that underestimate the capabilities of SWD, they may set lower expectations for these students. This form of bias can result in missed opportunities for challenging coursework, research, or mentorship (Copur-Gencturk et al., 2022). SWD are also entitled to reasonable accommodation to facilitate their learning. Students who feel unwelcome or unsupported in STEM programs due to faculty biases may also become less engaged in class, research, and extracurricular activities. This reduced participation can hinder their academic and personal growth.

Bias-related stress, lowered expectations, and a lack of support can also contribute to higher attrition rates among SWD in STEM fields. Many of these students possess the potential to succeed but may leave their programs due to the hostile academic environment (Cimpian et al., 2020). The effects of faculty biases on SWD are significant, but strategies to challenge and mitigate these biases exist. Having faculty members engage in training programs that address implicit biases, diversity, and inclusion is one strategy to mitigate bias (Forscher et al., 2019). Understanding and acknowledging biases is the initial step in combating them. Exploring the training needs for STEM academic faculty and support staff in distance learning classrooms for SWD,workshops,seminars,andeducationalresourcesbecomecrucialinstrumentsforfostering awareness and addressing potential biases in the provision of inclusive education.

RecognizingthediverseneedsofSWDisessentialbecauseithelpswiththecreationof an equitable and inclusive educational environment. Equity in education means ensuring allstudents have access to the resources and opportunities they need to succeed. This commitmentto inclusivity not only benefits SWD but also enriches the learning experience for their peers, promoting empathy, understanding, and respect for diversity. Faculty should work with their institutions'disabilityservicesofficestoensurethatindividualizedaccommodation isprovided to students who require them. These accommodations can range from extended test-taking time to accessible course materials (Forscher et al., 2019). STEM faculty can adopt inclusive teaching strategies that benefit all students, including those with disabilities. These strategies may include providing alternative formats for course materials, ensuring accessible technology, and offering multiple methods of assessment. Mentoring also plays a significant role in a student's success in STEM fields (Morgan, 2020). Faculty can actively engage in mentoring SWD, providing them withrolemodelswhohaveovercomesimilarchallengesandbiases. Facultyshouldalsoadvocate for diverse representation within STEM fields. By actively promoting diversity and inclusion in academia, faculty can help break down stereotypes and biases.

The purpose of this research was to explore how STEM academic faculty and support staff perceive their training needs for accommodating SWD in distance learning classrooms. Considering this purpose, identifying faculty biases is critical because it helps develop insights tailored to the specific training needs of these faculty. Distance learning presents unique challenges for SWD. Addressing faculty biases is crucial to creating inclusive online learning environments where all students can thrive regardless of their abilities. Faculty members must collaboratewithsupportstafftocreateaninclusiveacademicenvironment(Daltonetal.,2019). By addressing biases, collaboration can become more effective and focused on the individual needsofstudents. Identifyingfacultybiasesisafundamentalsteptowardachievingthesegoals. Faculty biases and stereotypes regarding SWD, particularly in STEM fields, can have far-reachinganddetrimentaleffectsontheeducationalexperiencesandsuccessofthesestudents. Recognizing the origins of these biases, their prevalence, and their impact is essential in addressing them effectively. I aimed to explore the way STEM academic faculty and support staff perceive their training requirements for accommodating SWD in distance learning classrooms, underscoring the importance of challenging these biases.

StatementoftheProblem
The lived experience of STEM faculty receiving preparation for teaching SWD through distancelearningshouldbeexploredfurther.Pastresearchershaveacknowledgedtheimportance of understanding the knowledge and attitudes of academic faculty and support staff towards SWD (Sniatecki et al., 2015). Sniatecki et al. (2015) identified the importance of examining faculty knowledge and attitudes. Similarly, Y. Li et al. (2020) noted that further research is necessary regarding curriculum and policy as there is an apparent gap in the literature regarding the "what?" Such research can add novel findings to a body of literature. Thus, there is a need to understand the training needs of STEM faculty members and support staff for SWD in distance learning classrooms (Basham & Marino, 2019). Ernst and Williams (2019) and Estapa and Tank (2020) indicated that support from school administrators plays a crucial role in influencing the outcome of different training for STEM faculty.

AccordingtoBashamandMarino(2019),theseunderstandingsareimportantbecause various statistics indicate that SWDs face various online learning challenges. Basham and Marino found that about 30% of students with disabilities in the United States reported difficultiesinaccessingonlinecoursematerials. In distancelearning,studentsrelyheavilyon digital materials. Many SWD face issues with inaccessible course content, such as portable document format (PDF) or videos without captions, which hampers their learning experience(Kimogol,2023).Additionally,accordingtotheCenterforAppliedSpecialTechnology (2021), 12% of adults with disabilities in the United States reported not using the internet due to technology-related barriers. Many SWD may not have access to the necessary assistive technologies, such as screen readers or specialized software, which are critical for their engagement in online STEM courses (Roberts et al., 2021). Schelly et al. (2020) also reported that some SWD face communication barriers in online classes, as 75% of postsecondary institutions that offered online courses did not provide services such as sign language interpreters. Addressing these challenges requires a concerted effort from educational institutions, faculty, and technology providers to ensure that distance learning is inclusive and accessible to all students, regardless of their disabilities. This might involve implementing universal design principles, providing assistive technologies, and offering appropriate support services (Schelly et al., 2020).

PurposeandSignificanceofthe Study
The purpose of this qualitative phenomenological study was to explore how STEM academic faculty and support staff perceive their training needs for accommodating SWD in distance learning classrooms. The study focused on a population of community college STEM academic faculty and support staff involved in the support of students enrolled in STEM programs. However, the focus was STEM academic faculty, echoing the call of past researchers for further research in this area (Y. Li et al., 2020). The training of faculty is a prime example of howtrainingandcurriculumintersect,emphasizingtheurgencyandimportanceofunderstanding the role of STEM faculty in curriculum and policy development. The study focused on how STEM faculty members and support staff for SWD perceive the training needs of STEM faculty for teaching SWD in online classrooms. Questions included exploring STEM faculty membersandsupportstaff'sknowledgeofaccommodationpoliciesforSWDandtheirattitudesregarding the abilities and strengths of SWD.

In this research, I sought to understand the perceptions of STEM community college faculty members and support staff concerning their training needs to assist SWD in distance learning classrooms. The findings of this study could be used to support the virtual classroom experiencecreatedbydistancelearninginSTEMcourses.Thefindingsmayillustratedifferences between STEM faculty and personnel offering disability services concerning perceptions of how learning needs for SWD and training needs for staff and faculty are met.

The social impact of this study is rooted in examining the perceptions of STEM faculty and disability services staff regarding the perceived training needs of academic faculty and supportstaff.ThefindingscouldilluminatehoweffectivelySTEMfacultyaddresstheneedsof students with varying degrees of abilities within these nontraditional learning contexts.

The research results could also have a significant positive effect on society. Although some SWD may have an even more challenging time than usual due to the way distance learning courses are structured, others may have an easier time than usual because of the technologies usedindistancelearning.LearninghowtoequipdisabilityservicesstaffbettertoassistSWDin the online classroom is another area where this research could have a positive societal impact.

There can be ashift in training requirements becauseof the shift from face-to-faceinstruction to onlinetutorialsandotherformsoftechnology-enhancedlearning.Theresultsofthisstudy could help to understand the

perspectives of those who work in disability services on the topic of how various trainings might help fulfill the needs of SWD who are pursuing their education at a distance. The study could also strengthen the argument for the effectiveness of the virtual classroom model in distance learning, particularly in the context of training STEM educators.

The potential for positive social impact from the findings of this study is abundant. A positive social impact could emerge from the completion of this research by determining the needs of students with impairments based on the perceptions of STEM academic faculty for SWD regarding their training needs to support SWD in distance education (Intemann, 2019). Distance learning involves the use of technologies that create a different context for learning; some students with impairments may experience more significant disadvantages through the designofdistancelearningcourses,andothersmayexperience fewerdisadvantagesbecauseof the technologies involved in distance learning (E. Burgstahler & Cory, 2020).

Effort, engagement, and commitment of stakeholders occurs by understanding the differentnatureofdisabilityforstudentswithimpairmentswhentheyarelearninginthedistance learning context as opposed to the traditional face-to-face learning context (E. Burgstahler & Cory, 2020). Another positive social impact involves understanding the training needs of personnel offering disability services to meet the needs of students with impairments in the distance learning context. The training could be different because of the reliance on technology to create an environment for education as opposed to the traditional learning environment where learning occurs face-to-face. The findings from the current research might support the understanding of how personnel offering disability services believe different training and focusing on various types of training would help meet the distance learning needs of SWD. The findings can also support the virtual classroom experience created by distance learning, particularly concerning STEM faculty. The findings could illustrate differences in perceptions between STEM faculty and personnel offering disability services regarding how learning needs for students and training needs for staff and faculty are met. Determining how STEM faculty perceptions differ from those of staff offering disability services could result in social impact. The findings could support the understanding of the gaps, strengths, and weaknesses of STEM faculty in addressing disability in the distance learning context for students with different levels of disability in the nontraditional learning context.

Research Questions
The following research questions guided this study:
RQ1: How do STEM community college faculty and staff members perceive the adequacy and effectiveness of their current training programs in preparing them to support students with disabilities in distance learning environments?
RQ2: What specific training needs do STEM community college faculty and staff members identify as essential for improving their ability to support students with disabilities in distance learning classrooms?

The particularity and complexity under investigation in this study were rooted in the training needs of STEM faculty and support staff who engage with SWD within community college distance learning settings. STEM education presents unique challenges due to its heavy reliance on practical, often complex, content and the need for hands-on learning experiences. For SWD, this complexity is further compounded in online learning environments, where traditional support mechanisms and accommodations might not be applicable or available. Consequently, faculty and support staff are tasked with adapting their approaches to ensure accessibility and inclusivity, yet there remains uncertainty about how well current training programs prepare them for this responsibility.

Given the swift adoption of distance learning models, particularly following the COVID-19 pandemic, many faculty members find themselves navigating new technologies and teaching methodologies without sufficient training in accommodating the diverse needs of SWD. I examined the perceptions of STEM faculty and support staff on the adequacy of their training and explored the specific types of support they believe are essential for promoting accessible and effective learning environments for all students. With these questions, I sought to uncover faculty and staff insights into the existing training gaps and the critical areas where additional resources or knowledge are needed. By focusing on these perspectives, the study aimed to illuminate specific areas for improvement within current training frameworks, thereby contributing to the broader goal of fostering an equitable, inclusive, and supportive distance learning experience for SWD in STEM programs.

Limitations and Delimitations
Several delimitations also exist concerning the study. A key delimitation of the study is that the research was limited to academic faculty and support staff in STEM programs. The faculty delimitation was selected to ensure that only faculty who have experience with STEM SWD participated in the study. The research was also delimited to academic faculty

and support staff who work with STEM SWD. Another delimitation to the research is that participants were individuals who had experienced training on how to work with SWD and how to accommodate their disabilities. This was important to consider because a reconnaissance visit to the study site helped establish that over the past five years, the site has not been applying any strategy to ensure steady support for STEM SWD.

The study has some limitations. The research was geographically limited because it was conducted in the Northeastern United States, which may limit the generalizability of the findings to other regions with different educational policies and demographic characteristics. The research was limited to understanding the development and preparation for disability accommodation from the perceptions of faculty and staff. Student observations were not used for this study because the time and cost required to pursue such a data collection strategy would likely be greater than the benefit andimplementing such a strategy could violate school policy concerning student privacy. Another limitation of the study is that there was no focus on specific disabilities or types of disabilities. The research took a general approach to SWD. Finally, the study was also limited to personnel from a community college, which may influence the applicability of the findings to other types of institutions.

Researcher Assumptions
Several assumptions were made in this study. I assumed that the students whom student disability services staff prepared to interact and have interacted with included students in STEM programs. The purpose of this qualitative phenomenological study was to explore how STEM academic faculty and support staff perceived their training requirements for accommodating SWD in distance learning classrooms, underscoring the importance of challenging these biases. Although the subject matter of faculty can be used to determine whether they teach students in STEM programs, the general nature of student disability services' staff means that the staff may not know whether they have interacted with STEM students or not. Another assumption was that the specific characteristics of STEM programs delineated them from other programs in the school, necessitating specific preparation and development of faculty to accommodate the impairments of STEM SWD.

Definition of Terms
The following defined terms are used throughout this research:

Distance Education.
Distance education, also called online learning, eLearning, or distance learning, is defined as a form of teaching and student learning held within an online learning environment (Saykili, 2018).

Implicit Bias.
Implicit bias refers to the attitudes or stereotypes that people unconsciously hold, which can influence their understanding, actions, and decisions (Schmader et al., 2022; Tilcsik, 2021). Implicit biases are not accessible through introspection, making them challenging to identify and address.

Reflective Continuing Professional Development Model.
The RCPD model facilitates faculty critical thinking on the efficiency and effectiveness of their approaches to studentswith disabilities (Brigley et al., 1997; Maor, 2006).

Students With Disabilities in Distance Education.
SWD are those students with some physical or mental impairment that significantly reduces and restricts an individual who may have difficulty using or understanding coursework in an online environment (Abes & Wallace, 2018).

Support Staff for Students With Disabilities.
Support staff for SWD at educational institutions are professionals who provide specialized services and accommodations to ensure equal access and support for SWD in their academic pursuits (S. Burgstahler & Doe, 2020).

Unconscious Bias.
Unconscious bias refers to the attitudes or stereotypes that affect our understanding, actions, and decisions unconsciously (Schmader et al., 2022). These biases are automatic and involuntary, often rooted in deeply ingrained societal and cultural norms.

Universal Design for Learning.
The universal design for learning is defined as an approach to teaching often used to adapt the course to the needs and abilities of all learners and reduce unnecessary obstacles in the learning process (Dalton et al., 2019).

Summary

In summation, the study focused on understanding the perceptions of STEM academic faculty and support staff regarding their training needs for accommodating SWD in distance learning classrooms. The importance of the research topic was echoed in this chapter. I emphasized the need to address these training needs to improve service delivery and create inclusive learning environments, especially given the rising prevalence of distance learning in STEM education. The primary research question was aimed at identifying the training needs of STEM faculty from their perspectives and those of the support staff, inspiring the audience to engage with the study. Chapter 1 includes a discussion of the study's assumptions, limitations, delimitations,anddefinitionofkeytermstoensureclarityand focus.The chapter also comprises several subsections, including the introduction, significance, and the problem statement. It concludeswithresearch questionsanddefinitionsofthecriticalterms,settingthestageforanin- depth literature review in Chapter 2.

InChapter2,Idelvedintotheliteratureandexistingresearchrelatedtothetrainingneeds of STEM faculty and support staff for SWD in distance learning. Chapter 3 includes the details of the methodology used for this study, including research methodology and design, adescription of the participant selection process and data sources, a detailed account of the instruments used for data collection and the procedures followed, and methods employed to analyze the gathered data, reflection on my role and potential biases and, ethical considerations and measures taken to ensure the integrity of the study.This chapter set up the empirical investigation, leading to the findings and discussions presented in Chapter 4. The findings revealed that faculty and support staff require support from the Center on Disability (COD) and administrators to better the learning experiences of SWD. The findings suggested that faculty and support staff require training on accommodating SWD, using tools, and making online classes conducive to learning. The findings further indicated that engagement and communication between instructors and SWD should be enhanced, with technological aspects included in the online classes. Interpretations and implications of the findings, recommendations for practice and future research, and a conclusion are discussed in Chapter 5.