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Special Education Teachers' Perceptions Regarding the Inclusion of Students with Learning Disabilities in Assistive Technology

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Walden University

College of Education & Human Sciences

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George Edward Avent

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Walden University
2024

Abstract

Special Education Teachers' Perceptions Regarding the Inclusion of Students with
Learning Disabilities in Assistive Technology

by

George Edward Avent

Master of Arts in Teaching, Purdue Global University, 2017

BBA, Baruch College of Business Administration, City University of NY, 1970

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

Curriculum, Instruction, and Assessment

Walden University

February 2025

Abstract

Special education teachers do not always include assistive technology (AT) in instructional practices to promote the academic success of students with learning disabilities. The purpose of this study was to explore the reasons special education teachers only sometimes include the use of AT in instructional practices. The conceptual framework was observational learning theory, also known as social learning theory, which focuses on human learning patterns based on observations of other human beings. A basic qualitative design with open-ended, semistructured interviews was used. The participants included 12 special education teachers from the school study site. The research questions framed the study's purpose to gain special education teachers' perspectives regarding the use of AT in instructional practices. A priori and axial coding were used to identify larger themes relevant to the research questions. Two major themes evolved: nonusage and integration. The results of this study may contribute to existing pedagogy and stakeholder edification by amplifying the influence of inclusion of AT on special education teachers. Positive social change implications of the study include encouraging special education teachers to develop self-efficacy through AT usage and gain self-confidence and constructive feedback from integrating AT applications involving students with learning disabilities.

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Dedication

To my family and friends who encouraged me to continue with this education process. To my instructors and faculty members who gave me good instruction and excellent guidance throughout the process.

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I would like to thank the leaders at the district level who granted permission for this research study to take place. I would like to bestow many, many thanks upon the interview participants who so freely gave of their time and expertise.

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Chapter 1: Introduction to the Study

In this study, I examined public high school special education teachers' use of assistive technology to support the academic success of students with mild and moderate to severe learning disabilities in an urban city in the Southeastern United States.

According to Garwood and Ampuja (2018), "Inclusion is the act of placing a student with a disability in the general school population for a part of the school day to interact with nondisabled peers and promote the success of that student with assistive technology" (pp. 2-4).

The Individual with Disabilities Education Act (IDEA) of 2004 included the Individualized Education Plan (IEP) mandate, which requires that "the technology needs of every student who receives special education services must be considered as part of the development of the IEP" (IEP Section). The legislation set forth that individuals who are supposed to receive special education and related services in an educational setting have a current IEP in place to receive such services. A report issued by the Wake County Public School System (2018) revealed that special education teachers have been dispensing the related services at a level less than 45% of the IEP mandated level of 100%. In this study, I examined that when developing the IEP, states and local school districts could develop alternatives for individuals if the key components outlined by IDEA are addressed. Phillips (2018) noted that the IEP had to be creative, flexible, and individualized in meeting the needs of students with learning disabilities.

According to the study site school system report, special education teachers have failed to be successful or responsive, and parents were filing complaints with the district's

special education administrator. Parents have also been using due process rights to pursue dispute resolution options such as mediation, and parents have been requesting to have their child switched to another teacher's class. The study site school system reported that the IEP goals were not being met, which meant that the school did not provide a free appropriate public education (FAPE), and the student's parents had recourse to demand more intervention and support.

Sacks and Haider (2017) reported, "The IEP is a plan or program developed to ensure that a child who has a disability identified under the law and is attending an elementary or secondary educational institution receives specialized instruction and related services" (p. 958). An FAPE refers to "a child with disabilities receiving the same education as a child without disabilities or handicap. An FAPE can be achieved by giving the child special services, usually written in an IEP" (Moran, 2019, pp. 242-244).

This chapter includes a list of scholarly research findings that support and clarify the main assertions in the problem statement, the purpose statement, the significance of the study, and the conceptual framework of the study. I highlight the relationships and connections to the topic of the study. I discuss the gap in practice that occurs when special education teachers inconsistently follow the IDEA/IEP mandate. I also explain why this study was needed and provide evidence of consensus that the problem was current, relevant, and significant to the students with learning disabilities' (SLDs') teaching discipline.

The problem is framed in a way that builds upon or counters previous research findings focusing on research conducted in the past 5 years. Following are the primary

topics framed: conceptual framework, research questions, nature of the study, definitions, assumptions, scope and delimitations, limitations, and significance.

Background

SLDs have been included in the general school population since Horace Mann was appointed Secretary of the Massachusetts State Board of Education in 1848 (Messerli, 1972). Messerli (1972) explained, “Mann hoped that by bringing all children, of all classes together, they could have inclusion and a common learning experience” (p. 14). There is a history of inclusion that can be traced back to the 14th Amendment to the U.S. Constitution, ratified by Congress in 1868. Among its provisions was a definition of citizenship and equal protection of the laws for all citizens (Luykx & Padawer, 2017).

Brown v. Board of Education (1954) argued that segregated public schools were inherently unequal and deprived segregated children of equal protection of the laws, as provided by the 14th Amendment of the Constitution of the United States. In that case, the U.S. Supreme Court ruled that state-sanctioned segregation solely based on a person’s unalterable characteristics, such as race, was unconstitutional. The *Brown v. Board of Education* decision was not only a major victory concerning the civil rights of minorities, but it also laid the foundation for equal educational opportunities for students with disabilities.

Subsequently, parents of children with disabilities began to bring lawsuits against their school districts for excluding or segregating children with disabilities. *Pennsylvania Association for Retarded Children v. Commonwealth of Pennsylvania* (1973) established that the quality of the education and training given to children with disabilities had to

match that of the education and training given to general students (as cited in Gilhool, 1973). In *Mills v. Board of Education of District of Columbia* (1972), the parents' attorneys argued that the schools were discriminating against the children because of their disabilities. The U.S. District Court ruled that schools are constitutionally prohibited from deciding that they have inadequate resources to serve children with disabilities.

The Education for All Handicapped Children Act (EAHCA, 1975) was passed shortly after *Mills v. Board of Education of District of Columbia* (1972) and reaffirmed that public schools must provide equal access to students with physical and/or mental disabilities in the least restrictive environment (LRE) as part of IDEA. IDEA mandates that children who receive special education should learn in the LRE. There is a clause in the legislation mandating that SLDs should spend as much time as possible with peers who do not receive special education (Savage & Meyer, 2012).

The inclusion of SLDs in the general school population involves consideration of factors, such as time and special education teacher training. Facilitating these students' achievement with assistive technology involves consideration of abandoning existing pedagogy and rallying administrative support and other challenges, such as cost (Rice, 2017).

The IDEA also requires that all students with disabilities be included in regular statewide assessments, with accommodations, as appropriate. IDEA (1997) requires that students who could not be assessed with regular assessments be assessed through an alternate assessment to determine annual progress, as mandated by the No Child Left Behind (NCLB, 2001) law. The IDEA contains six pillars, five of which inform the policy

of disability inclusion in U.S. public education and provide guidelines via the National Information Center for Children and Youth with Disabilities (NICHCY, 1997). The overall goal of the legislation was to provide children with disabilities the same equal educational opportunities as nondisabled students.

In recent years, students with disabilities' participation rates in the United States have been due to three primary factors, as detailed in three primary studies: (a) reluctance to abandon existing pedagogies, (b) cost and lack of administrative support, and (c) the challenges of learning about assistive technology and implementing it. Hennessy et al. (2005) focused on special education teachers' constraints, such as lack of time, lack of training, and reluctance to abandon their existing pedagogy, as reasons why special education teachers do not always include assistive technology instructional practices to promote SLDs' success. Rice (2017) concentrated on the lack of assistive technology accessibility, cost, and administrative support as reasons why special education teachers do not always include assistive technology in instructional practices to promote SLDs' success. Wood (2015) determined that the challenges of learning about, recommending, and implementing assistive technology were reasons why special education teachers did not always include assistive technology in instructional practices to promote SLDs' success in small, rural schools.

The gap in practice occurs when there is a gap between what the special education teachers are accomplishing in student academic achievement with assistive technology compared to what is achievable based on current professional knowledge (IDEA, 2004). The current study was needed because special education teachers at the study site have

not been in full compliance with the IDEA/IEP mandate requiring the technology needs of every student who receives special education services must be considered as part of the development of the IEP. An examination of the report reveals why the study is needed, which is that special education teachers have been less than in full compliance with the IDEA/IEP mandate.

Problem Statement

The problem was that the special education teachers at the study site did not always include the use of assistive technology in instructional practices to promote the SLDs' academic success. The specific population was all instructors and SLDs attending the same public high school study site, which, in 2018, reported a success rate of 48%, compared to an objective rate of 100% (see Garwood & Ampuja, 2019). For this study, inclusion was defined as “the act of placing a student with a disability into the general population for a fraction of the school day to interact with nondisabled peers and promoting the success of that student with assistive technology” (Garwood & Ampuja, 2018, pp. 3-4). Evidence of consensus that the problem is current, relevant, and significant to the discipline is the previously referenced gap in practice findings in a report issued by the study site school system. Additional evidence that the problem is current, relevant, and significant to the discipline is the U.S. Department of Education's 2016 report that nationwide assessments have continued to show a significant achievement gap between students with disabilities and those students without disabilities and found that the lack of the inclusion of assistive technology in learning activities with SLDs as a contributing factor.

Atanga et al. (2020) found that assistive technology helps bridge the gap between SLDs and their peers without learning disabilities, emphasizing that in the classroom environment, assistive technology can be used for a variety of purposes, such as communication, positioning, and mobility; hearing and vision; physical education; and instruction in reading, writing, and mathematics. Atanga et al. stated,

Assistive technology differs from instructional technology in that the latter is focused on the design and delivery of instruction and involves the use of practical techniques to enhance instruction and, thus, positively impact learning. Assistive technology provides access to and allows full participation in the classroom environment, helping close the learning gap. (p. 2).

The primary intent of the IDEA (2004) was to ensure that all students with disabilities have access to the general education curriculum in a regular classroom setting to the maximum extent possible. Therefore, for SLDs to participate fully in the curriculum, they need to utilize assistive technology to help close the learning gap (Zirkel, 2016).

Purpose of the Study

The purpose of this study was to explore why special education teachers do not always include the use of assistive technology in their instructional practice and to consider special education teachers' perspectives on the best way to integrate assistive technology into the instructional practice of promoting the academic success of SLDs. The word *perceptions* was used in the title, and the word *reasons* was used in the manuscript abstract—both words are meant to be descriptive of the problem. However,

the purpose of the study was to explore the reasons why teachers do not always include assistive technology in instructional practices and to consider the teachers' perspectives on the best way to integrate assistive technology into the instructional practice of promoting SLDs' academic success.

In this study, I followed qualitative guidelines as the research paradigm and interviewed the special education teachers. The participants were special education teachers who hold standard certifications to provide specialized instruction to a diverse population of students, while focusing primarily on the needs and academic achievement goals of students with disabilities. This study ascertained the teachers' perspectives toward assistive technology inclusion of SLDs in the general education classroom. This study determined how certain explorations, as presented in three research questions based on social learning theory, influenced those perspectives.

Research Questions

The following research questions were open-ended and guided the study while remaining open to what emerged from the data. In alignment with the title, research problem, and purpose, the following research questions were posed:

Research Question 1 (RQ1): What are special education teachers' reasons that they do not use assistive technology in their instruction of students with learning disabilities?

Research Question (RQ2): What are special education teachers' perceptions regarding the best way to integrate assistive technology into the instruction of students with learning disabilities?

Research Question 3 (RQ3): How frequently do special education teachers use assistive technology in the instruction of students with learning disabilities?

Conceptual Framework

Observational learning, also known as social learning theory, focuses on the human being's learning patterns based on observation of other human beings (Bandura, 1977). Observational learning was deemed an appropriate framework because social learning theory argues that in and out of the classroom, children learn through a 4-step pattern (see Bandura, 1977). Bandura (1977) formulated the principles of social learning as follows:

- Attention: Something is noticed within the environment and the individual is attentive to it.
- Retention: The behavior is noted and remembered.
- Reproduction: The individual copies or emulates the behavior that is observed.
- Motivation: An individual's behavior is repeated through positive or negative praise or punishment.

Social modeling is a very powerful method of teaching and learning in education. If children see positive consequences from a behavior, they are more likely to repeat that behavior themselves (Bandura, 1977). Conversely, if negative consequences are the result, they are less likely to perform that behavior (Bandura, 1977). Assistive technology can be a novel and unique context for electronically observing behaviors, such as self-efficacy, attitudes, and outcomes, and recording and reporting such data as the learning-

disabled student's ability to succeed in specific study situations and to accomplish tasks (Burke & Hughes, 2017).

Others have used this conceptual framework in the potential for greater independence and achievement. The connection to this study is that the study and subsequent articles describe the kinds of technology that exist and that have the potential to help students compensate for their disabilities.

Nature of the Study

In this study, I employed a basic qualitative design. Qualitative research is a holistic approach that involves discovery (Creswell, 2018). Qualitative research is also described as an unfolding model that occurs in a natural setting, enabling the researcher to develop a level of detail from high involvement in the actual experiences (Creswell, 2018). My rationale for selecting this research approach was that qualitative research provides a systematic inquiry into social phenomena in natural settings.

The phenomenon being investigated was the problem that special education teachers in a southeastern urban U.S. city did not always include the use of assistive technology in instructional practices to promote SLDs' success, despite the use of assistive technology being required by the IEP. There was inconsistent use of assistive technology inclusion in the instructional strategies the special educators implemented to support SLDs, even though it is required by the IEP. The purpose of this study was to explore the reasons special education teachers do not employ assistive technology and to consider teachers' experiences regarding the best way to integrate assistive technology into the instruction of SLDs.

I used interviews as the main data collection instrument. I was the only interviewer of the 12 participants. I kept a log with a description of my processes, including times when I composed memos, referred to memos, checked in with participants, revised instruments, engaged in theory, and consulted with peers. This process was described by Ravitch and Carl (2016) as keeping a research journal. I used coding to organize the collected data into manageable units so that I could find thematic clusters that related to the research questions (Ravitch & Carl, 2016). I used a priori coding to identify themes (see Ravitch & Carl, 2016). While rereading the participants' responses to the interview questions, I used axial coding to (a) confirm that the concepts and categories accurately represented interview responses and (b) explain how the concepts and categories were related (see Strauss & Corbin, 1990, 1998). Theme identification is one of the most fundamental tasks in qualitative research, and a variety of aspects influence what ultimately becomes themes, with the research questions being the most influential of these aspects (Ravitch & Carl, 2016).

Definitions

For a better understanding of this study, the following terms are operationally defined:

Assistive technology: Any item, piece of equipment, or product system, whether acquired commercially, off the shelf, modified, or customized, that is used to maintain or improve the functional capabilities of individuals with disabilities (IDEA, 2004).

IDEA: The reauthorized federal law, previously known as the EACHA (PL-94-142) of 1975, which mandates school districts provide an FAPE for all students deemed eligible and in need of specialized services or instruction (Harmon, 2020; IDEA, 2004).

IEP: A legal document that details the specific performance levels and academic needs of a student who is eligible for and qualifies for special education services. The IEP is developed by a multidisciplinary team that includes school personnel, experts, the student's parents, and the student, when appropriate. Components include present levels of performance, annual goals, special education services and related services, needed accommodations or modifications, and other information specific to the child, including assistive technology considerations (IDEA, 2004; Phillips, 2017).

Inclusive education: An educational philosophy that allows for a range of strategies and methods. Direct, classroom-based, community-based, and consultative programming are a few of the available educational options. The goal of inclusive practices is to plan and devise an intervention option that is unique in meeting disabled individuals' educational needs. (Phillips, 2018).

Learning disabilities: A variety of disorders involving the failure to learn an academic skill despite normal levels of intelligence, maturation, and cultural and educational opportunity (Bell, 2019).

Special education: Specially designed instruction provided by public schools at no cost to parents to meet the educational needs of eligible exceptional students, including classroom instruction, out-of-school instruction, instruction in a special school or residential setting, and instruction in other settings, including the workplace and training

center (Harmon, 2020). Special education also includes assistive technology devices and services, physical education, vocational education, or other curricular offerings when modifications are necessary to meet the individual needs of exceptional students (IDEA, 2004).

Assumptions

I assumed that the special education teachers who participated in this study would provide honest and accurate responses to the interview questions. I also assumed that the use of the interview questions would result in adequate information for me to examine the experiences of the special education teachers about SLDs included in the general education classroom. In addition, I assumed that the participants currently used some type of assistive technology. My final assumption was that the participants in this study represented a group of special educators who supported the use of assistive technology to engage students in learning activities.

Scope and Delimitations

In this study, I examined special educators' experiences regarding assistive technology for SLDs. The study adhered to the conceptual framework of the study to inform the scope. This was deemed an appropriate framework because social learning theory argues that in and out of the classroom, children learn through a 4-step pattern, formulated by Bandura (1977): attention, retention, reproduction, and motivation, as presented by the research questions.

This study reflected the educators' experiences serving a population of SLDs. The district serves public schools in an urban city and is mandated by law to offer SLDs an

FAPE. Findings may have varied with a more diverse participant pool from public schools in rural districts. I analyzed all data regarding perceptions of assistive technology use for SLDs with no consideration of the number of years the educators had been serving this population.

Limitations

The primary limitation was found to be transferability. Transferability is established in a qualitative study by providing readers with evidence that the research study's findings could apply to other contexts, situations, times, and populations.

Other limitations were found to be as follows:

- It was a time-consuming process, and such a study of this type may take several weeks or months.
- Because this process delved into personal interaction for data collection, discussions often deviated from the main issue being studied.
- I could not verify the results of the study because qualitative research deploys an open-ended approach, so participants have more control over the content of the data collected.
- It was a labor-intensive approach, requiring time for the analysis processes, such as categorization, recording, and obtaining data from a group of respondents.
- It was difficult to investigate causality because there is no way to analyze qualitative data mathematically. This type of research is based more on

opinion and judgment rather than results, and because all qualitative studies are unique, they are difficult to replicate.

- Qualitative research is not statistically representative because the responses given are not measured.

Significance

Forrester (2016) noted that “Accommodating students with disabilities in a general education class often requires instructional modification and extra student support” (p. 69). The problem was that special education teachers in a southeastern urban city in the United States did not always include the use of assistive technology in instructional practices to promote SLDs’ success. These special education students suffered from mild to moderate learning disabilities and were in the general education population. The technology needs of every student who receives special education services must be considered as part of the development of the IEP (Phillips, 2018). There was inconsistent use of assistive technology consideration in the instructional strategies the special educators implemented to support SLDs, even though it is required by the IEP.

The school system under whose auspices this study was conducted cares if the study is done because the school system reported that a gap in practice occurs when there is a gap between what the special education teachers are accomplishing in the area of student achievement with assistive technology compared to what is achievable based on current professional knowledge. The gap specifically involves a lack of compliance with the IDEA/IEP mandate. Burke & Hughes (2017) reported, “The use of technology has the

potential to help students compensate for their learning disability” (p. 10), thus resulting in the potential for greater independence and achievement.

The results of this study may be beneficial to school districts (for professional development), colleges/universities (for teacher preparation), assistive technology companies (for development and training purposes), special educators (for legal mandates of IDEA, 2004; Harmon, 2020), special education teachers (for assistive technology curriculum applications), and healthcare practitioners (for practical applications). The potential for positive social change implications of the study includes encouraging SLDs to develop self-efficacy through confidence building and constructive feedback (see Bandura, 1982).

Summary

The purpose of this study was to explore the reasons special education teachers do not employ assistive technology and to consider teacher perspectives on the best way to integrate assistive technology into the instruction of SLDs. I explored the assistive technology experiences of educators who serve SLDs. I used interview data to analyze themes from those working directly with this low-incidence population. Assistive technology is a means to provide alternative approaches in developing educational interventions for SLDs. The findings of this study may enable educators working with SLDs to promote social change by assisting students to overcome their limitations with the use of assistive technology, thus actively engaging students in learning activities instead of promoting passive observation. School district administrators, stakeholders, and parents may better understand the effects of assistive technology on learning and the

development of skills for SLDs. The educational needs of SLDs should be the primary focus when determining curriculum access. The goal of this research was to break down barriers to assistive technology by identifying how low- and mid-tech devices are used to enrich the lives of SLDs and provide them with access to the curriculum so they may become part of an interactive learning community. By understanding SLDs' unique educational needs, educators can implement quality instruction for this low-incidence population with the use of low- and mid-tech assistive technology interventions.

Section 2 includes a comprehensive examination of the literature regarding assistive technology integration into literacy activities for SLDs. The chapter identifies the characteristics of SLDs and the types of literacy activities that enhance their learning. Also discussed are the kinds of assistive technology and assistive technology barriers. Chapter 2 presents the qualitative research design and the data collection process, which included interviews and thematic data analysis.

Chapter 2: Literature Review

The problem I investigated in this basic qualitative study was that special education teachers do not always include the use of assistive technology in instructional practices to promote the success of SLDs. For this study, the meaning of inclusion is “the act of placing a student with a disability into the general population for a fraction of the school day to interact with nondisabled peers and to promote the success of that student with assistive technology” (Garwood & Ampuja, 2018, pp. 3-4). Under the IDEA (1975), the federal education law that governs special education, schools are required to provide an equal education for students with disabilities. Under the Rehabilitation Act of 1973, federally-funded programs are prohibited from discriminating based on disability. A report issued by the County Public School System (Wake County Public School System, 2018) revealed that special education teachers have been in less than full compliance with the IDEA, which is also referred to as IDEA 2004. The IEP provision requires that the assistive technology needs of every student who receives special education services must be considered as part of the IEP development. The purpose of this study was to explore the reasons special education teachers do not employ assistive technology and to consider teacher perspectives on the best way to integrate assistive technology into the instruction of SLDs.

The terms assistive technology and IEP are used in the IDEA amendment legal definition: Something that enables students to use their abilities to work around their disabilities (IDEA, 2004). The term learning disability is used for a heterogeneous group of students who are seen to have significant difficulties in the acquisition of literacy and

numeracy skills (Siebers, 2008). Other terms used synonymously with learning disability are *learning difficulty* and *special needs* (Siebers, 2008). The major sections of this chapter in this basic qualitative study include the following areas: Literary Search Strategy, Conceptual Framework, Literature Review Related to Key Variables and Concepts, and Summary and Conclusions.

Literature Search Strategy

The review of literature for this basic qualitative study includes the following areas: (a) definition of learning disability, (b) overview of learning disability identification tools used in the field of school psychology, (c) SLDs' characteristics, (d) short history of special education and the subsequent legislative mandates, (e) barriers to assistive technology student achievement faced by special education professionals, and (f) definition of assistive technology impact in schools. When searching the Walden databases (Dissertations & Theses @Walden University Library, ProQuest Central, ScholarWorks and ProQuest Dissertations & Theses Global, and Google Scholar) for peer-reviewed articles and books, I used the following keywords: *Albert Bandura, learning disabilities, assistive technology, low incidence school populations, thematic data analysis, Brown v. Board of Education, legislative education mandates, IDEA, ESSA, and conservatism.*

Conceptual Framework

Observational learning, also known as social learning theory, focuses on the human being's learning patterns based on the observation of other human beings (Bandura, 1977). This is deemed an appropriate framework for this study because social

learning theory argues that in and out of the classroom, children learn through a 4-step pattern formulated by Bandura (1977). If children see positive consequences from a behavior, they are more likely to repeat that behavior themselves (Bandura, 1977). Conversely, if negative consequences are the result, they are less likely to perform that behavior.

In this study, my purpose was to explore an assistive technology classroom as a novel and unique context (setting, situation, environment) to explore the reasons special education teachers do not employ assistive technology, to consider teacher perspectives on the best way to integrate assistive technology into the instruction of the SLDs, and to encourage students to develop their highest achievement levels through confidence building and constructive feedback.

Assistive technology can be a novel and unique context for electronically observing behaviors, such as self-efficacy, attitudes, and outcomes, and for recording and reporting the learning-disabled student's ability to succeed in specific study situations and to accomplish tasks (Burke & Hughes, 2017). Sessoms (2016) used this conceptual framework in a qualitative case study to explore teachers' perceptions on whether face-to-face instruction using assistive technology improves the academic performance of students who are differently labeled. Forrester (2016) conducted a study of instructional modification by teachers in assistive technology applications. Forrester's research showed that making changes in assistive technology application instruction can evoke different responses from teachers and can influence their willingness to accommodate the needs of students with disabilities. Burke and Hughes (2017) wrote about using computer

tablets as assistive technology devices to support learning in students with diverse abilities. Burke and Hughes also found that the use of technology has the potential to help students compensate for their learning disability, with the potential for greater independence and achievement. The connection to this study is that the study and subsequent articles describe the kinds of technology that exist and have the potential to help students compensate for their disabilities.

Bandura (1977), the key theorist, is an influential social cognitive psychologist who is perhaps best known for his social learning theory. Bandura's social learning theory emphasizes the importance of observing and modeling the behaviors, attitudes, and emotional reactions of others. Most human behavior is learned observationally through modeling. From observing others, one forms an idea of how new behaviors are performed, and on later occasions, this coded information serves as a guide for action.

Social learning theory explains human behavior in terms of continuous reciprocal interaction between cognitive, behavioral, and environmental influences (Bandura, 1977). Because social learning theory encompasses attention, memory, and motivation, social learning theory spans both cognitive and behavioral frameworks (Bandura, 1977). Bandura's (1977) theory improves upon the strictly behavioral interpretation of modeling provided by Miller and Dollard in 1941 (as cited in Hirakawa, 1979). Miller and Dollard's proposition posits a motivation/clear observation theory. They argued that if a student was motivated to learn a particular behavior, that behavior would be learned through clear observations (Miller & Dollard, 1941, as cited in Hirakawa, 1979).

Bandura's (1977) work is quite different from other learning theorists who look at learning as a direct result of conditioning, reinforcement, and punishment (Landers & Landers, 1973). Bandura asserted that most human behavior is learned through observation, intimidation, and modeling. His learning theory is more closely related to the theories of Vygotsky (1978), which also emphasize the central role of social learning in explaining his zone of proximal development as follows: "The distance between the actual development level as determined by independent problem-solving and the level of potential development as determined through problem-solving under adult guidance or collaboration with more capable peers" (p. 86). Vygotsky believed that when a student is in the zone of proximal development for a task, providing the appropriate assistance will give the student enough of a *boost* to achieve the task. Bandura believed this boost can be provided by modeling.

The principles of observational learning are as follows: (a) The highest level of observational learning is achieved by first organizing and rehearsing the modeled behavior symbolically and then enacting it overtly. Coding modeled behavior into words, labels, or images results in better retention than simply observing. (b) Individuals are more likely to adopt a modeled behavior if it results in outcomes they value. (c) Individuals are more likely to adopt a modeled behavior if the model is like the observer and has admired status, and the behavior has functional value (Bandura, 1977). Observational learning, also known as social learning theory, focuses on the human being's learning patterns based on observation of other human beings (Bandura, 1977). This is deemed an appropriate framework because social learning theory argues that in

and out of the classroom, children learn through a 4-step pattern or the four principles of learning formulated by Bandura (1977).

Observational learning, also known as social learning theory, connects to this study because social modeling is a very powerful method of teaching and learning in education. If children see positive consequences from a type of behavior, they are more likely to repeat that behavior themselves. Conversely, if negative consequences are the result, they are less likely to perform that behavior (Bandura, 1977).

In this study, I explored the theory that an assistive technology classroom is a novel and unique context and, when applied in disability studies, will increase student achievement. I explored the concept that assistive technology can be a novel and unique context for electronically observing the behavior of SLDs' attitudes and outcomes upon an assistive technology intervention. I also explored the SLDs' instructors' ability to succeed in specific study situations and accomplish tasks (see Burke & Hughes, 2017).

Among the most recent novel and unique additions to the assistive technology classroom has been the iPad. Ok (2018) reported on the use of iPads as assistive technology for students with disabilities. Ok's research was a summary of previous literature on the use of iPads as assistive technology for functional skills of individuals with disabilities. In addition, Ok addressed the beneficial features of iPads as assistive technology and introduced examples of assistive technology apps, as well as online resources for those apps. The connection to this study was that technology exists that has the potential to help students compensate for their disabilities (Burke & Hughes, 2017; Siebers, 2008).

In my study, I ascertained the teachers' perspectives toward assistive technology inclusion of SLDs in the general education classroom and determined how certain explorations, as presented in three research questions based on social learning theory, might influence those perspectives. Burke & Hughes (2017) found that the use of technology has the potential to help students compensate for their learning disability, resulting in the potential for greater independence and achievement. The results may be beneficial to school districts (for professional development), colleges/universities (for teacher preparation), assistive technology companies (for development and training purposes), special educators (for legal mandates), special education teachers (for assistive technology curriculum applications), and healthcare practitioners (for practical applications).

Literature Review Related to Key Concepts and Variables

I conducted the literature review to describe studies related to the constructs (hypotheses, theories, paradigms, and ideas) of interest and chosen methodology consistent with the scope of the study. In the literature review, I define disabilities, special education history, special education law, and their relation to inclusion. I describe the origin and definition of inclusion in the education of SLDs. I identify and describe SLDs. I identify teachers' attitudes toward inclusion of SLDs and teachers' attitudes toward the inclusion of assistive technology for SLDs. I historically define, review, and describe the benefits and disadvantages of assistive technology in the inclusion of SLDs, and the appropriateness of SLDs' IEP, FAPE, and LRE. Finally, I included in this study the

different viewpoints on the inclusion of SLDs in the general education classroom equipped with assistive technology.

Origin and Definition of Learning Disabilities

The federal regulations prepared by the U.S. Office of Education (1977) produced and adopted the authoritative definition of learning disability, “A learning disability includes perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia” (as cited in Grigorenko et al., 2020, para. 9). Learning disability does not include children who have learning problems that are primarily the result of the visual, hearing, or motor handicaps; mental retardation; emotional disturbance; or environmental, cultural, or economic disadvantage (Bandura, 1977). A learning disability is a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations (Bandura, 1977).

Learning Disabled Versus Handicapped

Contrary to a popular misconception, learning disabilities are infrequent causes of marginal performance among students. The reason for this misconception may be one of semantics (Brown, 2019). Brown (2019) described the differences between disabled and handicapped, “Handicap and disability are closely related terms, which are often used concerning people with special needs. As they are very close synonyms, they are usually interchangeably used ”(para. 17). In both situations, social stigma, low self-esteem, and support system issues may be experienced by the individuals (Brown, 2019).

The World Health Organization (WHO, as cited in Benson et al. 2020) defined “a handicapped person to have a loss or limited opportunities in being involved in activities as compared to most of the population” (pp. 148-150). A handicap is the effect of a disability. It focuses on an obstacle experienced by a person due to a restriction in the environment. WHO defined a disabled individual as having any lack of ability to carry out an activity in the means viewed as normal by the community (as cited in Benson et al., 2020).

A disability is a reduced capacity to specifically perform a movement, detect certain sensory information, or execute a cognitive function; it is generally a lifelong condition such as blindness, intellectual disability, and cerebral palsy (Brown, 2019). For instance, a person who was born blind will likely experience restrictions in reading, navigating, and other related activities in their lifetime (Brown, 2019). The Rehabilitation Act of 1973 (1988) defines handicap as “a disadvantage that makes achievement usually difficult,” while disability is defined as “a physical, mental, cognitive, or developmental condition that impairs, interferes with, or limits a person’s ability to engage in certain tasks” (as cited in Brown, 2019, para. 7).

I focused primarily on SLDs attending high school, who suffered from mild to moderate learning disabilities, and who suffered some psychological or neurological impairment that made it difficult for them to perceive and process information correctly and to express their thoughts clearly (see Siebers, 2008). Learning disabilities often include minimal brain dysfunctions resulting from injury, such as aphasia, dyslexia, and similar expressive or perceptual (Siebers, 2008). As a separate learning category, SLDs

are distinguished from the handicapped, whose learning difficulties are traceable to congenital or acquired psychomotor dysfunctions, and from the disadvantaged, whose learning problems stem from socioeconomic or cultural deprivations (Brown, 2019).

Screening and Identification of SLDs

A student afflicted with specific learning disabilities suffers from confusion in one of the essential mental procedures. The essential mental procedures include dyslexia (difficulty in reading), dysgraphia (difficulty in writing), and dyscalculia (difficulty in solving problems; Benson et al., 2020). Screening SLDs is an early detection method for identifying learning disabilities, can provide the best educational activities for preventing the barriers to learning, and can avoid academic failure, especially suicidal behavior (Benson et al., 2020).

Special Education in History

Special education history began with Horace Mann from 1796 to 1859, according to Messerli (1972). This was a recommendation that communities establish common schools funded by taxpayer dollars. Mann believed that common schools taught common values that included self-discipline and tolerance for others (as cited in Zirkel, 2020). A common school was a public school in the United States during the 19th century (Zirkel, 2020). Special education in the United States claims lineage to other persons such as Anne Sullivan Macy, the teacher who worked miracles with Hellen Keller. Special educators teach those students who have physical, cognitive, language, sensory, and/or emotional abilities that deviate from those of the general population (Garwood & Ampuja, 2018). Special educators provide instruction specifically tailored to meet

individualized needs, making education available to students who otherwise would have limited access to education.

Special Education

Special education is “the instruction and support provided to students with mental, physical, social, and/or emotional disabilities” (Garwood & Ampuja, 2018, p. 3). These programs were created to meet the special needs of children with disabilities. IDEA (2004) mandates that all U.S. public schools provide special education services, with specific guidelines to ensure students with special needs receive an education on par with that of their peers. For a child to qualify for special education classes, professionals, such as physicians, specialists, psychologists, and social workers, must evaluate the individual to determine if a child’s disability will hinder educational performance.

A child must have one or more of the 12 disabilities to qualify for special education services (IDEA, 2004). At the close of the 19th century, state governments established juvenile courts and social welfare programs, including foster homes. Korr (2022) established that in 1931, the Bradley Home, the first psychiatric hospital for children in the United States, was established in East Providence, Rhode Island. The treatment offered in this hospital, as well as most of the other hospitals of the early 20th century, was psychodynamic. Psychodynamic ideas fanned interest in the diagnosis and classification of disabilities (Strohl, 2011).

Throughout the first half of the 20th century, advocacy groups were securing local ordinances that would protect and serve individuals with disabilities in their communities. For example, in 1930, in Peoria, Illinois, the first white cane ordinance gave individuals

with blindness the right-of-way when crossing the street (Rodgers & Voorhees, 1961). By midcentury, all states had legislation providing for the education of students with disabilities. However, legislation was still non-compulsory. In 1951, the first institution for research on exceptional children opened at the University of Illinois and began what was to become the newest focus of the field of special education: the slow learner and, eventually, what is known today as learning disability (Gordon & Tavera-Salyutov, 2018). In the late 1950s, federal money was allocated for educating children with disabilities and for the training of special educators (Gordon & Tavera-Salyutov, 2018). Thus, the federal government became formally involved in research and in training special education professionals, but limited its involvement (Gordon & Tavera-Salyutov, 2018).

Inclusion in Education and Applications

Inclusion and its concept definition in educational applications are attributed to Garwood and Ampuja (2018). Garwood and Ampuia defined inclusion as “educating students with disabilities in the general population of students in their neighborhood school—the school they would attend if they did not have a disability” (p. 4). The researchers stated that as more SLDs and emotional and behavioral disabilities find themselves in an inclusive, general education setting, there is a need to find ways to maximize their educational performance.

Inclusion in Legislation and the Laws

Legislation and law about the concept of inclusion was the landmark piece of legislation that became the 14th Amendment to the U.S. Constitution, ratified by Congress in 1868. This legislation was part of the plan for reconstruction following the

Civil War. Among its provisions were a definition of citizenship and the mandate of equal protection of the laws for all citizens (Barnett & Bernick, 2019). Gordon and Tavera-Salyutov (2018) remarked in a paper on disability rights legislation that the three main underpinnings of such legislation are equality, diversity, and inclusion.

Brown v Board of Education (1954)

The founding fathers' vision of schooling for creating American citizens did not extend to Black children in segregated schools in the South (Walker, 2012). Throughout their existence, Black schools and the education therein remained the centerpiece in a battle between external forces seeking to limit, repress, or reshape citizenship for Black Americans and the expectations of Black Americans who sought to claim the original purposes of schooling for citizenship as applicable to their children (Walker, 2012).

The most consistent campaign of advocacy to change school conditions was initiated by Mordecai Johnson at Howard University with his hiring of Charles Houston to reinvent the Howard Law School (Slade, 2017). By the next year, Houston had brought to campus the famed Thurgood Marshall and was amassing a cadre of lawyers who would challenge Jim Crow conditions in southern schools and throughout the nation. In conjunction with Black educational associations and Black parents, and ideologically amplified by the protests of Black servicemen returning from World War II, this group litigated numerous local school cases where parents objected to the inequality their children confronted in Black schools. These cases would ultimately yield five geographically diverse settings that would be melded together to challenge the *Plessy v. Ferguson* (1896) Supreme Court decision of "separate but equal" that still governed

public schools in the South. *Plessy v. Ferguson* did not prohibit government-mandated segregation as long as accommodations were equal for both races (Guzman, 2008). The *Brown v. Board of Education* decision of 1954 case represented a collective effort to use education to demand full citizenship. For a moment, the desire of Blacks for comparable school conditions appeared to trump the numerous obstacles they had confronted over the decades that reduced educational opportunities (Kelly, 2019).

The Elementary and Secondary Education Act

The Elementary and Secondary Education Act (ESEA) of 1965 was passed by the U.S. Congress and signed into law by President Lyndon B Johnson on April 11, 1965, and is the nation's national education law providing equal opportunity for all students. It was reinvented by its modern, revised NCLB Act (Carter, 2016; Casalaspi, 2017). In 1971, this support was reinforced and extended to the state level when the Pennsylvania Association for Retarded Children filed a class action suit against their Commonwealth (Kuriloff et al., 1974). This suit, resolved by consent agreement, specified that all children aged 6 through 21 were to be provided free public education in the least restrictive alternative, which would later become the LRE environment clause in EAHCA (*Pennsylvania Association for Retarded Children v. Commonwealth of Pennsylvania*, 1971).

Rehabilitation Act of 1973

The Rehabilitation Act of 1973 was an important piece of civil rights legislation. Its roots can be traced to the Smith-Hughes National Vocational Education Act of 1917, which created the Federal Board for Vocational Education. The Rehabilitation Act of

1973 expanded on the Smith-Hughes Act, while providing numerous provisions for federal agencies, programs receiving federal funding, and employers contracted with the federal government. Its passage was considered a landmark victory for disabled individuals. The Rehabilitation Act contains numerous sections; however, the most cited are Sections 501, 503, 504, and 508. Together, these sections greatly altered federal employment procedures regarding disabled individuals. They made it illegal for federal employers to discriminate against disabled individuals who would otherwise qualify for a job. They created target percentages of disabled workers that federal agencies should strive to meet. They also extended many of these guidelines and requirements to any employer receiving federal funding, including state governments and groups contracted by the federal government. Finally, Section 508 ensures that many of the same groups must make information available on their websites and other communications technologies accessible to individuals with disabilities (Biscontini, 2021). The EAHCA Act (1975) prohibited discriminatory practices in programs receiving federal financial assistance, but imposed no affirmative obligations concerning special education (Wegner, 1983).

Americans With Disabilities Act (1988), Amended in 1990 to IDEA

The Americans with Disabilities Act (ADA) is a wide-ranging civil rights statute that prohibits numerous kinds of discrimination against persons with physical or mental handicaps in both public and private sectors (Kaiser, 2003). The statute emphasizes two major forms of discrimination: in employment and in physical barriers to buildings, transportation, and public services. The significance of the legislation is that the ADA has

been somewhat successful in improving the economic opportunities for disabled persons, but its greatest impact has been to force both government and private businesses to improve physical access to buildings and transportation facilities (Scotch, 2000). Because of the subjective nature of the legislation's language, the Supreme Court's interpretations of key terms and concepts have frequently determined whether lawsuits are successful (Mezey, 2005). Often described as the world's first comprehensive law designed to protect persons with disabilities from invidious discrimination, the ADA was modeled after the Civil Rights Act of 1964 (Bergdorf, 1991). Its origins go back to the Rehabilitation Act of 1973, which had a provision prohibiting discrimination in federal programs against an otherwise qualified individual solely because of a handicap (U.S. Department of Justice, 2010). In the presidential election of 1988, both major candidates endorsed the principle of providing additional protections (U.S. Department of Justice, 2010). After the election, Congress and President George H. W. Bush agreed on a broad statute that is divided into five parts: Title I deals with employment discrimination, Title II covers access to government buildings and services (including places of education), Title III covers a vast array of nongovernmental facilities and services, Title IV deals specifically with hearing-impaired persons, and Title V deals with a variety of technical matters (U.S. Department of Justice, 2010).

The Individuals With Disabilities Education Act

The IDEA (1997) protects the educational rights of students with mental, physical, social, and/or emotional disabilities. Also called special needs students, these students typically have developmental delays in cognitive, physical, and/or scholastic

skills that may affect their performance in school. These students may need instruction that is different than that of other students. IDEA mandates that all children receive an FAPE that meets their needs. This education also must prepare students with disabilities for life after school, whether they attend college, seek employment, or live independently (Harmon, 2020).

Before 1975, more than 4 million children with special needs in the United States did not have access to proper public education. Many public schools denied these children an education altogether, while other schools segregated them from their peers without providing them with support for their special needs. During the 1950s and 1960s, the government intervened and began to work with organizations to develop services for children with special needs and their families (Yell et al., 2017). The government enacted legislation that began training educators to teach children with disabilities. Court decisions, including PARC/1971 (*Pennsylvania Association for Retarded Children v. Commonwealth of Pennsylvania*), were based on the equal protection clause of the 14th Amendment of the U.S. Constitution, which also created educational opportunities for children with disabilities. These rulings mandated that states and localities take responsibility for educating students with special needs.

Congress enacted the EAHCA in 1975. The purpose of this legislation was to ensure that children from age 3 to 21 with disabilities that hindered their ability to learn or caused them to learn in a way different from that of their peers received a free public education in every state and locality. Under the act, the government provided federal funding to help the schools evaluate students with disabilities and to develop learning

plans for the students. The EAHCA required that these special learning guidelines be comparable to those of the student's peers. In addition, families received support services from schools that allowed parents to better manage the education provided to their children (Smith, 2008).

In the years that followed, Congress amended the EAHCA several times to include other programs and services. In 1986, an amendment required that services be provided to children from birth. Early intervention and preschool programs enabled infants, toddlers, and preschool children with disabilities additional educational opportunities that helped prepare them for upcoming academic and social challenges (Smith, 1988). A 1997 amendment added services for those with disabilities over the age of 14 to help them transition to caring for themselves after they completed their education (Newman et al., 2010). Congress continued to amend the act through the next several years to further protect the educational rights of students with special needs. The government reauthorized the act in 2004 (Harmon, 2020).

IDEA is split into four parts: Parts A, B, C, and D. Part A explains the language of the act. Part B explains the educational guidelines for students with special needs between the ages of 3 and 21. It mandates that they receive an education comparable to that of their peers and, if feasible, in the same school setting. It also requires schools to conduct evaluations and participate in an IEP. Part C focuses on identifying children with special needs from birth to age 2, providing families with services, and preparing families for the education of their children. IDEA provides families of young children with disabilities with an Individualized Family Service Plan, which sets goals for children and

prepares both parents and children for upcoming educational opportunities. Part D provides further information about programs that IDEA is involved with to improve education standards for students with disabilities (Harmon, 2020).

The Assistive Technology Act of 1998

The Assistive Technology Act of 1998, also known as the Tech Act or The Assistive Technology Act of 2004 PL 108-364, legalized state provisions for assistive technology (De Jonge et al., 2006; Technology-Related Assistance for Individuals with Disabilities Act, 1988). The act prohibits discrimination against a person with disabilities in access to public services. The act forever changed assistive technology for individuals with disabilities, especially exceptional students. President Ronald Reagan signed it into law in 1988, and it provided federal funding to states to meet the technology needs of individuals with disabilities (Technology-Related Assistance for Individuals with Disabilities Act, 1988, 1988).

No Child Left Behind Act of 2001

The NCLB of 2001 has been called the most sweeping federal education legislation in the nation's history (McDonnell, 2005). Opinions have not lacked regarding its benefits, drawbacks, and overall viability in bringing about long-term improvements in public education. The NCLB is intended to close the learning gap between advantaged and disadvantaged students, between wealthy and nonwealthy students, and between minority and nonminority students (McDonnell, 2005). The NCLB has elicited both praise and complaint from educators and legislators alike. Smith (2005) noted that while there is general agreement regarding the overall aim of the legislation—ensuring the

education of every child—there is widespread disagreement surrounding the implementation of the legislation—what will be the cost, who will fund it, and how the goal should be accomplished.

NCLB called for yearly assessments of student performance, usually accomplished through standardized tests, in mathematics and English language arts in Grades 3 through 8 and an additional assessment in these subject areas in high school (Fuller et al., 2007). In addition, it demanded student assessment in a science curriculum one time in elementary, in middle, and in high school. An important goal of NCLB was to make sure that all students showed progress on the annual assessments—in other words, that *no child* was being *left behind*. Thus, the law made school districts analyze assessment results and other measures for minority subgroups to ensure that they demonstrated improved performance each year. State leaders and educators in many states found these goals to be impractical, so some sought other means for showcasing their school's success (Fuller et al., 2007).

NCLB did not identify any national education standards. The Common Core State Standards (CCSS), an initiative detailing what K–12 students should know in English language arts and mathematics, originated from a state-led, rather than federal, push to identify teaching goals and methods (Carlisle, 2020). NCLB set policy but did not spend money directly, instead relying on annual spending bills. Originally, the law set aside a maximum of \$32 billion, but Congress never passed funding for the full amount (Schwalbach, 2020).

Under NCLB, states desiring a portion of the federal education money had to improve schools with low assessment scores. Schools that were unable to adequately improve test scores after 5 years were required to comply with at least one of the following four measures: terminate the employment of administrators and teachers, convert to charter school, implement longer school days or years, or shut down the school permanently (Meyers & Vangronigen, 2021).

Every Student Succeeds Act

Every Student Succeeds Act (ESSA) is a reform law that shifts power and responsibility on issues of school performance and accountability from the federal government to the states. It reduced the federal role in K–12 education for the first time since the Reagan era in the 1980s (Hess & Eden, 2021). ESSA was a bipartisan measure that preserved federally-mandated standardized testing but eliminated punitive consequences for states and school districts that performed poorly (Hess & Eden, 2021).

ESSA, which President Barack Obama signed into law on December 10, 2015, is a revision of the ESEA of 1965, which outlined the federal government's role in education from kindergarten through 12th grade (Wong, 2020). ESSA replaced the previous revision of the ESEA, called the NCLB Act, that had been implemented in 2002 during the George W. Bush Administration. ESSA leaves most accountability goals to the state's jurisdiction (Mitra, 2020).

Unlike NCLB, ESSA allows states to determine their own accountability goals. Although the Department of Education is no longer directly involved in the development of accountability goals, states do have to present their goals to the Department of

Education for approval (Mitra, 2020). The law sets broader parameters defining what accountability goals need to incorporate, and test data and graduation rates are given more value than other more subjective metrics. ESSA is the first iteration of the ESEA since the 1980s to return oversight for education to the states, a move that pleases many conservatives (Hess & Eden, 2021). ESSA, more so than NCLB, gives states less stringent guidelines and more autonomy to design holistic frameworks to improve student outcomes. States can choose whether to utilize ESSA determinations relating to targeted support and improvement as their summative determinations or choose to design and implement their own assessments. Additionally, ESSA gives states an open timeline for student attainment of English language proficiency, while requiring states to consider initial student proficiency levels when setting individual long-term goals (Villegas & Pompa, 2020).

Three Stages of the SLDs Identification Process

Identifying the student with a learning disability involves much subjectivity at each stage of the process, including the teacher referral, the assessment process, and the eligibility deliberations. SLD identification consists of the following three stages (MacMillan & Siperstein, 2019):

- Stage 1: The teacher referral: The most important decision in the assignment of SLD programs is the decision by the regular classroom teacher to refer. The referral is a signal that the teacher has reached the limits of their tolerance of individual differences, is no longer optimistic about their capacity to deal effectively with a particular student in the context of the larger group, and no

longer perceives that the student is teachable by themselves. When a teacher makes decisions about a child's academic progress, they are using subjective judgment and local norms, as the child's performance is compared with that of classmates and grade peers (MacMillan & Siperstein, 2019).

- Stage 2: The assessment: To qualify for special education services, the child must qualify for one of the disability categories characterized by this gate, the psychological assessment, as representing a cognitive paradigm intended to detect or document the existence of a within-child problem. In comparison to the referral stage, the assessment stage employs national norms. The use of objective evidence is a cornerstone of psychological assessment, and information from standardized tests is used. Thus, the subjectivity noted at the referral stage is exacerbated by the additional subjectivity that is introduced during the assessment stage (MacMillan & Siperstein, 2019).
- Stage 3: Eligibility deliberations: A committee ultimately determines whether a given child will be classified as learning disabled after considering all the evidence brought to its attention (MacMillan & Siperstein, 2019).

IDEA specifically prescribes that a team decision must be made and specifies the role of the parent in this decision. These specifications make it clear that the psychometric profile alone cannot be used to determine eligibility; to do so would be out of compliance. Like the teacher at the referral stage, the team is permitted to exercise professional judgment, but it is a *collective judgment* rather than the individual judgment at the referral stage (IDEA, 2004).

Some educators have reasoned that the team decision regarding eligibility and placement is guided by the concept of profitability, which reflects the collective judgment on whether the specific special education services provided by the special education staff at that school site will or will not be beneficial to the child. These decisions are ultimately influenced by a wide range of contextual factors that involve high degrees of subjectivity (MacMillan & Siperstein, 2019).

Teacher Attitudes Toward Inclusion and Barriers

In describing teachers' attitudes toward inclusion, Forrester (2016) noted that accommodating students with disabilities in a general education class often requires instructional modification and extra student support. Forrester showed that making required changes can evoke different responses from teachers and can influence their willingness to accommodate the needs of students with disabilities. Educators face three primary barriers when making the required changes involved in assistive technology: (a) reluctance to abandon existing pedagogy (Hennessy et al., 2005), (b) cost and lack of administrative support (Rice, 2017), and (c) the challenges of learning about and implementing assistive technology (Wood, 2015).

Controversy About Special Education Teachers

What is controversial about special education teachers is that there is a growing and pervasive shortage of special education teachers that threatens the quality of education students with disabilities receive. In the United States, 49 states have reported shortages of special educators (National Coalition on Personnel Shortages in Special Education and Related Services, 2016), and enrollment in teacher preparation is lower

than at any point since the National Center for Education Statistics began collecting these data (U.S. Department of Education, 2016). Special education teacher shortages have existed in the United States at least since 1975, when PL 94-142 (IDEA) was first passed. Although educational opportunities were available to some students with disabilities before 1975, this law mandated, for the first time, that public schools educate all students, thus contributing to a dramatic increase in demand for special educators (Dewey et al., 2017). Since then, demand for special educators has consistently exceeded the supply, yielding a pervasive, chronic national shortage. Projections indicate shortages are currently growing, particularly in high-poverty urban and rural schools (Dewey et al., 2017). Special educator attrition is particularly problematic, as it exacerbates the shortage, leaving many districts in the position of having to hire unqualified personnel and requiring that limited resources be directed toward recruitment and induction rather than longer term district initiatives (Cagiltay et al., 2019). High-poverty schools bear the brunt of high turnover, reducing the likelihood that students with disabilities who live in poverty will be taught by highly qualified special educators. There is a need for a study about how researchers need to disseminate findings about attrition/retention to a broader stakeholder group, those outside of special education (e.g., principals, district leaders). Only two of the present studies reached general education leadership or policy journals (Feng & Sass, 2017), while one was published in a special education leadership journal. Scholars should consider improving dissemination efforts, especially to practitioner audiences responsible for retention, using varied types of educational technology in special education material (Cagiltay et al., 2019).

Advantages Versus Disadvantages of Assistive Technology

According to IDEA (1997), assistive technology refers to “any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of children with disabilities.” The benefit and advantage in education is that assistive technology serves to enhance learning and support classroom performance and participation. Assistive technology can range from pencil grips and raised-line paper to screen reading software and high-tech, speech-generating devices (Satterfield, 2020). The harm and disadvantage in education is that assistive technology lacks definitive research on use and outcomes in education because of the complexity of measuring outcomes. This is mainly due to the diversity of individuals in the population under study (Satterfield, 2020). For students to receive special education services, they need an IEP.

Relevant Acts

The Assistive Technology Act of 1998

The Assistive Technology Act of 1998 prohibits discrimination against a person with disabilities in access to public services. The act forever changed assistive technology for individuals with disabilities, especially exceptional students. President Ronald Reagan signed it into law in 1988, and it provided federal funding to states to meet the technology needs of individuals with disabilities.

Individualized Education Plan

IEP facilitation is a voluntary, early dispute resolution option available to parents and school districts when both agree that the presence of a neutral third party would assist

with communication and problem-solving during a committee on special education (CSE) or committee on preschool special education (CPSE) meeting (Phillips, 2018). The purpose of IEP facilitation is to develop and sustain collaborative, productive relationships between CSE/CPSE members, keep meetings student-focused, and reduce adversarial disputes during the IEP development process (Phillips, 2018). IEP facilitators are trained impartial individuals who assist members of the CSE/CPSE in developing or reviewing a student's IEP, addressing differing opinions and reaching a consensus on IEP recommendations (Dragoo, 2019; Phillips, 2018).

Free Appropriate Public Education

FAPE, according to the Supreme Court in *Smith v. Robinson* (1984), the EAHCA was “a comprehensive scheme set up by Congress to aid the states in complying with their Constitutional obligations to provide public education to students with disabilities” (Wolfman, 2022). The EAHCA required that school personnel and parents collaborate to develop a student's special education program that was individually designed to meet his or her unique needs and confer a FAPE (IDEA, 2004). The FAPE requirement of the IDEA (2004) has remained unchanged since the passage of EAHCA. The FAPE requirement has remained unchanged since the passage of EAHCA (1975).

Interpretations of FAPE by the federal courts, however, have evolved from the U.S. Supreme Court's ruling in *Hendrick Hudson District Board of Education v. Rowley* (hereinafter *Rowley*) in 1982 to its most recent ruling, *Endrew F. v. Douglas County School District* (2017). These interpretations of FAPE by the Supreme Court, especially in the recent *Endrew* decision, have important implications for special educators and for

teacher educators. In the early 1970s, Congress found that over one million students with disabilities were not receiving a public education at all and over four million students with disabilities were not receiving a public education appropriate for their needs (Conroy & Yell, 2019). As Chief Justice Rehnquist noted in *Rowley* (1982), the latter group of students with disabilities were often “left to fend for themselves in classrooms designed for the education of their non-handicapped peers.” As a result, the EAHCA of 1975 was passed, which required states to ensure the provision of FAPE to all students with disabilities to receive federal funding. The central requirement of the EAHCA was the FAPE mandate. The means for developing a student’s FAPE was the IEP, which according to the U.S. Supreme Court was the *modus operandi* (Yell & Bateman, 2019).

Least Restrictive Environment

The LRE is one of six key principles of the Individuals with Disabilities Education Improvement Act of 2004, protecting the rights of children with disabilities to an individually appropriate education in the general education environment and to the maximum extent appropriate in proximity to peers without disabilities (Dragoo, 2019).

Previous Approach to the Problem

Following are the ways researchers in the discipline have approached the problem and the strengths and weaknesses inherent in their approaches. The problem is that special education teachers do not always include the use of assistive technology in instructional practices to promote the success of SLDs. The benefit and advantage of assistive technology in education is that assistive technology serves to enhance learning and support classroom performance and participation. The harm and disadvantage in

education is that assistive technology lacks definitive research on its use and outcomes in education because of the complexity of measuring outcomes, which is mainly due to the diversity of individuals in the population under study (Satterfield, 2020). In 2000, the National Assistive Technology Research Institute (Assistive Technology RI) was launched to explore assistive technology and assistive technology services in schools and to discover what practices were most effective (Satterfield, 2020). The Assistive Technology RI team examined planning and implementation of assistive technology in K-12 schools, as well as professional development in assistive technology. The Assistive Technology RI produced the Status of Assistive Technology Use Survey, which helped inform the field of the breadth of assistive technology use in K-12 schools, as well as the locus and contexts in which assistive technology was being used, pointing to a need to broaden assistive technology use to general education settings and beyond communication and access. Assistive Technology RI also launched a study of state and local level policies to assistive technology and the IEP process, which suggested that, while many agencies had assistive technology policies in place, awareness at the teacher level remained limited. An investigation of assistive technology and the IEP process revealed that some districts had more explicit and complete directions and policies regarding assistive technology and the IEP than others. Satterfield (2020) highlighted areas where a lack of information regarding assistive technology could jeopardize some student's academic success. Satterfield also revealed a lack of planning for assistive technology implementation. This led to the development of the assistive technology

planner, a set of materials to guide this process, including monitoring progress related to assistive technology use (Satterfield, 2020).

Assistive Technology RI also sought to explore the impact of assistive technology upon academic progress. Using interviews of teachers, students, and families, Assistive Technology RI discovered frequent reports of positive results (Satterfield, 2020). However, teachers reported cases of device abandonment relating to student dissatisfaction with the device chosen for them (either the assistive technology was stigmatizing or it was not their choice), inadequate training provided, or the assistive technology provided was inappropriate relative to the student's needs. An Assistive Technology RI study of institutions of higher education illustrated the limits of the preparation of preservice teachers and therapists for implementation and effective use of assistive technology, reporting that many professionals had only a general awareness of assistive technology as they entered the field of occupation. While the Assistive Technology RI project ended in the year 2006, its studies have highlighted issues that persist today and raised questions that continue to be relevant.

Some authorities have surmised that the idea of identifying and measuring assistive technology outcomes seems at first to be simple. However, assistive technology is part of a larger process that includes assistive technology implementation services, and the intervention of which assistive technology is itself a part. The connection to this study is that given the expansion of assistive technology options available today, educators must also examine the question of which assistive technology solution best meets a student's needs. Burke and Hughes (2017) wrote of using tablets to support assistive

technology learning in students with diverse abilities. Prevalent themes include the benefits of using tablets as an assistive technology tool with SLDs. The connection to this study was that the article describes kinds of technology that exist and has the potential to help students compensate for their disabilities. Continuing with ways researchers in the discipline have dealt with the problem of using assistive technology to teach literacy to SLDs, I will highlight some computerized methodologies. Ok (2018) examined iPads in the classroom. OK noted how the iPad is used as an assistive technology tool in K–12 and college classrooms for everything from note taking to embarking on virtual tours to learning about outer space. Teachers across disciplines have used iPads as assistive technology devices to teach literacy, literature, writing, language, social science, history, mathematics, science, geography, computing, medicine, pharmacology, business, art, drama, and music (Ok, 2018). Interactive communication technology can be used as a tool for screening students with specific learning disability in which an interactive communication technology tool, known as Ontology, may screen for a specific learning disability. This model includes the screening of SLDs and plays a notable role for parents and teachers to identify their children or student at risk for specific learning disabilities and furthermore prescribe fitting instructive exercises (Ok, 2018).

Synthesizing Studies Related to the Research Phenomenon

Synthesizing studies related to the key concepts and/or phenomena under investigation (special education teachers) produces a description of what is known about them, what is controversial, and what remains to be studied.

Synthesizing Studies Related to the Research Questions

This section reviews and synthesizes studies related to the research questions and why the approach selected is meaningful. The research questions were based on social learning theory of Bandura (1977). The purpose of this study was to gain the perspectives of special education teachers regarding the use of inclusion in instructional practices to promote the success of SLDs.

Social modeling is a powerful method of teaching and learning in education. If children see positive consequences from a behavior, they are more likely to repeat that behavior themselves (Bandura, 1977). Attention can be a very beneficial factor in every SDL's life. It is not only good for academic purposes, but for social and emotionally learning as well (Bandura, 1977). In retention, the behavior is noted and remembered. In reproduction, children learn from each other and eventually become more understanding and well rounded. Motivation is most applicable when students begin to enter the work field (Bandura, 1977). Social modeling, also termed social learning, is a theory developed by Bandura (1977) that states behavior can be learned by observing the actions of others. To truly learn the behavior, pupils watch. There are four requirements or factors that need to be at work: attention, retention, reproduction, and motivation (Bandura, 1977).

In this synthetization of studies relating to the research questions Pavlov (1897), (Skinner (1938), and Bandura (1977) all formulated theories of learning. Pavlovian condition, operant conditioning, and observational learning all incorporate stimuli, response, and observation. Operant conditioning is a method of learning that occurs through rewards and punishments for behavior. Through operant conditioning, an

individual makes an association between a behavior and a consequence (Skinner, 1938). In classical conditioning (also known as Pavlovian conditioning since it originated with a Russian psychologist named Pavlov), learning is through association. In simple terms, two stimuli are linked together to produce a new learned response in a person or animal (McLeod, 2016).

McLeod (2016) wrote that Watson proposed that the process of classical conditioning (based on Pavlov's observations) was able to explain all aspects of human psychology, and everything from speech to emotional responses was simply patterns of stimulus and response. Watson denied completely the existence of the mind or consciousness. Watson believed that all individual differences in behavior were due to different experiences of learning (as cited in McLeod, 2016).

Summary and Conclusions

This literature review was intended to help establish the growing national interest in assistive technology implementation, outcomes, and benefits pertaining to SLDs and reflect the range of professional publications in recent years espousing assistive technology implementation, outcomes, and measurement systems for use in the field (Fichten et al., 2014) his literature review was also intended to make clear on examination that there is a growing body of research accompanying assistive technology implementation, outcomes, and benefits (Bandura, 1977; Forrester, 2016).

The development and manufacture of assistive technology equipment is constantly evolving, and new products are finding their way into the educational marketplace at a dizzying pace. To understand the role of assistive technology and its

relationship to student achievement requires education professionals to understand both how and why assistive technology works. Garwood and Ampuja (2018) defined inclusion as “the practice of educating students with disabilities in the general population of students in their neighborhood school—the school they would attend if they did not have a disability” (pp. 3-4). Garwood and Ampuja stated, “As more and more SLDs find themselves in an inclusive, general education setting, there is a need to find ways to maximize their educational performance” (p. 2). The authors further detailed the best practices and assistive technology tools for SLDs used in a career and technical education classroom. Equally important is that education professionals recognize that achievement of students with developmental disabilities is often contingent upon use of assistive technology that allows access to educational or life skill experiences.

Finally, access is insufficient in and of itself, it must be paired with consideration of student productivity. Ultimately, the benchmarks for determining assistive technology effectiveness are student achievement in the academic and life skills curricula, as evidenced by district- or statewide measures of student progress (Garwood & Ampuja, 2018).

Chapter 3: Research Method

The purpose of this study was to explore the reasons special education teachers do not always include the use of assistive technology in their instructional practice and to consider special education teacher perspectives on the best way to integrate assistive technology into instruction of the SLD. In this study, I followed qualitative guidelines as the research paradigm and interviewed the special education teachers. This chapter includes the research questions, the setting, the research design and rationale, the role of the researcher, methodology, trustworthiness, ethical procedures, and a summary.

Research Design and Rational

The following research questions were open-ended and guided the study while remaining open to what emerged from the data. In alignment with the title, research problem, and purpose, the research questions posed were:

RQ1: What are special education teachers' reasons that they do not use assistive technology in their instruction of students with learning disabilities?

RQ2: What are special education teachers' perceptions regarding the best way to integrate assistive technology into the instruction of students with learning disabilities?

RQ3: How frequently do special education teachers use assistive technology in the instruction of students with learning disabilities?

The research study was a basic qualitative study design. The central concept or phenomenon was the study of special education teachers' knowledge of assistive technology in the classroom so that appropriate professional development may take place

to strengthen teachers' knowledge and pedagogy. The research tradition was qualitative research, which refers to research that focuses on collecting and analyzing written or spoken words and textual data (see Creswell, 2018). The rationale for this chosen tradition was to explore why special education teachers do not always include assistive technology in instructional practice. This rationale included open-ended, semistructured interviews that were best for this study because this technique allowed new ideas to be brought up during the interview because of what the interviewee said, while a structured interview has a rigorous set of questions that does not allow diversion.

I also considered a quantitative approach with the purpose of studying a cause-and-effect relationship between SLDs, assistive technology use, and engagement in literature achievements. Quantitative research generally involves a well-controlled setting, the testing of a hypothesis, and gathering objective data to draw conclusions that are generalizable and open to replication by other researchers (Ravitch & Carl, 2016). I chose not to use the quantitative approach because I did not test a hypothesis or generate numerical data for statistical analysis.

Qualitative research has various research designs that a researcher can consider for a research study: grounded theory, ethnographic, case studies, and phenomenology (Smith, 2023). Each is described as follows, and included in the narrative is an explanation as to why grounded theory, ethnographic, and case studies were not appropriate for my study.

Ethnography is the study of culture and has at its roots in the field of anthropology but has branched out to study the cultures of peoples and how cultures

influence the lives of the people that live within social setting (Merriam & Tisdell, 2015). I chose not to use ethnographic studies because this study did not pertain to the unit of analysis culture.

Case study is a form of qualitative research that focuses on discovering meaning, investigating processes, or gaining deep understanding of an individual, group, or situation. I chose not to use the case study method because in this study, the behavior of the unit of analysis was manipulated by the assistive technology phenomenon. The primary data collection for this study was through in-depth interviews, but did not focus on identifying a phenomenon (see Ungvarsky, 2020). I chose not to do a phenomenological study because I did not identify an existing phenomenon.

I chose to use basic qualitative research because the focus of my research was on understanding assistive technology from the perspective of the educators in their natural setting and uncovering strategies, techniques, and practices of highly effective teachers. The purpose of educational qualitative research is to improve our practice, and the basic qualitative research design is particularly well suited to obtain an in-depth understanding of effective educational processes (Merriam & Tisdale, 2015).

Role of the Researcher

In this study, I assumed the role of the researcher. As the sole researcher, I had no personal and/or professional relationships with the participants, or supervisory or instructor relationships involving power over the participants. I had no researcher bias, also called experimenter bias, which is what happens when someone conducting a study intentionally or unintentionally influences the results based on their own expected

outcome (see Skidmore, 2016). I avoided such bias by conducting the study adhering to quality research design, using a reliance on previous experience and understanding, and recalling that unintentional researcher bias often stems from poor research design or a simple lack of experience and understanding. I followed ethical considerations when recruiting participants for the research study by keeping the interview participants' identities confidential. To protect the confidentiality of the interview participants and the confidentiality of the collected raw data, I assigned pseudonyms to the interviewees and any other names mentioned in the interview transcriptions. I assured procedures and confidentiality by informing the research participants ahead of time of the voluntary nature of the interview.

Methodology

The nature of this study was a basic qualitative study (see Creswell, 2018). The problem was that special education teachers do not always include the use of assistive technology in instructional practices to promote the success of SLDs (Wake County Public School System, 2018). There was inconsistent use of assistive technology inclusion in the instructional strategies the special educators implemented to support SLDs, despite that it is required by the IEP (Wake County Public School System, 2018). The purpose of this study was to explore the reasons special education teachers do not always include the use of assistive technology in their instructional practice. It also served to consider special education teachers' perspectives on the best way to integrate assistive technology into the instruction of the SLDs. The methodology consisted of interviews and observations.

Participant Selection

In the selection of the participants, I chose 12 participants who served as the representative group of participants for interviews and data collection, who all held master's degrees or doctoral degrees in special education, and who were currently working in the field of study, special education. All participants were required to have attained a minimum education level of a master's degree. I was the only interviewer. I took about 30-45 minutes with each participant and used five open, semistructured interview questions. I used the following procedures, techniques, and keys to research study recruiting success, which were developed by Caucutt (2015):

- Enable study participants to feel they are joining the research team.
- Keep them engaged over time.
- Make the study experience positive so people will want to share it.
- Create consent forms that are easy to understand.
- Match the recruitment tool to the target audience by seeking participants who have a professional background and knowledge of the target audience.

Instrumentation

Research instrumentation is the process of constructing research instruments that could be used appropriately in gathering data on the study (Global life sciences, 2018). The questionnaire, interview, and observation are commonly used tools in gathering data. I used open-ended, semistructured questions devised for a range of participants. These questions have been reviewed by three experts in the field who have deemed them appropriate to gain information for the research questions. *Instrument* is the general term

researchers use for a measurement device (Global life sciences, 2018), which were open-ended, semistructured research questions in this study.

Procedures for Recruitment, Participation, and Data Collection

I provided the participants an informed consent form, a voluntary agreement stating they will participate in the research and they understand the research and its risks. I chose to recruit 12 participants, who served as the representative group of participants for interviews and data collection, who all held master's degrees or doctoral degrees in special education, and who were currently working in the field of study, special education.

The location of each data collection event was the participant's workplace, which was scheduled at a mutual and pre-agreed upon time. I initially contacted the participants via e-mail and/or the telephone, as mutually agreed upon. The data collection events lasted approximately 30 to 40 minutes, and I was the only interviewer. I used five open-ended, semistructured interview questions.

I recorded the data collection events through a research journal. Throughout every stage of the research, I kept a log/description of my processes, including times when I interviewed, recorded interviews, composed memos, referred to memos, checked in with participants, revised instruments, engaged in theory, and consulted with peers. This has been described by Ravitch and Carl (2016) as a research journal.

The participants exited the study through a debriefing procedure. Debriefing is the process of discussing the general purpose of the research study and its implications with a participant at the conclusion of the study. Debriefing serves to educate the participant as

to the logic and importance of the overall study, explain the reason for any deception, attempt to ameliorate any damage caused by the deception, and investigate potentially negative reactions to the study, among other goals (Sharf & Kimonis, 2015).

Follow-up procedures (requirements to return for follow-up interviews) were completed in the following manner. Follow-up procedures are an important component of all research. Follow-up procedures are most often conducted during the actual research, but can also be conducted afterward. Follow-up is generally done to increase the overall effectiveness of the research effort. It can be conducted for several reasons, namely, to further an end in a particular study, review new developments, fulfill a research promise, comply with Institutional Review Board protocol for research exceeding a year, ensure that targeted project milestones are being met, thank participants or informants for their time, and debrief stakeholders. Follow-up may also be conducted as a normal component of the research design (STARSurg Collaborative & Nepogodiev, 2018).

Data Analysis Plan

Throughout every stage of the research, I kept a description of my processes, including times when I interviewed, recorded interviews, composed memos, referred to memos, checked in with participants, revised instruments, engaged in theory, and consulted with peers. This has been described by Ravitch and Carl (2016) as a research journal.

I used coding to organize the interview data into manageable units so that I could find thematic clusters that related to my research questions. I used a priori coding (predetermined coding), a process of coding qualitative data whereby the researcher

develops the codes ahead of time based on the research questions and the conceptual framework to identify themes (see Ravitch & Carl, 2016).

Axial coding is a qualitative research technique that involves relating data together to reveal codes, categories, and subcategories grounded within participants' voices within one's collected data (Ravitch & Carl, 2016). In other words, axial coding is one way to construct linkages between data (Allen, 2017). Creswell (2018) stated, "Coding is the process of analyzing qualitative text data by taking them apart to see what they yield before putting the data back together in a meaningful way" (p. 156). A most qualitative inquiry code is often a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data (Saldaña, 2012).

After the identification of themes using a priori coding, I used axial coding to break down the core themes to confirm linkages between data. I used axial coding to (a) confirm that the concepts and categories accurately represented interview responses and (b) explain how the concepts and categories are related (see Allen, 2017). Theme identification is one of the most fundamental tasks in qualitative research, and a variety of aspects influence what ultimately becomes themes. Central to these are the research questions (Nowell et al., 2017).

I member-checked the transcribed interviews to gain clarification and to ensure trustworthiness and qualitative validity (Strauss & Corbin, 1990, 1998). In qualitative research, a member check, also known as informant feedback or respondent validation, is a technique used by researchers to help improve the accuracy, credibility, validity, and

transferability of a study (Strauss & Corbin, 1990). I saved the transcribed interviews as PDF documents, which allowed the collected data/documents to remain in the original configuration. I save each file to my computer hard drive in a personalized form for future reference.

Trustworthiness

To be accepted as trustworthy, qualitative researchers must demonstrate that data analysis has been conducted in a precise, consistent, and exhaustive manner through recording, systematizing, and disclosing the methods of analysis with enough detail to enable the reader to determine whether the process is credible (Nowell et al., 2017). I put the knowledge created through this research into practice. Therefore, it is important that this research is recognized as familiar and understood as legitimate by researchers, practitioners, policy makers, and the public. Trustworthiness is one way in which researchers can persuade themselves and readers that their research findings are worthy of attention (Hammarberg et al., 2016).

Peer review and member checking are two methods I used to provide credibility. Peer review refers to consultations being held regularly with the dissertation committee to examine the themes and the trends in the data collection (see Hammarberg et al., 2016). Member checking refers to the researcher taking emerging themes to the 12 interviewees to seek clarification and obtain additional information (see Hammarberg et al., 2016). This process helped the participants verify that my interpretation of what they said was correct.

I demonstrated transferability by the thick description that the research study's findings are applicable to other contexts. In this study, *other contexts* meant similar situations, similar populations, and similar phenomena. Similar situations refer to learning disability studies, similar populations refer to SLDs, and similar phenomena refer to K-12 instructors applying assistive technology. I used inquiry audit to establish dependability, which requires an outside person to review and examine the research process and the data analysis to ensure that the findings are consistent and could be repeated (see Korstjens & Moser, 2017). My first outside person was a recent graduate of Walden University with a Doctorate Degree in Curriculum Instruction and Analysis. My second outside person was a professor at Purdue University Global.

The degree to which the findings of the research study could be accessed as having confirmability by other researchers (Korstjens & Moser, 2018) was as follows. My concern was with establishing that the data and interpretations of the findings were clearly derived from the data and not the result of my bias.

Ethical Considerations

Prior to contacting the school or participants of the study, I obtained Institutional Review Board (IRB) approval (approval # 07-17-23-0749278). As a measure of ethical protection, I obtained informed consent from all participants. For purposes of enhancing reliability, I employed a peer reviewer. During an information session, I ensured participants that their rights to privacy and confidentiality were protected. I also gave participants an opportunity to ask any questions they may have had pertaining to the study. I provided full disclosure of the research intentions to participants and presented a

clear message that participation was voluntary. I also provided participant consent forms that answered questions they may have had involving their rights to privacy, procedures, confidentiality, and contacts in the event a participant had questions related to the study. Gaining IRB approval was essential and required to ensure that the research methodology was ethical and that there would be no physical or psychological harm to the study participants. The informed consent form is a document summarizing the purpose of the study, showing proof to the participant regarding assurance of anonymity and confidentiality and eliminating or minimizing any ethical issues, and discussing how the interviews will be conducted with their participation (Curran et al., 2019).

I assigned the interview transcripts files a number from 1 to 12, which was the number of participants in the study. I chose this measure to ensure and to protect the study participant's privacy. The participants' real names do not appear in any of the interview transcript files. I will store the data collected in the interviews in my password-protected computer and will store it for 5 years, after which they will be permanently deleted if no longer needed.

Summary

In this chapter, I outlined the research method used to answer the research questions. The chapter contains a discussion of the procedure, study participants, data collection, and interview questions and outlines the specifics of how the study was conducted and who participated in the study. In this chapter, I explained how a basic qualitative methodology was used to develop the purpose of the study, which was to explore the reasons special education teachers do not consistently employ assistive

technology and to consider teacher perspectives on the best way to integrate assistive technology into the instruction of SLDs. All study-selected participants were expected to participate by sharing their experiences in the classroom/workplace. I asked participants to share their perspectives of special education teachers regarding the use of assistive technology in instructional practices to promote the success of SLDs. An analysis of the data is presented in Chapter 4.

Chapter 4: Results

The purpose of this qualitative study was to explore the reasons special education teachers do not always include the use of assistive technology in their instructional practice and to consider special education teacher experiences on the best way to integrate assistive technology into the instructional practice of promoting academic success of SLDs. While examining the problem three research questions were posed:

RQ1: What are special education teachers' reasons that they do not use assistive technology in their instruction of students with learning disabilities?

RQ2: What are special education teachers' experiences regarding the best way to integrate assistive technology into the instruction of students with learning disabilities?

RQ3: How frequently do special education teachers use assistive technology in the instruction of students with learning disabilities?

These research questions were answered through data collected from conducting individual interviews with 12 special education teachers who were employed in a large high school located in the Southeast United States.

Flynn (2023) noted that special education teachers are teaching professionals who focus on the education needs of students with physical, emotional, cognitive, or behavioral special needs. Special education teachers may be generalists with knowledge and talents in various subjects and special needs. Alternatively, they may have an academic specialization and training with speech impairment, hearing problems, language delays, intellectual disabilities, seizures, orthopedic impairment, visual

impairments, autism, traumatic brain injuries, or learning disabilities. Special education teachers help to develop and provide IEPs for every child in the public school system with documented special needs.

As this study was conducted, the experiences of the participants were cultivated, especially their familiarity with the IEP as a tool for inclusion. King-Sears (2022) felt that IEP familiarity was to be the basis for any meaningful learning disability/assistive technology inclusion. King-Sears reported that central to inclusion is the IEP process. An IEP is defined as a written document prepared for a named student that specifies the learning goals that are to be achieved by the student over a set period and the teaching strategies, resources, and supports necessary to achieve these goals. It is a document and a process that serves two purposes: education and accountability. Educationally, the document sets out the targets for the student's learning and the expected learning outcomes. In terms of accountability, the IEP records and evaluates the effectiveness of provision for the student (King-Sears, 2022)

Assistive technology is now included in the resources and support necessary to achieve SLDs' learning goals. Satterfield (2020), a noted expert on outcomes of assistive technology in education, posited that the idea of identifying and measuring assistive technology outcomes seems at first to be simple. However, assistive technology is part of a larger process that includes assistive technology implementation services and the intervention of which assistive technology is itself a part. Given the expansion of assistive technology options available today, researchers must examine the question of which assistive technology solution best meets a client's needs. While rehabilitation and

other medical fields have sought to measure outcomes for some time, concern for assistive technology outcomes in education began to emerge in the mid-1990s (Satterfield, 2020).

Consensus as to what outcomes should be measured has remained elusive. Several federally-funded projects, professional surveys, and summit discussions have provided a context for the examination of the collection of assistive technology outcomes data. Recent developments have rekindled discussion of outcomes by demonstrating that the field remains unprepared regarding producing assistive technology outcomes evidence (Satterfield, 2020).

According to the IDEA of 1997 (PL 94-142, 1975), “Assistive technology refers to any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of children with disabilities.” In education, assistive technology serves to enhance learning and support classroom performance and participation. Assistive technology can range from pencil grips and raised-line paper to screen reading software and high-tech speech-generating devices (IDEA, 1997, 2004; Li et al., 2015).

The law also defines assistive technology services to encompass and support the selection, acquisition, and use of assistive technology, including evaluation and training for students, families, and professionals. Some have suggested that while these definitions of assistive technology and assistive technology services are important, they represent only two legs of a three-legged stool. The third leg should address assistive technology outcomes. Without greater definition, educational professionals have little on

which to base instructional and purchasing decisions regarding assistive technology (Satterfield, 2020).

Data from most of the participants revealed a lack of training and experience at the college level and skills at the local school level that impeded their success and impacted their perceptions regarding the inclusion of SLDs in the classroom setting. Therefore, there is a need for additional training experience and support to successfully meet the needs of SLDs and to change the attitudes and views of instructional models that support students with special needs, including inclusion.

In conclusion, all but one of the participants felt as if they did not have the necessary training and support from administrators to accommodate and meet the students' needs. The participants stated this as one of the reasons they do not use assistive technology in their instruction of SLDs. Regarding the best way to integrate assistive technology into the instruction of SLDs, the participants felt co-teaching with trained learning professionals was the best way. In response to RQ3 pertaining to the frequency of special education teachers' use of assistive technology in the instruction of SLDs, the response ranged from frequently to not at all frequent, depending on the level of participant training.

Data Collection

After receiving permission to conduct research from Walden University's IRB on July 17, 2023, and approval from the proposed research site on August 21, 2023, I made face-to-face contact with the participants to receive informed consent for participation in the study. I officially contacted the participants individually and in person and explained

to them the reason for the study and why they were requested to participate. I presented participants a letter to explain that their participation, identity, as well as the identity of the school and school system would remain confidential. I also shared my role as the researcher and the interviewer with the participants.

All participants received a face-to-face reminder 2 days prior to their scheduled interviews to confirm their appointments and/or reschedule the interviews, if necessary. The total number of participants in the study was 12. The 12 participants responded that they willingly wanted to participate in the study. After all consent forms were collected and all appointments had been confirmed, I began the interview process.

The interviews were conducted in one of the school's classrooms during noncontractual hours. I used the interviews as a method to gather data from participants on their experiences in the training they received at the college level, the support they received from school administrators and other school personnel, as well as any other support necessary to be successful in meeting the needs of students with disabilities.

Creswell (2018) verified that in a qualitative study, data are collected from the participants in the form of interviews, research, surveys, and questionnaires. I set up and conducted the interviews for this study in an environment that was conducive for the interviews using one-to-one correspondence. I gathered all interview material needed for the interviews prior to the interview sessions and made sure that the environment was comfortable and as quiet as possible. The interview materials needed were a research journal, an audio-tape recorder device, the individual participant interview guide and questions, and a clipboard for the interview guides. I also had a copy of the interview

guide attached to a clipboard, which can be beneficial in taking notes and keeping track of direction with guiding questions and proceedings of the interviews. I audio-taped the individual interviews.

I used self-designed protocols established by Creswell (2018) for my individual participants, and I began the interviews by restating the procedures, the voluntary nature of the study, its risks and benefits, non-compensation, and finally, the confidentiality of each interview. I asked the individual participants 10 open-ended questions. The time span of the interviews ranged between 30 minutes to 1 hour. The questions I asked were directed toward the attitudes and views of special education teachers about the instruction of students with disabilities in their classrooms and the inclusion of an instructional model. At the end of the interview, I thanked each participant for their time and participation. After the final interview was conducted, I collected and compiled the interviews, my research journal, and a portable flash drive and secured and stored them.

Data Management

I stored all data collected in my home office in a brown file folder locked in my file cabinet. The participant consent forms, audio-tape recorder, audio-recorded interviews, my research journal notebook, and my flash drive have all been stored in this file cabinet. The research journal was written in a notebook and recorded in the form of a word processing document on my laptop computer with password protection. I also backed up the document on my portable flash drive. The research journal serves as the secondary source of data. All data that are compiled in my locked file cabinet will be locked up in the file cabinet and stored for a minimum of 5 years.

Data Analysis

This study was influenced by Creswell's (2018) inductive approach process of qualitative analysis. I analyzed the data through this approach to determine that the research problem and questions were answered. Strategies suggested by Creswell were used to analyze the individual interviews. As a first step, I used a certified transcribing company to transcribe all recorded interviews and to expedite the time-consuming process. After receiving the transcribed interviews back, I used SPSS qualitative data analysis software to strengthen the study and to have a more creative, systematic, and thorough research study. This software allowed me to cluster and analyze different statements and quotes of the various interviews that highlighted the phenomenon experienced by the participants with inclusion of special education students into common patterns and themes. I then compared and color coded these patterns and themes alongside the response of each participant by creating codes and themes qualitatively to create multidimensional categories, while counting the number of times they appeared in the text data.

Creswell (2018) stressed that it is imperative that the researcher review the interviews numerous times when examining the data to get a true picture of the entire piece. I created a preliminary framework for analysis by identifying an open coding category, and I created categories around this core phenomenon. I grouped similar words and phrases together. This was done to identify statements and quotes from the interviews with common themes about the phenomenon experienced by the participants with the inclusion of special education students.

Furthermore, I organized the interview transcripts with open coding and proceeded to axial coding to move from descriptive coding to more abstract coding. I then used member checking to test the complete report with the participants before distributing it in the final form and to confirm the credibility of the research study. Each member read their individual script responses and confirmed the data to be accurate. Finally, I categorized the patterns and themes into core themes. This process is data reduction, a process of condensing data and simplifying data by focusing on the issues being addressed (Mezmir, 2020). Data reduction refers to the process of selecting, focusing, simplifying, and transforming the data that appear in written field notes or transcriptions (Mezmir, 2020).

The data provide evidence of problems that have originated from a lack of knowledge, training, and support necessary to be successful in meeting the needs of students with disabilities. In addition, when general education teachers have negative attitudes toward teaching students with disabilities, both teachers and students suffer. Several key topics emerged from the coding process because of the participants' responses to the interview questions.

Structural and Textural Descriptions of the Individual Interviews

In researching special education teachers' perceptions regarding the inclusion of disability students in assistive technology and in recording the analysis of the participants' interview responses, I separated the participants. The method I used to separate them was by the years of learning disability classroom teaching experience to distinguish among those teachers with 5 years or less teaching experience and those with

10 or more years of teaching experience. The theme that emerged most frequently was the teacher's lack of effectiveness when instructing SLDs due to lack of training.

King-Sears (2022) ascertained,

The goal of inclusion is to create schools with prepared teachers that recognize all students have a right to participate in all aspects of the school community environment; teacher training institutions must provide the education necessary for effective implementation of inclusionary practices. (pp. 8-9)

The participants' perceptions of themselves as ineffective when working with students with disabilities was because they lacked the appropriate training needed in this area. The participants voiced their perceptions due to the lack of training that was received at the college level was a primary theme. Some of the difficulties the participants emphasized in their perceptions ranged from lack of knowledge, preparedness, differentiation, and training in the teacher education program/college level to local school staff development. Local school staff development and cooperation between general education teachers, special education teachers, and paraprofessionals was the primary theme emphasized as the best way to integrate assistive technology into instructional practices.

All but one of the participants conveyed in their responses to interview questions that they did not receive adequate training in working with students with disabilities to be effective and to successfully meet their needs or the needs of the learning-disabled students. Furthermore, the participants who had at least one college course conveyed that they continue to feel unprepared and ineffective when instructing SLDs. Participant 04 stated:

The unpreparedness falls into two categories. The first category is when I fail to recognize that a student is not a candidate for assistive technology and the stigma that follows that student because it may be embedded in his or her IEP because of the incorrect information in the IEP.

The second category is when the correct information is not in the IEP. Participant 05 stated, "Failure of recognition, that is, the failure to recognize that a student qualifies as an LD and assistive technology candidate, is my primary reason for not including LD students in assistive technology programs." Participant 06 stated:

The reason I do not always include LD students at instructional practices is because of my belief that students with LD should be taught in separate classrooms and under the direct supervision of special education teachers and paraprofessionals schooled in these instructional methods.

Most of the participants felt like more training is necessary at the college level and more classes should be offered or made available to prepare teachers for working with students with disabilities. Participant 07 offered the following, "I was fortunate to attend a university where there is a varies curriculum in disability studies and assistive technology applications." Participant 08 stated, "My college training in the use of visual aids such as tablets, and iPads and Whiteboards has had a great influence on my teaching of assistive technology students."

As I reflected over the interviews, it was quite alarming to see that the novice participants had very similar experiences to those of veteran participants with 10 or more years of teaching experience in the classroom. The novice and veteran teachers reported

similar experiences in the training they received at the college level. Interview Participant 08 stated, “My theory is that students with LD using assistive technology should be taught in separate classrooms rather than be included in the general population. This way they could be attended to by LD and assistive technology specialists.” Participant 09 stated:

I had only one special education course, and it didn’t have anything to do with what I’m facing in the classroom today. It did not prepare me for working with students with real disabilities, and they were not helpful at all. I feel as if the course was a waste of time.

In comparison, Participant 09, a teacher with 16 years of experience, stated:

The only course I had was an exceptional childhood course. During this course, I had no interactions with special needs students during my college years. I did not acquire any theory or practical skills during this course, and now I am left feeling inadequately trained and worried that I am an ineffective teacher.

Additionally, Participant 10, a teacher with 21 years of teaching experience, stated, “I have been out of college for 22 years, and the only course that I had was Introduction to Special Education, and the training that I received did not come until I got into the classroom.”

According to the participants in this study, they do not feel that their college-level training courses prepared them to be successful and effectively meet the needs of students with disabilities and/or the application of assistive technology. Asuman et al. (2018) concluded,

The college training that inclusion teachers receive is not sufficient to equip them to teach students with different disabilities in an inclusion setting. Therefore, more training is needed in the field of special education to enhance understanding and improve attitudes regarding inclusion. (p. 42)

Teachers have identified the lack of administrative support as another challenge militating against the implementation of inclusive learning disability and assistive technology education. A factor that influences attitude is the amount of support general educators receive. Due to the limited amount of support from administration, paraprofessionals, and support specialists in schools serving students with disabilities, teachers are left feeling inadequate, unprepared, and incompetent when working in the inclusion classroom (Asuman et al., 2018). Participant 11 stated, “A feeling of a sense of inadequacy in the ability to successfully meet the needs of students with disabilities due to lack of support.” Participant 12 remarked, “Administration should support the implementation of inclusion and get more involved in understanding what teachers are experiencing when working with a variety of students with disabilities.”

While many general educators show skepticism toward inclusion, they are willing to try it if appropriate supports are in place. Having the necessary tools and assistance is a major concern. These teachers felt that teaching students with disabilities involves too much work (e.g., IEPs). Many general education teachers do not feel they have the means or help to meet the expectations of an inclusive classroom. Participant 02 stated,

There has been a huge disservice for the students with disabilities in my classroom, due to a lack of training and support on my behalf of knowing how to

deal with certain kinds of needs of students with disabilities and assistive technology applications. The lack of support for the students that are having behavior issues totally distract from the education of the other children in the classroom. I consider this to be a very big negative when it impacts all the other children just because of one child. It takes away time and attention from everyone else and their academic success. I think these students need to be removed from the classroom rather than telling me to buzz the front office and wait for someone to come. I think when the needs are that big, there needs to be more support.

In summary, the themes from the textural and structural descriptions of the individual participants' interviews specified that their attitudes and beliefs toward assistive technology inclusion and teaching students with disabilities, in general, derived from the following influences: teacher ineffectiveness when instructing SLDs due to lack of training, teachers feeling inadequate in their ability to successfully meet the needs of students with disabilities due to lack of support, and attitudes and beliefs that developed towards the inclusion model and teaching students with disabilities due to a lack of training, tools, and resources.

Key Findings

RQ1: What are special education teachers' reasons that they do not use assistive technology in their instruction of students with learning disabilities? Three major themes evolved through RQ1, which stand as a foundation in addressing the research questions for this study: nonusage, integration, and frequency. RQ1 addressed reasons special education teachers do not use assistive technology in instructional practices pertaining to

SLDs and resulted in multiple findings: lack of assistive technology training, unfamiliar assistive technology concepts, lack of administrative support, reluctance to assistive technology and newness, unable to judge feedback, assistive technology implementation issues, unable to gauge assistive technology outcomes, difficulty correlating assistive technology input with improved performance, insufficient time for students who struggle, unsure when to apply support, unsure when to apply behavioral support -v- emotional support. Table 1 shows the reasons special education teachers do not use assistive technology in their instruction of SLDs.

Table 1

Reasons Special Education Teachers Do Not Use Assistive Technology in Their Instruction of Students with Learning Disabilities

Theme	Participant	Codes
Nonusage	1	Lack of assistive technology training
	2	Unfamiliarity with assistive technology concepts
	3	Lack of administrative support
	4	Reluctance to assistive technology newness
	5	Unable to judge feedback
	6	assistive technology implementation issues
	7	Unable to judge assistive technology outcomes
	8	Difficulty correlating assistive technology input with improved performance
	9	Insufficient time for students who struggle
	10	Unsure when to apply support
	11	Unsure when to apply emotional support
	12	Unsure when to apply behavioral support

RQ2: What are special education teachers' perceptions regarding the best way to integrate assistive technology into the instruction of students with learning disabilities?

RQ2 addressed the integration of assistive technology in instructional practices pertaining

to SLDs. Again, the result was multiple findings: integration focusing on student outcomes and not inputs, integration of continuous review and modification assistive technology practices, integration of more co-teaching with general education students, integration practices that ensure all students can read, integration aspects that follow extra assistive technology instruction time, integration to reteach the days lesson, integration by addressing missing foundational skills, integration that corrects assistive technology and other misunderstandings, integration preparations that allow special educators to apply their strengths, and integration reliance on paraprofessional assistive technology support. Table 2 shows special education teachers' experiences regarding the best way to integrate assistive technology into the instruction of SLDs.

Table 2

Special Education Teachers' Experiences Regarding the Best Way to Integrate Assistive Technology into the Instruction of Students with Learning Disabilities

Theme	Participants	Codes
Integration	1	Focus on student outcomes
	2	Less focus on initial inputs
	3	More co-teaching
	4	Practices that ensure all students can read
	5	Practices that allow extra assistive technology instruction time
	6	Reteach the days' lesson
	7	Address missing foundational skills
	8	Correct assistive technology misunderstanding daily
	9	Preparations that allow special educators to apply their strengths
	10	Reliance on paraprofessional support
	11	Focus on repetition
	12	Continuous review

RQ3: How frequently do special education teachers use assistive technology in the instruction of students with learning disabilities? RQ3 addressed the frequency of assistive technology in instructional practices about SLDs. Again, the result had multiple findings: frequencies with strong family support, frequencies with strong community support, frequencies where both student and teacher can learn, frequencies that arise when assistive technology is not expensive, frequencies that arise when assistive technology awareness is apparent, frequencies when assistive technology resources are present, frequencies stemming from paraprofessionals and co-teachers abreast of UDL, Rtl, PBIS, and assistive technology based practices.

Discrepancies

Ten participants agreed that they lacked the necessary training needed to implement successful inclusion practices in their classrooms. The two participants who felt they received adequate training were able to implement the training in their classrooms.

Patterns, Relationships, and Themes

I found that the experiences of novice teachers (teachers with 5 years or less of teaching) compared to veteran teachers (teachers with 10 or more years of teaching experience) were very similar. Most of the novice teachers felt they had not received sufficient training in more recent years of teacher training and had not been prepared for today's inclusion classroom settings. When asked about their experiences at the college level, most of the novice teachers agreed with the veteran teachers that higher learning institutions need to improve their programs to prepare teachers for the challenges that lie

ahead in inclusion classroom settings. Additionally, all but one of the 12 participants shared that they were very disappointed in the training that they had received and felt like they had been cheated out of a very important part of their learning experience at the college level.

Evidence of Data Quality

In an ongoing effort to analyze the data for this study, I found that the patterns, relationships, and themes of the findings were valid. Virtually all the study findings were based specifically on individual interviews. According to Creswell (2018), a researcher must specify the steps that are taken to check the validity and credibility of his or her research process to highlight its significance.

Internal Validity

According to Creswell (2018), a researcher must specify the steps that are taken to check the validity and credibility of his or her research process to highlight its significance. Additionally, Creswell stated that validity is seen as a strength in qualitative research, as it determines the accuracy of the findings. Creswell recommended strategies such as member checking; rich, thick description; bias reduction; peer debriefing; inclusion of negative or discrepant information; prolonged time; and external auditing to assist with finding accuracy. In this study, I used the strategies of member checks to enrich internal validity. Member checks involved asking participants to review the transcribed scripts and elaborate on their authenticity. Each member read his or her individual script responses and confirmed the data to be accurate.

External Validity

External validity has been described by Trafimow (2023) as transferability in a qualitative study. This study used rich, thick description to describe the participants and settings under study, as well as the data analysis protocols, data collection procedures, and lastly, the findings of the research study. Additionally, Trafimow explained external validity in research refers to the extent to which the results of a study are generalizable to the participants in daily practice, especially for the population that the sample is thought to represent.

Reliability

Reliability refers to how stable the data are (Wienclaw, 2021). In this study and in the research context, reliability is all about ensuring that if you were to repeat the same study using the same reliable measurement technique, the researcher would end up with the same results. It is like having multiple researchers independently conduct the same experiment and getting the same outcomes that align perfectly (Wienclaw, 2021).

Trustworthiness in this study and of a study is necessary to examine the process by which the end-product has been achieved and present faithful descriptions recognizable to the readers (see Enworo, 2023). In establishing trustworthiness, Lincoln and Guba (1985) created stringent criteria in qualitative research known as credibility, dependability, confirmability, and transferability.

Transferability in this study and in qualitative research is synonymous with generalizability or external validity in quantitative research. Transferability is established by providing readers with evidence that the research study's findings could be applicable

to other contexts, situations, times, and populations. It is important to note that as a researcher one cannot prove that the research study's findings will be applicable. As the researcher, one labors to provide the evidence that could be applicable. Lincoln and Guba (1985) noted, "It is, in summary, not the naturalist's task to provide an index of transferability; it is his or her responsibility to provide the database that makes transferability judgments possible on the part of appliers" (p. 25).

Summary

This doctoral study was purposefully intended to examine and describe the experiences of special education teachers and the attitudes and concerns that they may have towards the inclusion of students with disabilities in assistive technology practices. This chapter was designed to explain how the data were gathered, collected, and analyzed. It also explained how the research questions were answered. The research questions were as follows:

RQ1: What are special education teachers' reasons that they do not use assistive technology to explain students with learning disabilities?

RQ2: What are special education teachers' perceptions regarding the best way to integrate assistive technology into the instruction of students with learning disabilities?

RQ3: How frequently do special education teachers' use assistive technology in the instruction of students with learning disabilities?

Additionally, the data analysis involved responses from 12 interviewed participants who were special education teachers and who currently work in an

elementary inclusion classroom setting. The data from the interviews were transcribed, coded, and later analyzed through the process of data reduction. Data reduction is a process of condensing data and simplifying data by focusing on the issues being addressed Zhang et al. (2023).

In addition to the data reduction process, member checking was used to support the credibility of the study and to test the overall report with the participants before sharing it in final form. I used an individual textural and structural description to explain more detailed representations of each participant's insights and views on his or her attitudes and beliefs toward inclusion. The textural and structural descriptions also helped to identify the common themes that were used to answer the research questions for this study. There were three common themes that evolved from this study that stood out the most. I used these themes as a foundation for the findings in this study, as well as to address and answer the research questions used in this study.

Chapter 5 includes a summary of why and how the study was conducted, an explanation/interpretation of findings, a review of the literature, implications for social change, and recommendations for action. Chapter 5 also includes recommendations for further study and the researcher's reflections upon the research used in this study.

Chapter 5: Discussion, Conclusions, and Recommendations

The IDEA (2004) ensured that students with disabilities would receive a free and appropriate academic and social education comparable to students without disabilities. Therefore, classroom teachers must ensure that students with disabilities are served and appropriately accommodated to meet their needs in the general education classroom. Teachers have been expected to meet the needs of all students through differentiated instruction, which includes providing accommodations for students with disabilities. The current study showed that teachers expressed concerns and frustrations and developed negative attitudes and beliefs toward inclusion due to insufficient training, lack of support, and inappropriate resources.

This qualitative study evolved to examine the problem, which is that special education teachers do not always include the use of assistive technology in instructional practices to promote the academic success of SLDs. The participants in this study were all instructors teaching at the same public high school, which in 2018 reported a success rate of 48% compared to an objective rate of 100%, according to a report issued by the school.

The purpose of this study was to show the reasons special education teachers do not always include the use of assistive technology in this instructional practice and to consider unique education teacher perspectives on the best way to integrate assistive technology into the instructional practice of promoting the academic success of SLDs.

The following research questions were open-ended to guide the study while remaining open to what emerged from the data. In alignment with the title, research problem, and purpose, the following research questions were posed:

RQ1: What are special education teachers' reasons that they do not use assistive technology in their instruction of students with learning disabilities?

RQ2: What are special education teachers' perceptions regarding the best way to integrate assistive technology into the instruction of students with learning disabilities?

RQ3: How frequently do special education teachers use assistive technology in the instruction of students with learning disabilities?

The framework I used in this study was observational learning, also known as social learning theory, which focuses on the human being's learning patterns based on observation of other human beings (Bandura, 1977). Observational learning is deemed an appropriate framework because social learning theory argues that in and out of the classroom, children learn through a 4-step pattern (Bandura, 1977).

Interpretation of the Findings

The participants conveyed in their responses to interview questions that they did not receive adequate training in working with students with disabilities to be effective and to successfully meet their needs or the needs of the SLDs. Furthermore, the participants who had at least one college course conveyed that they continue to feel unprepared and ineffective when instructing SLDs. One participant stated that the unpreparedness falls into two categories. The first category was revealed to be when the participant fails to

recognize that a student is not a candidate for assistive technology and the stigma that follows that student because it may be embedded in their IEP because of the incorrect information in the IEP.

The second category was revealed to be instances when correct information is not in the IEP. Another participant stated the failure of recognition and explained that the failure to recognize that a student qualifies as a learning disabled and assistive technology candidate was the primary reason for not including SLDs in assistive technology programs. Another participant stated that the reason she did not always include SLDs in instructional practices is because of her belief that SLDs should be taught in separate classrooms and under the direct supervision of special education teachers and paraprofessionals schooled in these instructional methods.

Most of the participants felt more training is necessary at the college level and more classes should be offered or made available to prepare teachers for working with students with disabilities. This theory was put forth by a participant who had attended a university where there was a curriculum that included disability studies and assistive technology applications. A participant who had a technology background stated that his college training in the use of visual aids, such as tablets, iPads, and Whiteboards, has greatly influenced his preparedness for the teaching of assistive technology students.

The novice participants had very similar experiences to those of veteran participants with 10 or more years of teaching experience in the classroom. One participant repeated her theory that SLDs using assistive technology should be taught in separate classrooms rather than be included in the general population. This way the

student could be attended to by learning disabilities and assistive technology specialists. Separately, a participant stated, “He only had one special education course, and it didn’t have anything to do with what he is facing in the classroom today.” That participant added that “The course did not prepare me for working with students with real disabilities, and they were not helpful at all. I feel as if the course was a waste of time.”

In comparison, a teacher with 16 years of experience stated that the only course she had in college was an exceptional childhood course. During this course, the instruction included no interactions with special needs students. She further stated that she did not acquire any theory or practical skills during this course, and now she is left feeling inadequately trained and worried that she is an ineffective teacher. Additionally, a teacher with 21 years of teaching experience stated that she had been out of college for 22 years, and the only course that she remembers having was an Introduction to Special Education, and the practical training that was received did not come until she got into the classroom.

The study participants do not feel that their college-level training courses prepared them to be successful and to effectively meet the needs of students with disabilities and/or the applications of assistive technology. Shadreck (2015) concluded that the college training that inclusion teachers receive is not sufficient to equip them to teach students with the different disabilities in an inclusion setting. Therefore, more training is needed in the field of special education to enhance understanding and improve attitudes regarding inclusion (Shadreck, 2015).

The participating teachers identified the lack of administrative support as another challenge of the implementation of inclusive learning disability and assistive technology education. Another factor that influenced the attitudes of participants is the amount of administrative support the educators receive. Due to the limited amount of support from administration, paraprofessionals, and support specialists in schools serving students with disabilities, teachers are left feeling inadequate, unprepared, and incompetent when working in the inclusion classroom (Shadreck, 2015).

One participant reported a sense of inadequacy in the ability to successfully meet the needs of students with disabilities due to lack of support from the administration. Another agreed that administration should support the implementation of inclusion and get more involved in understanding what teachers are experiencing when working with a variety of students with disabilities. While many of the educators showed skepticism toward inclusion, they were willing to try it if appropriate supports are in place. Having the necessary tools and assistance is a major concern. These teachers felt that teaching students with disabilities involves too much work (e.g., IEPs). Many general education teachers do not feel they have the means or help to meet the expectations of an inclusive classroom. An interview participant stated that there has been a huge disservice for the students with disabilities in his classroom due to a lack of training and support on how to deal with certain kinds of needs of students with disabilities and assistive technology applications.

Collectively, the teachers felt that a lack of support for the students that are having behavior issues totally distracts from the education of the other children in the classroom.

This was a consistent finding, and most considered this to be a major negative when it impacts all the other children just because of one child. Most felt that this takes away time and attention from everyone else and their academic success. Many participants think these students need to be removed from the classroom rather than telling the instructors to buzz the front office and wait for someone to come.

Implications for Practice

Implications for practice involve discussing what your findings might mean for individuals who work in the same or similar fields. Assistive technology can be a novel and unique context for electronically observing behaviors, such as self-efficacy, attitudes, and outcomes, and recording and reporting such data as the learning-disabled student's ability to succeed in specific study situations and to accomplish tasks (Burke & Hughes, 2017).

Other researchers have used this conceptual framework in their studies to investigate the same topic. Sessoms (2016) used this conceptual framework in a qualitative case study to explore teachers' perceptions on whether face-to-face instruction using assistive technology works in improving the academic performance of students who are differently labeled. Forrester (2016) conducted a study of instructional modification by teachers in assistive technology applications. His research showed that making changes in assistive technology application instruction can evoke different responses from teachers and can influence their willingness to accommodate the needs of students with disabilities. Burke and Hughes (2017) wrote of using computer tablets as assistive technology devices to support learning in students with diverse abilities. Burke

and Hughes also found that the use of technology has the potential to help students compensate for their learning disability, resulting in the potential for greater independence and achievement.

The connection to this study is that the study and subsequent articles describe the kinds of technology that exist and that have the potential to help students compensate for their disabilities. The results of this study may be beneficial to school districts (for professional development), colleges/universities (for teacher preparation), assistive technology companies (for development and training purposes), special educators (for legal mandates of IDEA, 2004; Harmon, 2020), special education teachers (for assistive technology curriculum applications), and healthcare practitioners (for practical applications). The potential for positive social change implications of the study includes encouraging SLDs to develop their self-efficacy through confidence building and constructive feedback.

Recommendations

Recommendations for research are suggestions or advice provided to researchers to guide their study on a specific topic and/or research method. They are typically given after the study. Research recommendations are more action-oriented and provide specific guidance for future decision makers, unlike implications that are broader and focus on the broader significance and consequences of the research findings. While most agree that qualitative research is the right research method for this type of study, qualitative research tools are not designed to capture hard facts. The quantitative research method and a subsequent statistical analysis would have given the study more credibility.

The data discovered would have been strengthened using quantitative research tools such as statistics. A quantitative research study could be developed quantifying multiple aspects of the targeted demographic. For example, this study lacked participant diversity. A broader demographic of participants alone may be an area of future research.

Another quantitative study would be one that coupled this study's findings with that of a larger and more diverse population and potentially comparing the perspectives of female teachers versus male teachers, comparing the perspectives of participants who had college-level courses in learning disability studies and those who had no such courses, or comparing the perspectives of assistive technology savvy teachers to those who were not assistive technology savvy, as the acquisition of the knowledge was applied in answer to the research questions and as applied in practical classroom applications.

Another recommendation for research would be one involving teachers who stayed versus those who left the disability studies environment. Researchers may compare career stages of teachers who left the learning disability teaching profession and what the difference is at those career stages for the learning disability teaching professional who stayed. A study could be one that looked at the career trajectory of SLDs who benefited from assistive technology intervention versus SLDs who had no such intervention.

Researcher Reflections

The researcher's reflections are a vital part of the research process as they explain the experiences of the researcher throughout the study. It is necessary to reflect on these experiences to note possible biases, preconceived ideas, possible effects on the

participants, and changes in thinking that may have come about because of the study conducted by the researcher (Borowska-Beszta, 2017). Following are some common areas of reflection in this study:

- **Research methodology:** I reflected on an evaluation and analysis of the chosen research methods and processes used in the study. I hope to have provided insights into the strengths, limitations, and implications of the research approach.
- **Suitability:** I reflected on whether the chosen research methodology aligned with the research objectives and questions. I provided and selected methods that were appropriate for addressing the research problem and that provided meaningful and reliable data.
- **Data collection:** My reflection was on the effectiveness of data collection methods employed in the research; an evaluation of the techniques used to gather data, such as surveys, interviews, and observations; and consideration of factors like data quality, reliability, validity, and ethics.
- **Sampling:** In my reflections, I recall a heavy reliance on the sampling methods employed to select participants or sources of data and an assessment of the representativeness of the sample and consideration and potential biases or limitations associated with the sampling strategy. My reflections also included considerations of sample size and the generalizability of findings.
- **Data analysis:** I reflected on the analytical techniques employed to interpret and analyze the collected data and the assessment of the appropriateness and

rigor of the chosen analytical methods, such as coding or thematic analysis.

My reflections also considered any challenges or limitations encountered during data analysis.

- **Research validity and reliability:** My reflections also focused on the overall validity and reliability of the research findings. Researchers evaluate whether the research methodology employed has allowed for accurate and trustworthy results. They consider potential sources of bias, errors, or alternative explanations for the findings.
- **Ethical considerations:** I reflected on the ethical issues related to the research methodology, such as informed consent, privacy, confidentiality, and potential harm to participants. I assessed whether ethical guidelines and principles were followed throughout the research process.
- **Future directions:** I provided suggestions for future studies based on my reflections and identified areas for improvement and proposed alternative research.

Conclusion

There were three major themes that evolved from this study, and they stand as a foundation in addressing the problem statement, the purpose of the study, the research questions, and the conceptual framework: nonusage, integration, and frequency. The problem is that the special education teachers do not always include the use of assistive technology in instructional practices to promote the academic success of SLDs. The purpose of this study was to explore the reasons special education teachers do not always

include the use of assistive technology in their instructional practice and to consider special education teacher perspectives in the best way to integrate assistive technology into the instructional practice of promoting the academic success of SLDs.

The first most prevalent theme that evolved in all cases was nonusage, and “lack of training” was the most prevalent response that evolved in all cases, in the first two research questions, and in a review of the tables. The second most prevalent theme that evolved in all cases was integration, and the “lack of focus on student outcomes” was the most prevalent response that evolved in all cases, in the first two research questions, and in a review of the tables. The third most prevalent theme that evolved in all cases was frequency, and the “lack of strong administrative support” was the most prevalent response that evolved in all cases, in all three research questions, and in a review of the tables.

The results of this study suggest there are three themes relating to special education teachers’ perceptions regarding the inclusion of disability students in assistive technology:

- Nonusage and its primary by-product, which is lack of training.
- Integration and its primary by-product, which is lack of focus on student outcomes.
- Frequency and its primary by-product, which is lack of strong administrative support.

The participants conveyed in their responses to interview questions that they did not receive the adequate training in working with students with disabilities to be effective

and to successfully meet their needs or the needs of the SLDs. Therefore, they had not the talent to focus on and/or analyze student outcomes, and they were not assisted in any of these efforts by strong administrative support.

Hopefully, the findings in this study will prompt additional studies, especially those of a quantifying methodology where a broader demographic of the participants can be examined with particular attention to their learning disability teaching motivations as juxtaposed on to their assistive technology training. Data from my research findings may encourage schools to develop special programs that will provide teachers with the necessary training in learning disability applications, learning disability support tools, and assistive technology resources that are needed to appropriately educate students with disabilities. Inclusion is a law-binding agreement because of both IDEA (2004) and NCLB (2001).

Social change, by way of an upgrade in instructional strategies, should be the order of the day resulting in administrator, special education teacher, general education teacher, the parent, and all who are involved in educating students with disabilities.

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