1-1-2011

Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities

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COLLEGE OF EDUCATION

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Walden University
2012

Abstract

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MA, South Carolina State University, 1986

BS, Bowling Green State University, 1980

Doctoral Study Submitted in Partial Fulfillment

of the Requirements of the Degree of

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The Teacher as a Leader

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Abstract

Assistive technology (AT) is defined as any tool that can help integrate students with severe or multiple disabilities (SMD) into learning activities. As mandated by federal law, AT must be considered for all students with disabilities. Educators, however, do not consistently embrace low and mid tech AT devices in reading and the language arts, thus limiting student engagement in learning activities. The purpose of this study was to explore educators' perceptions of their experiences regarding the acquisition and the use of low and mid tech assistive devices with students with SMD. This study builds on the existing literature base of using AT to increase student participation in literacy activities, thus moving students through Vygotsky's zone of proximal development from limited performance to independent performance. Research questions in this study addressed (a) educators' experiences regarding the use of AT for students with SMD, (b) educators' perceptions of AT use for students with SMD, and (c) strategies educators use to match AT to students with SMD. A qualitative phenomenological research design utilizing interviews with educators and unobtrusive data collection was used to determine the effectiveness of the incorporation of AT devices in learning activities for students with SMD. Results indicate that educators have limited AT use and little or no training. This study indicates the need for formal and informal AT training for educators and contributes to social change by enhancing the literature on academic modifications and adaptations with the use of low and mid tech assistive device interventions. Implications for social change include improving teaching practices for students with SMD.

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Dedication

To my husband ONeal, who planned things he never did and did things he never planned. Yet, throughout our almost 30 years together, his love has remained unconditional.

Acknowledgements

I would like to thank the leaders at the district level who granted permission for my 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.

Thank you to my nephew Nick and my son Lewis, whose computer wizardry greatly assisted me as I earned an online degree using a dial-up internet provider.

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Section 1: Introduction to the Study

Children with severe or multiple disabilities (SMD) have cognitive, physical, and communications limitations that make accessing traditional learning activities difficult (Kirk, Gallagher, Coleman, & Anastasiow, 2009). Schalock, Luckasson, and Shogren (2007) emphasized three concepts characteristic of students with SMD: intellectual limitation, limitations in adapting to environmental demands, and early age of onset during the developmental period. These limitations adversely affect educational performance, and traditional means to access activities are not an option. Prior to 2007, Luckasson et al. (2002) observed that acknowledgement of each individual's limitations leads to a profile development of needed support. These authors defined *support* as "resources and strategies that aim to promote development, education, interests, and personal well-being of a person that enhance individual functioning" (p. 151). Therefore, when describing the limitations of students with SMD, addressing supports for engagement in learning activities should be included. By incorporating appropriate supports, such as assistive technology (AT), students with SMD may improve targeted skills. Edyburn (2007) noted that AT provides a variety of interventions to compensate for the limitations students with SMD may encounter.

Out of the 7,620 students enrolled in School District 1 and School District 2 in South Carolina (State of South Carolina Annual School Report Card, 2007), approximately 70 students were identified as SMD. Jackson (2005) noted that this low-incidence population generally does not exceed 1% of the school-aged population at any given time, thus posing significant challenges to local education agencies struggling to

meet their needs because of the relative rarity of students with these disabilities. Because public schools encounter these students so infrequently, they have little, if any, knowledge of how best to educate these students, of what technologies are available to assist them, and of the protocols to follow to obtain needed and appropriate support services from outside agencies. Students with SMD experience a commonality: They are difficult to serve by the local education agencies.

Even though students with low-incidence disabilities attend school the same amount of time as their counterparts, traditional classroom activities are not an option for these students because of the supports needed to address their limitations. Students with SMD exhibit a range of disabilities that impact the way they learn and acquire information (Heward, 2006). These students are diverse and have unique needs that extend beyond those of students with high-incidence disabilities, such as learning disabilities and mild mental disabilities.

Rothstein and Johnson (2010) stated that a wide variety of differences exist among children within each of the disability categories identified in the Individuals with Disabilities Education Act (IDEA, 2004). Children with the same functional level may have differing educational needs because of a variety of factors.

There is a lack of empirical data regarding students with SMD, low and mid tech device use, and engagement in core curriculum activities pertaining to reading and language arts. According to Foreman (2009), in the past, assessment protocols were administered primarily for the purpose of classifying students for special education placement, whether in a special school, program, or class. Through the years, this

placement policy has changed. Foreman recognized that “in the U.S., Australia, and most developed countries, the government policy requires an appropriate educational program is provided to all students regardless of the level of disability” (p. 9). For students with SMD, AT should be incorporated into the curriculum to provide an appropriate educational program with means to access the materials.

When used appropriately, AT has the potential to improve functional outcomes for individuals with disabilities. IDEA (2004) defined AT devices as “any item, piece of equipment or product system, whether acquired commercially or off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of a child with a disability” (20 U.S.C., 1401, Section 602[1]). An example of an AT device includes a single message communication aid to record a repeating phrase from a story, which is then activated by the user. Accommodations are required for students with SMD to gain access to activities that are readily available for their nondisabled counterparts. AT accommodations allow students with SMD to actively engage in activities. Instead of being passive observers, they can become active participants.

IDEA (2004) supported the role of AT in education for students with disabilities. According to IDEA, AT is a necessary component of education for all students with disabilities. AT is an integral part of special education supports, and AT considerations are mandated when planning and developing education programs for all students with disabilities. Lartz and Stoner (2008) noted that the No Child Left Behind (NCLB) Act of 2001 has targeted all students, both with and without disabilities, by emphasizing participation and success in the academic curriculum.

These federal mandates were intended to provide a solid foundation for AT incorporation into the curriculum beginning with early intervention services at birth, with refinement of AT needs from preschool through graduation from high school. Michaels and McDermott (2003) deemed AT as one of the "great equalizing forces in education and meaningful inclusion of students with disabilities both in terms of promoting access to the general curriculum and in facilitating the ability of the students to demonstrate mastery of that knowledge" (p. 29). Planning instruction with the incorporation of AT devices promotes engagement in activities for all students with diverse needs and varying abilities. Educators must consider presenting materials in such as way to ensure that all students have access to both core curriculum and expanded core curriculum activities.

Yet, for unknown reasons, I observed that educators working with students with SMD do not consistently use assistive devices to engage these students in learning activities. According to Day and Huefner (2003), ample evidence is available to confirm that school district personnel comply with IDEA protocols by simply including a checkbox on the Individualized Educational Program (IEP) form to indicate that AT has been considered. This checkbox format generally means the IEP team might not have seriously considered the benefits of AT implementation because educators do not have a thorough understanding of AT resources and the legislation governing their implementation (Marino, Marino, & Shaw, 2006).

Cognitive, physical, and communications limitations impair the engagement of students with SMD in classroom activities. Students in this low incidence disability population are difficult to educate because local schools infrequently encounter these

students, thus providing significant challenges for local education agencies to meet their individual needs. AT provides a means for students with SMD to access materials and compensate for their limitations. This chapter will provide background information regarding AT mandates along with problems that have arisen because educators do not embrace AT integration in a consistent manner.

Background

In 1998, Congress passed the Assistive Technology Act (ATA). Included in the ATA was the summation that "disability is a natural part of human experience and in no way diminishes the rights of individuals to make choices and to benefit from education" (p. 5). The ATA was intended to increase the active involvement of students with disabilities, increase the awareness of practices and procedures that facilitate the availability of AT, and enhance the skills and competencies of educators involved in providing AT.

The use of low and mid tech assistive devices with students with SMD in reading and language arts activities is the focus of this study. In the spring, classroom teachers administer the South Carolina Alternate Assessment (SC-Alt) to students with significant cognitive disabilities that result in performance that is substantially below grade-level achievement expectations even with the use of accommodations and modifications. This assessment is based on alternate achievement standards for students with significant cognitive disabilities who are unable to participate in statewide testing (*Test Administration Manual*, 2008).

The administrators' test manual outlines how to administer the test and includes 13 appendices, one of which discusses low, middle, and high tech AT, including definitions, examples, resources and materials, device information, training, and an AT continuum. However, educators in the school lack the knowledge to help students with SMD use assistive technologies in various learning environments. When asked about AT devices to enhance student responses, one classroom teacher at Rural School District 2 responded, "I would not know what assistive technology to use or how to use it" (P. Lake [pseudonym], personal communication, March 6, 2008). Examples such as the dialogue above validate the need for specialized curricula and instructional practices to address disability specific needs for students with SMD.

Enhancing literacy skills is a major focus when developing many students' Individualized Education Programs (IEPs). Luckner and Handley (2008) stated that "the most fundamental responsibility of schools is teaching students to read" (p. 7). Within School District 1 and School District 2, there have been recent initiatives to promote reading and language arts by including mandatory literacy enrichment for all students in all grades and at all schools. School District 2, for example, has implemented the Systematic Instruction of Phoneme Awareness, Phonics, and Sight Words (SIPPS) as a solution for struggling readers. In School District 1, all English and language arts (ELA) teachers are required to take five 15-week courses on literacy to improve student performance. These initiatives have the potential to provide resources for the students in general education and those students with high incidence disabilities. However, teachers still need means to integrate reading and language arts activities for students with SMD.

A minimal amount of relevant literature on teaching students with SMD is available. Even though Bowder, Mims, Spooner, Delzell, and Lee (2008) concluded that "literacy may be one of the most important instructional areas for enhancing quality of life for all students" (p. 3) there is not much research-based information available on the use of low and mid tech assistive devices to engage students with SMD in reading and language arts activities. Evidence is needed to encourage individuals to consistently utilize AT for the active engagement of students with SMD in learning activities, so these students' performance can progress from limited performance, to mediated performance, and ultimately to independent performance (Vygotsky, 1978).

As a researcher, my interests involve the human experiences of educators who work diligently to develop and implement strategies to engage students with SMD in learning activities. Students in the low incidence population pose a great challenge to educators who are searching for strategies to meet the diverse needs of these children with SMD. Exploring the concerns of educators may result in a better understanding of AT use by offering knowledge and practical support strategies. The goal of this research was to assist educators to reflect on their AT experiences, to improve their future practices, and to better inform interview participants with educational decision making. A combination of both knowledge and experiences may result in effectively utilizing AT to enhance the engagement of students with SMD in reading and language arts learning activities.

Problem Statement

In South Carolina School District 1 and School District 2, educators do not embrace low and mid tech AT devices consistently when it comes to reading and language arts activities for students with SMD. The literature review reveals that researchers primarily target high-incidence populations such as learning disabilities, speech disorders, and autism, along with high tech interventions that involve computers, mobility, and robotics. Currently, federal law (ATA, 2004) mandates the consideration of AT. A student's IEP must address the use of AT, and adults working with students with multiple disabilities are encouraged to use AT. However, educators inconsistently use AT to engage students with SMD in learning activities, as noted by discrepancies documented in students' IEPs. Students in this low incidence population are impacted by this problem because their cognitive and physical limitations hinder these students' access to traditional learning activities. There are many possible factors contributing to this problem, among which are barriers such as a lack of awareness of AT devices, a lack of funding, and a lack of training. These barriers were identified by Thorkildsen (1994) and still exist today.

This study contributes to the body of knowledge needed to address this problem by providing possible solutions to existing barriers regarding the use of AT devices with students with SMD during learning activities. This study addresses the pressures placed on educators to meet the needs of this diverse population by identifying strategies that will promote engagement in learning activities for students with SMD.

Nature of the Study

I chose a phenomenological approach to describe current AT device use and the effectiveness of the incorporation of AT devices in learning activities for students with SMD. Leedy and Ormond (2005) noted that a phenomenological study "attempts to understand people's perceptions, perspectives, and understandings of a particular situation [when] the researcher has had personal experience related to the phenomenon in question and wants to gain a better understanding of the experiences of others" (p. 139). As a phenomenological researcher, I depended almost exclusively on semi structured interviews with a purposeful selection of participants, all of whom have had direct experience with the phenomenon being investigated.

The primary form of data collection, phenomenological interviews, has been described by Fontana and Frey (2000) as one of the most powerful ways to understand another's perspectives. Interviews were conducted with 10 educators from various disciplines in special education, including classroom teachers and speech and language pathologists, and provided the main source of data. Unobtrusive data collection included the collection of page 8 of each IEP for students with SMD in order to document how the educators responded to the consideration of the special factor involving the concern of AT. Interview and unobtrusive data were interpreted using recursive data analysis where the data were reviewed repeatedly to elicit themes and meaning and then to validate the interpretation of the data. I identified the AT experiences of educators who are working with students with SMD, as well as the obstacles perceived to limit the participants' progress utilizing AT.

According to Creswell (2003), a qualitative research study is valid if the findings are accurate from the standpoint of the both the researcher and the participants. Three strategies were used to validate the accuracy of the findings, including triangulation, member-checking, and using rich, thick description to convey the findings. Peer debriefing by adult participants was a resource to determine if the information included in the final report was accurate.

Research Questions

There are limited studies about the low incidence population of students with SMD and low and mid tech assistive devices. A phenomenological approach (Creswell, 2007) was utilized to describe the meaning of the lived experiences for several educators about the concept or phenomenon of AT device use. According to Smith (2007), phenomenology was developed to explain how individuals give meaning to phenomena in their daily lives. Phenomenology explores "the essence of consciousness as experienced from the first person point of view" (Smith, 2007, p. 1). Schulz (1967) noted that phenomenological studies focus on providing research accounts for individuals in a specific setting by emphasizing insight into their lived experiences. Smith defined phenomenology as "a new approach to the study of consciousness and its roll in constituting or giving meaning to the world" (p. 11).

The mandate to consider AT when planning for the educational needs of students with SMD has challenged many educators to develop strategies to provide instruction that engages this low incidence population in activities associated with literacy. Understanding the common experiences of educators' use of AT provides a deeper

understanding of this phenomenon, which may lead to better practices involving the incorporation of AT into literacy activities.

The research questions for this study were designed to delve into the qualitative, rather than quantitative, aspect of educators' experiences with AT use, with the purpose of understanding the phenomenon from the participants' points of view. Amedeo Giorgi (2008), founder and contributor to the original *Journal of Phenomenological Psychology*, discussed one of the roles of the researcher in a phenomenological study:

> She seeks an ordinary person in the lifeworld and asks for a careful, concrete description of a situation in which the participant has lived through the experience of the phenomenon being researched. The reason for this is that the phenomenological psychologist is interested in *how* the phenomenon is lived. He lets the participant select the situation and of course that situation reflects the participant's understanding of what the phenomenon is. (p. 40)

With this role in mind, the research questions were open ended, thus allowing the participants to provide input regarding the phenomenon from their point of view and their experiences. Probing questions were included to clarify experiences and perceptions. Based on the fundamental principles of phenomenological research, the following questions guided this study:

1. What are educators' experiences regarding the use of AT for students with SMD?
2. What are educators' perceptions of AT use for students with SMD?
3. What strategies do educators use to match AT to students with SMD?

The research approach, questions, and findings are discussed in detail in Section 4.

Purpose Statement

The purpose of this phenomenological study was to describe educators' perceptions of the impact of AT for students with SMD in public schools in South Carolina. I explored the AT experiences of educators who serve students with SMD. Perceptions of educators who have worked with students with SMD were analyzed in order to broaden the scope of the research study and to provide information from those working directly with this low incidence population.

I investigated how educators use AT and what patterns emerged in their application of AT. Data were reviewed for procedures and strategies that could be considered essential components of AT integration to better meet the needs of students with SMD. Interviews were analyzed to better understand educators' planning and practice related to students with SMD, these students' engagement in literacy activities, and the incorporation of AT to enhance participation. Educators may use the information from this study to align their instructional strategies with AT choice. The results of this study could be used to develop trainings for educators on effective uses of AT for students with SMD.

Theoretical Framework

Legislation Impacting Students With Disabilities

Forty years ago, special education legislation did not exist; there was no legal basis for equal educational opportunities in the United States for students with

disabilities. Prompted by the Civil Rights movement in the 1960s, individuals with disabilities, their parents, professionals, and advocates demanded equal access to educational opportunities for students with disabilities (Ewing & Jones, 2003). Before this demand for equal access, many students with disabilities received educational services in facilities and institutes separate from their local schools. With the implementation of the federal Education for All Handicapped Children Act (1975), public schools were mandated to provide free and appropriate services to students with disabilities, regardless of the severity of their disabilities. Revisions and improvements to the 1975 mandate have occurred through several reauthorizations and the creation of IDEA (2004, § 2647). In addition, the No Child Left Behind Act of 2001 (NCLB, 2002, § 6301 (3)) sought to build one education for all students by enacting new standards of school accountability and providing highly qualified teachers to deliver instruction for all students. Bowder (2003) noted that NCLB includes educating students with SMD in a regular school setting with supplemental aids, supplemental services, and accommodations, and assessing all students in reading, mathematics, and science.

Much of the focus of educational reform has targeted the high incidence disabilities such as communication disorders (e.g., speech and language impairments), specific learning disabilities (e.g., attention deficit hyperactivity disorder [ADHD]), mild/moderate mental disabilities, and emotional or behavioral disorders (Jackson, 2005).

The targeted population for this research is not the high incidence population with the cognitive and physical capabilities to access instructional technology. The focus of this research is on the low incidence population, which includes approximately 1% of

students between the ages of 3 and 21. Low incidence disabilities include blindness, low vision, deafness, hard-of-hearing, deaf-blindness, significant developmental delay, complex health issues, serious physical impairment, severe disability, multiple disability, and autism (Jackson, 2005). According to Jackson (2005),

> When the issue at hand for students with disabilities centers on the provision of services in local schools, the availability of qualified personnel and the technical sophistication of necessary resources must be carefully considered. In order to provide students with disabilities with a free and appropriate public education, it is useful to classify learners in terms of *incidence*, or how many students with any particular disability or combination of disabilities reside in a community. Under such a system, students with the most commonly seen disabilities may be more appropriately served by local public schools while students with relatively rare disabilities may not find adequate resources or highly qualified personnel. (pp. 9-10)

For the purpose of this research, educators who work with students with SMD were the targeted population.

Vygotsky and the Zone of Proximal Development

Early childhood educators, such as Montessori, Froebel, and Steiner, all emphasized the importance of manipulative experiences (Elkind, 2005). These experiences included seeing, touching, handling items, and experiencing new sensations to create rich, hands-on materials for children to explore and conceptualize. These

experiences target the nondisabled population and must be modified if students with SMD are to be included.

Westling and Fox (2004) noted that students with SMD constitute the most heterogeneous group of all exceptional children and that the differences among students with SMD are greater than their similarities. Heward (2006) noted the one defining characteristic of students with SMD is the exhibition of significant and obvious deficits in multiple life skill or developmental areas, thus requiring the need for special services and supports.

Like early learning educators, Vygotsky (1978) agreed that children learn through exploration of their own environments, and intellectual growth is spontaneous. Vygotsky's social constructivist theory offered an alternative solution to educational reform by stressing the co-construction of knowledge. Wells (1999) noted that socio-constructivism emphasized "the co-construction of knowledge by more mature and less mature participants engaging in activity together" (p. xii) and that children could not fully realize their abilities without the help of adults. Vygotsky argued there was a zone of proximal development (ZPD) that could be addressed only with guidance and modeling by adults. Vygotsky proposed that

> an essential feature of learning is that with the creation of a zone of proximal development, learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers. (p. 90)

Certain conditions must be met if interaction is to enable potential development to come to fruition. These conditions involve assistance that enables the learner to achieve with an adult guide what the learner is unable to achieve alone. Vygotsky emphasized the teacher's role much more than other theorists.

For students with SMD who are within the low incidence population, adult intervention is a must. According to Vygotsky (1978), learning takes place in one's ZPD, which is a gap between what the learner can accomplish independently and what the learner cannot do, even with assistance. The ZPD is a continuum of learning. It is divided into three areas and includes performance limit—the child cannot perform, even with assistance; mediated performance—the child performs when assisted; and independent performance—the child performs without assistance (Vygotsky, 1978). Vygotsky surmised that the ZPD is determined by adult interactions, and current research (Obukhova & Korepanova, 2009) has validated this theory by demonstrating that help from adults can take on various roles from active adult encouragement to a neutral position without adult assistance, allowing students to participate in activities that are aligned to their abilities. Zuckerman (2007) observed:

> The ZPD of a child is not a naturally existing phenomenon that arises by itself every time an adult helps a child achieve greater independence. It is a special form of interaction in which the action of the adult is aimed at generating and supporting the child's initiative. (p. 43)

Students with SMD have a long history of limited engagement, not only to accessing educational opportunities, but also to accessing educational materials. The

theoretical basis for this study involves the recommended practice in education that calls for the active involvement of students (Greenwood, Horton, & Utley, 2002; Nielsen, 2001; Vygotsky, 1978; Zemelman, Daniels, & Hyde, 2005).

Active Learning Theory

Active learning theory is built on the premise that students should not be passive recipients of instruction from the educator, but should be actively involved in their learning with considerable hands-on opportunities (Downing, 2010). Active learning theory was developed by researchers as they observed students with SMD and how these students interacted in their environments (Nielsen, 2001). The key to this theory involves providing the students with opportunities to actively explore developmentally appropriate environments that were purposefully designed by adults. This theory is geared towards students with the most significant delays and has informed the study of active participation by students with SMD by "enabling [these students] to learn that they can act upon the world and initiate interaction with others" (Nielsen, n.d., p. 1). This theory holds that even students with SMD can learn when provided opportunities to actively explore and participate in activities. Wolery, Strain, and Bailey (1992) observed that students with SMD need specifically organized environments that have been adjusted to minimize the effects of their disabilities and to promote learning a broad range of skills. These students need competent professionals who are capable of promoting learning and identifying skills necessary to meet the specific needs of students with SMD.

Quality instruction is a key to helping students with SMD reach their greatest potential. Both curriculum adaptations and individualized teaching supports must be

considered in order to provide environments where students have opportunities to demonstrate knowledge and skills.

Definition of Terms

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 (ATA, 2004).

High tech assistive technology: Devices that require complex technical support strategies. High tech AT involves equipment that may be expensive, difficult to obtain, and may require sophisticated training (Cook & Hussey, 2002).

Individualized Education Program (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 (Heward, 2006). The IEP is developed by a multidisciplinary team and 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, § 2647).

Individuals with Disabilities Education Act (IDEA, 2004): The reauthorized federal law previously known as the Education for All Handicapped Children Act (PL-94-142) of 1975, which mandates school districts to provide a free, appropriate, public education for all students deemed eligible and in need of specialized services or instruction (IDEA, 2004, § 2647).

Low tech assistive technology: Strategies that do not involve any electronic or battery operated devices. Low tech devices are low cost, easy to use, readily available, and the least intrusive in the educational environment (Cook & Hussey, 2002).

Mid tech assistive technology: Simple electronic devices that often use batteries but require little training to use. They are portable and lightweight (Lahm & Reed, 2005).

Multiple disabilities: "Concomitant impairments (such as mental retardation-blindness, mental retardation-orthopedic impairment, etc.), the combination of which causes such severe educational needs that [the student] cannot be accommodated in special education programs solely for one of the impairments" (Jackson, 2005, p. 26).

No Child Left Behind Act (NCLB): Federal legislation that increases accountability for public schools by requiring academic standards for all students, establishing annual assessments for students in Grades 3 through 8, requiring schools to publicly report on performance data for all identified student groups (i.e., race, gender, disability, English language proficiency, and socio-economic status), and requiring teachers and paraprofessionals to be highly qualified, among other regulations. A goal of NCLB is for all students to be performing at or above grade level in reading and mathematics by 2013-2014 (NCLB, 2002, § 6301 (3)).

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. 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, § 2647).

Assumptions

For the purposes of this study, I selected participants because of the services they provide within the low incidence population of students with SMD. I specifically targeted educators working with students with SMD who are unable to access traditional learning activities because of their cognitive and physical limitations. The assumption is that the participants in this study represent the adults who will support the use of AT to engage students within this low incidence population to actively engage in reading and language arts activities. Another assumption involved current use of AT; Interview Protocol Question 1 asks "What AT have you used?" and it was assumed that the participants currently use some type of AT. It was also assumed that the participants knew the value of literacy for this low incidence population and that they incorporated some type of activities for accessing literacy activities.

Scope

Many of the participants have worked closely together with each other as a part of a multidisciplinary team to meet the unique needs of students with SMD. Therefore, the scope of each participant's views may be skewed due to lack of exposure to resources from other programs and personnel outside of the districts. Studying other school districts may generate a more varied set of perceptions.

At this time, only low and mid tech AT device use is being addressed. Including high tech device usage may produce different results with regards to AT integration.

Reading and language arts are the only subjects addressed in this research. Including subjects such as math, science, social studies or expanded core curriculum subjects such as social interaction and activities for daily living might have yielded different results because of the nature of the activities and the various means needed to access the curriculum.

Delimitations

This study focused on the perceptions of educators involved with students with SMD in two rural school districts in South Carolina. Neither general education teachers nor special education teachers who work with students with higher incidence disabilities were involved in this research study.

Limitations

This study reflects the perceptions of educators serving the low incidence population of students with SMD. The two districts being targeted serve public schools in the rural South and are mandated by law to offer students a free and appropriate public education. Findings may vary with a more diverse participant pool from public schools in non-rural districts, which secure more revenue from taxes levied by small and large businesses.

All data were analyzed regarding perceptions of AT use with no consideration to the number of years the educators had been serving this low incidence population.

Grouping data according to the years of experience of each participant may provide different perspectives.

As a teacher for the visually impaired in both of the districts being investigated, all educators asked to participate were fellow colleagues and friends. Different perceptions may be collected from an unfamiliar researcher, as the educators may answer more openly. Also, as a result of my position, it should be noted that I believe that AT makes a difference in a student's ability to function in a classroom setting when the right match is made. I also believe that in order for AT to be effective in a classroom setting, the teacher must endorse and encourage its use. Knowing that I have some bias prior to beginning the interviews, I tried to remain neutral and not be judgmental. Bryman (2004) validated the use of a research journal as a way to bracket bias and record the researcher's thoughts during data collection and analysis. Research journals served as a means to track personal impressions and were used in conjunction with recorded interviews to take notes about the interviewees' body language.

Significance of the Study

In 2004, 20,000 commercially made AT devices were available to maintain or increase the functional capabilities of individuals with disabilities (Edyburn, 2004). Edyburn noted, instead of providing comfort to educators and service providers who work with students with SMD, this number of AT devices often is overwhelming. Thorkildsen (1994) identified barriers to AT use, including lack of awareness of AT by professionals, lack of training in AT, insufficient funding or lack of knowledge about the

access to funding AT, and the problem of some school districts not allowing AT to leave the classroom.

What can be done to improve or increase the use of AT to provide students with SMD skills to engage in learning activities? Lahm and Reed (2005) designed a resource guide for teachers and administrators outlining types of AT for use in classrooms that includes numerous AT categories, and which is available to interested personnel in the districts under study. Lahm and Reed noted that there are thousands of items that can be classified as AT and many ways to think about AT. Categorizing AT based on the task for which the AT will be used has helped to provide guidelines for educators to match the appropriate AT devices to the student and activity. Lahm and Reed divided AT into the following categories: computer access, writing, communication, reading/studying/math, recreation and leisure, electronic aids for daily living, mobility, vision and hearing, and vocational.

With the number of AT devices available, and the degree of complication involved in using some of these devices, small steps need to be taken to encourage educators and service providers to use materials, and thus improve or increase the functional capabilities of their students. When addressing AT considerations, it is important to keep in mind the students' needs, the strength of the current learning environment, the availability of the materials, the student's IEP, and the devices appropriate for the child (Smith et al., 2005). In this phenomenological study, educators' experiences and perceptions of their students' AT needs were addressed.

Summary

The purpose of this phenomenological study was to describe educators' experiences and perceptions of AT for students with SMD in public schools in rural South Carolina. I explored the AT experiences of educators who serve students with SMD. Interview data were analyzed in order to identify themes from those working directly with this low incidence population.

AT is a means to provide alternative approaches in developing educational interventions for students with SMD. The findings of this study will enable educators working with students with SMD to promote social change by assisting students to overcome their limitations with the use of AT, thus actively engaging students in learning activities instead of promoting passive observation. Adults will understand the effects of AT on learning and on the development of skills for students with SMD. The educational needs of students with SMD should be the primary focus when determining curriculum access. The goal of this research is to break down barriers to AT by identifying how low and mid tech devices currently are being used in order to enrich the lives of students with significant disabilities and provide them with access to the curriculum so they may become part of an interactive learning community. By understanding the unique educational needs of students with SMD, educators can implement quality instruction for this low-incidence population with the use of low and mid tech AT interventions.

Section 2 includes a comprehensive examination of the literature regarding AT integration into literacy activities for students with SMD. The review identifies the characteristics of students with SMD and the types of literacy activities that enhance their

learning. AT barriers and kinds of AT are also discussed. Section 3 presents the qualitative research design and the data collection process that includes interviews and unobtrusive data analysis. Section 4 provides the findings of the phenomenological research study and describes implications of the data analysis. Section 5 presents a summary of the study. This section includes recommendations and implications for further research in the use of AT as an instructional tool to engage students with SMD in literacy activities.

Section 2: The Literature Review

In this section, an overview of the characteristics of students with severe and multiple disabilities (SMD) is provided, along with a discussion of the history of assistive technology (AT), AT barriers, and kinds of AT.

Research-based evidence abounds on the best practices for integration of literacy development in core curriculum areas for students in the high-incidence special education populations that include students with learning disabilities or students at risk (National Reading Panel, 1998; The Rand Reading Comprehension Report, 2004; Snow, Burns, & Griffin, 1998). Research journals are dedicated to literacy for students in the low incidence population who are blind or visually impaired (Literacy, 1996), and numerous books (Copeland & Keefe, 2007; Downing, 2010; Hallahan & Kauffman, 2008; Heward, 2008) exist with information regarding the characteristics of students with SMD. However, because this population is so diverse, more research is needed in order to meet the needs of the low-incidence disabilities population. Journals addressing high-incidence disabilities, special education technology, and high tech AT outcomes and benefits are published to keep providers abreast of current topics. Specific characteristics being targeted for research include low-incidence students with SMD, low and mid tech AT device utilization, the core curriculum subject of reading, and theories addressing active learning instead of the passive observer stance commonly promoted with these students. There is very little evidence available to inform the practices of educators who work with students with SMD and integrate low tech devices into the reading curriculum.

The purpose of this phenomenological study was to describe educators' experiences and perceptions of AT for students with SMD in public schools in rural South Carolina. This phenomenological study explored the AT experiences of educators who serve students with SMD. Perceptions of educators who have worked with students with SMD were analyzed in order to provide information from those working directly with this low incidence population.

The Individuals with Disabilities Education Act (IDEA, 1997) guarantees students with disabilities a free, appropriate public education (FAPE) with all the necessary supports and services that enable these students to benefit from a specialized education. In addition to a FAPE, IDEA requires access to the core curriculum for all students. A major component of core curriculum integration includes providing supports to ensure access to learning and encouraging active participation by all students. Even though IDEA mandates instruction in the core curriculum for all students, there are no clear cut directions to ensure access to learning activities for those students who do not display traditional academic skills. This national mandate strongly supports all students accessing the core curriculum, but minimal, if any, guidance exists to determine what that access looks like for students with SMD. Therefore, strategies for core curriculum integration must be redefined so that content and activities can be made accessible for all students. Zemelman et al. (2005) recommended that effective instruction for all students be characterized by active involvement. With AT integration, students with SMD can be actively involved in their learning with hands-on opportunities.

No Child Left Behind (NCLB, 2001) provides a legal mandate to ensure that all students are learning and that schools are responsible for that learning. It was originally presumed that students with SMD were unable to learn (Downing, 2010). This erroneous paradigm blamed students with low-incidence disabilities for their lack of progress. Attention now is placed on the need to change these students' learning environments and their educators' instruction strategies.

Students with SMD have limited access to core curriculum activities and instruction, thus limiting access to experiences that lay a foundation for skill development. Therefore, for students with SMD, skill acquisition may take different forms and involve different instruction. Students with SMD can learn, but their learning environments must be staffed with skilled educators to provide the adaptations and accommodations needed for success. Experts such as Bradford et al. (2006) and Browder, Trela, and Jimenez (2007) have stressed the need for systematic teaching procedures in order for students with SMD to learn. Systematic instruction refers to carefully planned and direct strategies used to teach new behaviors and skills, maintain skills previously acquired, and generalize skills to other environments, activities, and people. Materials can be adapted to be more inclusive so students with SMD can gain access to core curriculum activities.

In this literature review, I examine various teaching strategies for students with SMD. I used online resources such as the Educational Resources Information Center (ERIC), Elton B. Stephens Company (EBSCO), Questia, and Google Scholar. Key words for searches of the above databases included: *core curriculum*, expanded core curriculum,

assistive technology, low tech devices, medium tech devices, learning theories, Vygotsky's zone of proximal development, Nielsen's active learning, learning strategies, teaching strategies, research based reading instruction, special needs children, exceptional children, students with multiple disabilities, and students with severe disabilities. Professional journals used within the literature review include: *American Psychologist*, *Assistive Technology Outcomes and Benefits*, *Augmentative and Alternative Communication*, *Council for Exceptional Children*, *Exceptional Children*, *Intervention in School and Clinic*, *National Staff Development Council*, *The Journal of Educational Research*, *The Journal of Special Education*, *The Journal of Special Education Technology*, *The Journal of Visual Impairment and Blindness*, *Occupational Therapy International*, *Staff Development Council*, *Teaching Exceptional Children*, *The Reading Teacher,* and *T H E (Technological Horizons In Education) Journal*.

The literature review reveals that researchers primarily target high-incidence populations such as learning disabilities, speech disorders, and autism, along with high tech interventions that involve computers, mobility, and robotics. The majority of this research is quantitative in nature, utilizing surveys. Qualitative case studies of individual students with disabilities also are common. I located no qualitative research studies on the use of AT with students with SMD using educators as interview participants. Discussed within this section are four main topics: literacy and students with SMD, the history of AT, AT barriers, and kinds of AT.

Literacy and Students With Severe or Multiple Disabilities

Thirteen different classifications (IDEA, 1997) have been identified to better understand the various characteristics of students with special education needs. Heward (2008) noted that ranges in disabilities vary from the severely profound population with cognitive and physical limitations to those individuals with minor learning deficits. This study focuses on individuals with the most severe cognitive and physical limitations who are identified as severely disabled, multiple disabled, or developmentally disabled.

Many definitions describing individuals with severe disabilities focus on cognitive deficits, sensory deficits, orthopedic handicaps, and functional impairments. These definitions reveal little about the need for extensive and ongoing supports. The international organization, TASH (formerly The Association for Persons with Severe Handicaps), has identified persons with severe disabilities as

> individuals of all ages who require ongoing support in one or more major life activities in order to participate in an integrated community and enjoy a quality of life similar to that available to all citizens. Support may be required for life activities such as mobility, communication, self-care, and learning. (Lindley, 1990, p. 1)

Students identified as severely disabled must meet two specific criteria: They must have an intellectual quotient (IQ) between 25 and 39 and have significant deficits in adaptive behavior skills. Adaptive behavior skills include caring for personal hygiene, health, mobility, communication, and social behavior (Heward, 2008). Both substandard IQ and

deficits with adaptive behavior must exist simultaneously to be identified as severely disabled.

Regardless of cognitive and physical limitations, Snell (2003) noted that individuals with severe disabilities share "the capacity to learn" (p. 210). Cultural diversity currently is a major focus of educational researchers, and much attention has been focused on the need to embrace the diversity of the members of various cultures. However, even today, with all of the initiatives available to embrace diversity, students with multiple disabilities remain on the outskirts (Locke, 2000). Little information is available that addresses students with SMD and their access to literacy activities through the utilization of low and mid tech assistive devices. Educators working with students with SMD are searching for effective strategies to enhance the participation of students in this low-incidence population in learning activities. Utilizing low and mid tech devices provides a means to easily adapt activities so students with SMD have the opportunity to experience these activities, including those that address literacy, and begin to develop preemergent and emergent literacy skills. According to Mirenda (1993),

> Literacy is more than learning to read, write, and spell proficiently. It is learning to enjoy words and stories when someone else is reading them. Reading is learning to love books and all the worlds that can be opened by them. (p. 5)

When contemplating literacy learning for students with multiple disabilities, one must look past the criteria set forth by government initiatives such as the National Reading Panel and embrace the fact that "some modicum of involvement or participation, as opposed to independence, constitutes literacy" (Mirenda, 1993, p. 5). Norris and Damico

(1990) stressed the importance of educators providing a sufficient amount of opportunities in order to maximize active participation for students with SMD. Providing accessible literacy materials with the use of AT is the cornerstone to active engagement for students with low incident disabilities.

When providing literacy activities for students with SMD, educators must begin with early experiences that involve symbolism, listening for enjoyment, and gaining information from listening and participating in reading activities. Floyd, Canter, and Judge (2008) noted that emergent literacy activities include listening and responding to oral communication, interacting with written texts (e.g., holding books, "reading" books by using pictures), and exploring the written and verbal world (e.g., scribbling with crayons, turning pages, talking with others, pretending to read). Ourand (2008) noted that preemergent literacy involves low-to-early symbolic levels, not showing typical signs of being ready for reading, limited interaction with books or signage in the environment, significant structure and prompting, and reinforcement for listening, recognizing, identifying, and understanding.

Downing (2005) identified six barriers to literacy instruction for students with significant disabilities. These barriers include attitudinal barriers, low expectations, limited opportunities, limited means of accessing literacy, educators' limited time, and educators' perception that if a student does not acquire literacy skills by a certain age, additional attempts are of no use. Attitudinal barriers include beliefs that the student is too disabled to acquire reading skills (Downing). According to Downing, emphasis is placed on taking care of the student's health care issues, rather than promoting academic

skills such as literacy. Students with SMD encounter limited opportunities to explore their environments, due to physical and cognitive limitations, and therefore lack experiences to build upon. With limited means to access literacy, students with SMD are not provided with opportunities to demonstrate what they know and to engage in the literacy learning experience. Educators do not have the time needed to adapt and design appropriate materials for students with SMD who are unable to access standard materials. With limited time, it is difficult for educators to individualize literacy materials for their students. The last barrier identified by Downing is the conception that if a student with SMD does not acquire literacy skills by a certain age, efforts at further literacy activities should not be attempted. These barriers, combined with the cognitive and physical deficits characteristic of students with SMD, make participation in literacy activities difficult without interventions such as AT incorporation.

According to Musselwhite and King-Debaun (1997), students with severe disabilities are not fully included in traditional classroom activities. They are present bodily, but not fully participating, either academically or socially. Beukelman and Mirenda (1992) developed a "participation model that can clarify how students with severe disabilities are integrated into educational settings" (p. 212). The parameters included in this model are integration, ranging from full, to selective, to none (excluded); academic participation, with competitive participation at the highest level, then active, then involved, and no participation at the lowest level; social participation, also including levels of competitive, active, involved, and none; and independence, ranging from complete, to independent with setup, to assisted.

Use of the participation model can accurately portray students' current levels of integration, participation, and independence, and provides a framework for decision-making and planning. AT is a means to provide the support to allow students to function at the highest level. The participation model is not so different from constructivism and Vygotsky's (1978) zone of proximal development (ZPD). Learning takes place in one's ZPD, which is a gap between what the learner can accomplish independently and what the learner cannot do, even with assistance. The ZPD is a continuum of learning. It is divided into three areas and includes the following (Vygotsky):

1. Performance Limit—The child cannot perform, even with assistance.
2. Mediated Performance—The child performs when assisted.
3. Independent Performance—The child performs without assistance.

Students in this low incidence population demonstrate a significantly reduced performance limit in relation to their nondisabled peers of similar age. Therefore, in relation to the variety of tasks presented, students with SMD may not be able to perform, even with assistance, while their nondisabled peers may show mediated or independent performance. With Beukelman and Mirenda's (1992) participation model, these same students demonstrate skills in the lowest levels with no participation, assisted participation, or involved participation. Regardless of what model is used to determine present levels of performance for students with SMD, educators providing the various services can help advance skills to the next level with the use of AT devices.

Preemergent literacy learning starts at an early age, as infants and toddlers actively engage in many types of experiences with print, including writing. Young

children learn about literacy through exposure to print within their natural environments and seeing models of others interacting with print (Teale & Sulzby, 1992). They also learn about the functions of reading and writing through active engagement and interaction with the adults in their world (Clay, 2005). When it comes to students with SMD, these early literacy experiences do not come easily. For a variety of reasons, students with SMD face numerous barriers to literacy learning opportunities. At this important time in their lives, parents are often consumed with intense care demands for their children with special needs, thus making it difficult to find the time and energy for literacy activities. When compared to self-help, communication, and medical needs, literacy is a lower priority for both the parents and the teachers of children with SMD (Light & McNaughton, 1993). Because of other priorities identified by their families and teachers, students do not receive the same literacy exposure their nondisabled counterparts receive during this formative time when foundational skills are beginning to develop.

AT does not have to be high tech and overwhelming. It does not have to be expensive and challenging to use. One effective characteristic of instruction involves active involvement of students (Zemelman et al, 2005). Instead of students being passive recipients of instruction from educators, the objective is to elicit students' active participation in hands-on learning activities (McCarthy, 2005; Scruggs, Mastropiere, & Okola, 2008). For example, the school-aged population that is targeted in this study includes students with SMD who enjoy being read to by teachers. With appropriate AT

devices, these students can have the means to participate more actively in reading activities.

Several of the teachers who serve this low-incidence population use an adapted literary curriculum, *Read It Once Again,* which promotes school success in children with disabilities by integrating skills in multiple domains, such as cognitive, physical, fine motor, and language (Blair, 2002). This curriculum reinforces rhyme, rhythm, and repetition by focusing on dialogic reading, which relies on repeated readings of a book or story (Pappas, 1991). According to Doyle and Bramwell (2006), shared storybook reading, emphasized in *Read It Once Again,* is "an interactive way of reading books aloud with children that gives them a chance to be active participants in the reading session, thus providing a meaningful experience that stimulates learning" (pp. 554-555). Teachers are provided with tips to enhance story time by using a variety of methods such as puppets and props.

This curriculum looks promising on paper, but what about the students who cannot turn the pages of the book because the pages are too thin for them to grasp, or the ones who cannot balance the book and turn the pages at the same time because of motor delays? There are also students who cannot talk. How will they repeat the recurring phrase in the book? Solutions are readily available through the use of low tech assistive devices.

There are materials and ideas to assist teachers and service providers with low tech adaptations so students with disabilities can access books and core curriculum activities. AT must be promoted in classrooms for students in the low-incidence

disabilities population. The AT barriers need to be broken down in order to enrich the lives of students with significant disabilities, and to provide them with access to activities so they may become part of an interactive learning experience. Downing (2010) noted that, “Teaching involves helping others acquire skills that are new or have not been thoroughly mastered” (p. 21). For students with SMD, mastery will not occur quickly. These students require much repetition to learn the skills with multiple opportunities to practice these skills on a regular basis (Westling & Fox, 2009). Thus, educators need to provide instruction and support strategies using AT so students with SMD can acquire new skills.

King-DeBaun (n.d.) provided low tech and mid tech examples of how to adapt books for children of all abilities. The strategies outlined in this book allow children to be more independent in their exploration of books, thus enhancing early reading experiences. Most children with disabilities do not have comparable reading experiences as their nondisabled peers. Various types of books, such as picture books, board books, accordion books, manipulative books, and books with repeating phrases, can be adapted with the use of AT so students with disabilities can interact with them and capitalize on the development of literacy and learning. Educators must provide students with SMD plenty of opportunities to interact with books.

Following are examples of low tech alternatives that can be used to enhance books and make reading activities accessible to even the most disabled students (King-DeBaun, n.d.).

1. Page fluffers—These help to separate the book pages for children who have difficulty with independent page turning. Students who have not yet developed a pincer grasp can turn pages independently with the addition of page fluffers. Examples of page fluffers include clothespins, small chip bag clips, and foam or sponge pieces clipped or glued to the pages for independent interaction with the book. (p. 8)
2. Adapted flap books—Small hair bands are taped onto the book pages. The child can pull the band to open the flap. (p. 10)
3. Baggie books—Place book pages in sandwich bags, add a piece of cardboard between the story pages, attach the baggies with staples, then cover the staples with cloth tape. This can also be used to personalize books using photographs. (p. 10)
4. Photo flip book—The photo Rolodex is turned sideways, and the story pages are placed in the photo holders. Turn the knob, and the pages turn. (p. 12)

McGee and Richgels (1996) defined scaffolding as an instructional support where the educator models a learning strategy or task, then gradually shifts responsibility to the student. Scaffolding enables a student to accomplish as much of the task as possible with adult assistance. According to Beeds, Hawkins, and Roller (1991) scaffolding must occur in a collaborative context between the educator and the student that supports the student's intention. Access to the materials must be provided in order for the student to participate when invited to do so. Utilizing adaptations such as these provides a means for the

student to participate as supports are gradually withdrawn and performance improves from limited to mediated and finally to the ultimate goal of independent performance.

The AT needs of the students must be considered when selecting books because successful interaction is the goal. AT solutions represent changes in materials so that students with SMD can participate in activities associated with books. Engaging in activities as active learners instead of passive observers can become a reality with the use of low tech AT devices.

Evidence documenting best practices for students in the low incidence population (Erickson, 2005) with early literacy programs is scarce. In 2004, the Center for Literacy and Disability Studies at the University of North Carolina at Chapel Hill completed a research study in special education classrooms to evaluate the effectiveness of the *MEville to WEville* program. The investigators provided a 20-minute overview of the materials with no specific training before beginning implementation, yet this specific reading series recommended an array of AT to use as communication tools, access tools, participation tools, learning tools, and mounting tools.

Recommended AT items included a BIGmack communicator, a LITTLEmack communicator, a Big Red switch, a Jelly Bean switch, a Single Switch Latch and Timer, battery interrupters, a battery operated fan, and a universal switch mounting system (AbleNet, 2004). The BIGmack is a single message communication aid with a recording capacity of 75 seconds that also acts as a switch. The LITTLEmack communicator has all of the features of the BIGmack plus a mounting system designed to connect two or more LITTLEmacks to form a multiple message system. No specific training was performed

before beginning implementation of the *MEville to WEville* program, yet by the descriptions of the AT items, a minimal amount of training would have been beneficial for successful implementation of these low and mid tech devices. Lack of training is a huge barrier when it comes to the incorporation of AT in activities for students with SMD.

King-Sears (2001) presented a three-step process for teachers to determine the degree of accessibility of their classrooms for their students with disabilities. The three-step process includes: (1) analyzing the general education curriculum, (2) curriculum enhancement, and (3) curriculum modification. The author emphasized the importance of teacher collaboration and individually designed curriculum modification. King-Sears' view contributes to the notion of curriculum enhancement and curriculum modification effective for all students.

Koga and Hall (2004) described four factors influencing the effectiveness of curriculum modification. These factors are individual needs, subject specific needs, teachers' roles and school support, and use of technology. Based on the individual students' needs, teachers can select technologies with the features promoting active learning, experimentation, controlled interactions, and independence. AT allows students with SMD to access existing core curriculum activities. Modifying existing curricula, not only for literacy, but for all core curriculum areas, has been an effective way to create more accessible learning environments to support all students and their teachers in various educational contexts.

Koga (2004) identified many terms in use regarding changes made to curriculum, such as enhancements, accommodations, overlapping curricula, and adaptations. Emphasis is on effectiveness in improving education for all children, providing vivid examples and useful resources that enrich actual classroom practices for diverse learners. Curriculum adaptations become pivotal when we consider improving accessibility to activities in relation to individual students' needs. Therefore, the approach, design, and methods for each curriculum adaptation may differ significantly.

The core curriculum includes knowledge and skills related to academic subjects. Expanded core curriculum components access learning in a manner comparable to nondisabled students and includes AT integration. Therefore, academic subjects, including literacy need additional resources, such as AT for optimal access. For students with SMD, learning activities must be deliberately planned by skilled educators to maximize learning potential by addressing the individual needs of each student, and then taught to focus on the development of life long skill acquisition for students with SMD.

History of Assistive Technology

Today, the touchstone of special education law remains the individualized education program (IEP), which is a document detailing the range and intensity of services and supports intended for each eligible student with a disability. The IEP formalizes the collaborative relationship between general and special education and also aligns the general curriculum with specially designed instruction and other support structures necessary for enabling access to the curriculum. Major U.S. legislation affecting individuals with disabilities and the use of AT is as current as the 1970s.

However, primitive AT devices were used as early as the Stone Age (e.g., a walking stick to assist with an injured leg, an empty animal horn used to make voices louder to compensate for fading hearing). Present day canes and wheelchairs are surprisingly similar to their ancient predecessors (Cook & Hussey, 2002). In the 1970s, government involvement was legislated to provide access to devices to assist individuals with disabilities.

In 1973, the Rehabilitation Act established various principles, such as reasonable accommodation and the least restrictive environment, upon which subsequent legislation has been based (Cook & Hussey, 2002). This act focused on adults in federally funded employment and higher education, and it included the provision for AT devices, AT services, and an Individualized Written Rehabilitation Program (IWRP) for individuals with disabilities. At that time, the Education for All Handicapped Children Act (EAHCA, EHA, or Public Law 94-142), which later became the Individuals with Disabilities Education Act (IDEA), was not in place.

Prior to 1974 and the enactment of the EAHCA statute, U.S. public schools educated only one out of five children with disabilities. Many states had laws that purposefully excluded children with certain types of disabilities from attending public schools. At the time the EAHCA was enacted, more than one million children in the United States had no access to the public school system. Many of these children were housed at state institutions where they received limited or no educational or rehabilitation services. Another 3.5 million children attended school but were “warehoused” in segregated facilities and received little or no effective instruction (IDEA, 1997).

In 1974, Public Law 94-142 was passed by the U.S. Congress as the EAHCA (it later became IDEA). The goals of this act were to assure that all disabled students receive a FAPE and to increase learning and achievement. The IDEA Amendments of 1997 recognized the rights of every child and included the following mandates (Cook & Hussey, 2002):

- a free and appropriate education (FAPE),
- children with disabilities are to be educated with their peers,
- reasonable accommodations are to be provided to children with disabilities,
- education in the least restrictive environment (LRE),
- assistive technology devices and services for students aged 3 to 21,
- an Individualized Education Program (IEP) for each child,
- consideration of assistive technologies,
- services for children from birth to age 2, and
- expanded emphasis on educationally related assistive technologies. (p. 11)

With the IDEA Amendments of 1997, AT became a right of every disabled child. Finally, AT was recognized as a necessity that enables individuals with disabilities to engage in and perform many tasks.

Congress has reauthorized and amended PL 94-142 (1975) five times (Heward, 2006). According to Turnbull and Turnbull (2006), even with the reauthorizations and amendments, the six major principals that govern PL 94-142 have remained basically unchanged. These defining principals include zero reject, nondiscriminatory

identification and evaluation, FAPE, LRE, due process safeguards, and parent and student participation and shared decision making. Based on the zero reject policy, public schools must educate all children with disabilities regardless of the nature or severity of their disabilities. No child with a disability may be excluded from a FAPE. With each reauthorization, greater emphasis has been placed on the rights of students with disabilities to learn and to be educated with their non-handicapped peers and highly qualified teachers. In addition, NCLB has heightened awareness of the need to challenge all students and to stress the importance of all students learning core curriculum content.

In 1988, the Technology Related Assistance for Individuals with Disabilities Act (Tech Act) was introduced. The Tech Act contributed to the increased attention on the role AT could have in improving the learning experiences of individuals with SMD. The Tech Act provided federal funds to develop training and delivery systems for AT devices and services. This act was responsible for defining AT devices and services. It also promoted the availability and quality of AT devices and services to all individuals, including children. Prior to 1988, several laws addressed the potential of AT use by individuals with disabilities, but none mandated its use. The Tech Act was the beginning of laws specifically addressing the AT needs of individuals with disabilities, and since then, more laws have been passed. According to Alper and Raharinirina (2006), with the amendment of the Tech Act in 1994, focus on previous medical AT benefits were redirected to schools, work, and community settings.

In 1998, Congress passed the Assistive Technology Act (ATA). Congress found that “disability is a natural part of human experience and in no way diminishes the rights

of individuals to make choices and to benefit from education" (ATA, 1998, p. 2). The purposes of the ATA included increasing the active involvement of individuals with disabilities, increasing the awareness of practices and procedures that facilitate the availability of AT, and enhancing the skills and competencies of individuals involved in providing AT. Funding provided under the original ATA helped states establish systems for individuals with disabilities to gain access to AT.

Then, in 2004, the ATA was renewed with the intent to provide aid to states and help put technology into the hands of those who need it. Since then, "states have established the needed infrastructure to effectively administer AT resources. It is now time to redefine the primary purpose of this program from establishing systems to directly helping individuals with disabilities that need AT devices" (ATA, 2004, p. 9). The majority of this funding was used on direct aid programs that included AT reutilization programs, AT demonstration programs, alternative financing programs, and device loan programs.

With the reauthorization of IDEA in 2004, more emphasis was placed on AT and technology integration. Part B of IDEA has four primary purposes: (1) to ensure that all children with disabilities have a FAPE available to them with special education and related services designed to meet their individual needs; (2) to ensure that the rights of children with disabilities and their families are protected; (3) to assist states and localities to provide for the education of all children with disabilities; and (4) to assess and ensure the effectiveness of efforts to educate children with disabilities (U.S. Department of Education, 2006). One clause reiterates my own beliefs that "the right technology can

provide a student with a disability access to learning opportunities few dared to dream of just a decade ago and provide them with means for academic success" (IDEA, 2004, p. 50). Individualized instruction with AT considerations can be used to meet challenges and address weaknesses.

Even with the passage of the Tech Act of 1988, the ATA of 1998, and the reauthorization IDEA in 2004, students with special needs are not receiving AT devices that facilitate appropriate access to learning activities. Various means to access the curriculum are more readily available than ever before, but if AT devices are not being prescribed and used appropriately, the education of students with SMD will remain inferior to that of students without SMD.

Assistive Technology Barriers

Thorkildsen (1994) identified barriers for AT use. Barriers identified included "lack of awareness of AT by professionals; lack of training in AT; insufficient funding or lack of knowledge about the access to funding AT; and the problem of school districts not allowing AT to leave the classroom" (Thorkildsen, p. 10). Three of the goals addressed in the amended ATA of 2004 directly impacted these AT barriers. Professional development activities to train educators to incorporate AT into the curriculum would help alleviate the challenges of technology that hinder some educators from using devices. Professional development would also provide an awareness of the availability of AT devices, along with training to match the student with an AT device. Alternative financing programs would assist with the funding concerns, and device loan programs could help ease the problem of school districts not allowing AT to leave classrooms.

With the changes to the original ATA, improving access to AT is a viable means to help accommodate the challenges of individuals living with SMD.

Cook and Hussey (2002) identified "opportunity barriers" and "access barriers" that can hinder assistive technology intervention. Various opportunity barriers have been identified and include the following: policy barriers, practice barriers, attitude barriers, knowledge barriers, and skills barriers.

Policy barriers can be legislative, regulative, or agency generated that dictate situations in which consumers find themselves. An example of a policy barrier would include regulations that exist in some school districts that restrict the use of school purchased AT to specific use in school, preventing the AT from being taken home. Practice barriers are not dictated by policy but constrain the use of AT in manners similar to policy barriers. For example, if the school's policy does not require that the device stays in the school, but the local teacher or principal has the practice of keeping the devices in the school, the result is the same as if it were policy. Attitude, knowledge, and skills barriers all apply to those individuals with whom the consumer interacts and on whom the effective use of the device depends.

Another type of barrier identified included access barriers. Cook and Hussey (2002) defined *access barriers* as "barriers related to the abilities, attitudes, and resource limitations of the consumer or his support system" (p. 101). User and family preferences are access barriers that need to be identified. The resistance on the part of the parents to pursue AT because they feel the device will inhibit the child's development is a potential barrier to accessing technology. According to Cook and Hussey, parents are reluctant to

allow their children to use AT because they are worried that the use of an AT device will inhibit their child's development from occurring naturally.

The availability of tens of thousands of commercially made AT devices is another barrier for adults working with students with special needs. Instead of educators feeling that these AT devices expand their students' potential abilities to access the curriculum, the availability of so many AT devices is overwhelming even for the most knowledgeable individual.

Similarly, Copley and Zivani (2004) listed barriers to the use of AT for children with multiple disabilities in Australia. These barriers include lack of appropriate staff training and support, negative staff attitudes, inadequate assessment and planning processes, insufficient funding, difficulties procuring and managing equipment, and time restraints. To overcome these barriers, the authors proposed a team model for AT assessment and planning in order to optimize the educational goal achievement of children with SMD. The authors proposed that such a model could help target the allocation of resources in the schools to promote broader educational and functional outcomes from AT use.

AT is an effective means for providing a high quality education for all students with SMD and an alternative way to engage students with SMD in activities. Burdette (2007) identified many issues and perceived barriers to implementation, including disparate knowledge and skills; lack of clarity about characteristics of high quality instruction; gaps in research; gaps in leadership's ability to make change; misaligned policies; and insufficient funding. Regarding disparate knowledge and skills, Burdette

suggested that training and best practices for instruction should begin during university training and continue with professional development. To address the lack of clarity about characteristics of high quality instruction, clear explanations to teachers regarding best practices for instructing students of different ages, backgrounds, and abilities should be provided. Gaps in research include a lack of confidence on the part of the educators and a lack of confidence in the knowledge base related to AT. Also, a mismatch between current research and the immediate needs for implementation appears to exist because current research addresses high tech devices and instructional technology as opposed to low and mid tech device implementation for students with SMD. There is need for more research and development in order to understand how to implement quality instruction for diverse populations. The gaps in leadership's ability to make changes exist because most administrators are focused on NCLB requirements and not the students receiving special education services. Policies misalign because NCLB emphasizes group accountability, while IDEA emphasizes individual student accountability. Implementation challenges result because of a misplacement of resources, funds, and expertise. Insufficient funding results in limited resources that create difficulty when trying to build and maintain implementation programs. All of these concerns apply to the implementation of low and mid tech assistive devices to actively engage students with SMD in literacy activities.

Even in the 21st century, hesitancy on the part of educators to use AT is a reality for those individuals working with students in the low-incidence population. In actual practice, inexperience, lack of knowledge, and funding hinder AT effectiveness. Many educators use AT inconsistently and thus question its effectiveness in enhancing quality

instruction. Regardless of the barriers, educators need to overcome personal challenges associated with AT and use means that are available to enhance activities and enable students with special needs to engage in the curriculum. Not all AT devices are a high tech, costly means that require a high level of skill to use. Low tech, inexpensive alternatives are available, and even students with the most severe disabilities can be trained or taught to use them. Devices to assist students with SMD to participate in learning activities are available, but until educators are willing to overcome barriers, students with SMD will not be able to actively engage in the curriculum as easily.

Kinds of Assistive Technology

What can be done to improve or increase the use of AT to provide students with special needs skills to engage in reading activities? Eight types of AT in the classroom are outlined in a resource guide for teachers and administrators by Lahm and Reed (2005). With the large number and types of AT devices available, and the degree of complication inherent in using some of these devices, small steps need to be taken to encourage educators and service providers to use materials, and thus improve or increase the functional capabilities of their students.

AT devices usually are grouped into three categories: low tech, mid tech, and high tech (Assistive Technology Guide for Massachusetts Schools, n.d.). Low tech devices are typically easy to use, inexpensive to purchase, widely available, require little if any maintenance, and involve little or no training. Mid tech devices are somewhat more complex, often require minimal training, and require basic device maintenance. High tech

devices tend to be more costly, require extensive training and ongoing maintenance, and involve complex electronics.

When exploring AT solutions for the student, low tech devices should be considered first, not only because they are cost effective, but also because they are beneficial to the student because they are typically portable and easy to use. The uses of many of these low tech devices are virtually transparent. An example of a low tech alternative for interacting with a book could be to laminate or use plastic to protect the pages so the book can be wiped clean and disinfected after a student with uncontrollable drooling interacts with the materials. Purcell and Grant (2002) cited other benefits of low tech options, including the idea that simple accommodations are often more reliable than a high maintenance electronic system, are more readily available, represent cost effective solutions for schools with limited resources, and offer the least restrictive environment for the student.

Mid tech devices offer many of the advantages of low tech devices. They are relatively inexpensive and usually do not require extensive training. Also, they are often lightweight and portable, allowing them to be used anywhere. An example of a mid tech alternative for interacting with a book could be a BIGmack Communicator. This sturdy, single message communication aid allows easy recording of a single message of up to 75 seconds in length. It measures five inches in diameter, is battery operated, and costs approximately $100 USD. The teacher can record a repeating phrase from a book, and the student with severe communication delays can activate the message by gently pressing the top of the device, thus actively participating in the lesson.

When low tech and mid tech solutions are not appropriate, high tech AT devices should be considered. However, the effort needed to obtain and learn to use the device must be taken into account. For the device to be effective, the student should be able to use the technology in a short period of time and feel comfortable using the technology. If the device takes months to master, the student will lose valuable instructional time (Assistive Technology Guide for Massachusetts Schools, n.d.). An example of a high tech alternative for the development of literacy skills could be WYNNWizard. This is a literacy tool and talking word processor for struggling students. WYNNWizard is specifically designed to address the strengths and needs of students for whom writing and reading tasks are serious impediments to academic success. Not only does it cost over $1,000 USD for one to four licenses to operate this program, the district must provide the computers to access this program, and the teacher must attend a one day workshop. After the one day workshop, WYNNWizard representatives are available to troubleshoot. Students using this device must have the cognitive ability and the motor skills to interact with it. For students with SMD, technology such as WYNNWizard is not an option.

It is very important to remember that the most expensive AT device is not necessarily the best choice (Assistive Technology Guide for Massachusetts Schools, n.d.). Students with SMD who are the targeted population for AT integration into core curriculum activities are functioning significantly below their peers. Therefore, AT needs will be addressed using devices on the low end of the technology spectrum, that are easier to use than high tech devices, to enhance core curriculum activities for school-aged

children with special needs. Cook and Hussey (2002) stated that AT can be characterized in many ways and reminded:

> Yesterday's high tech is tomorrow's low tech, custom devices become commercial if more than a few people need them, and appliances often enable the use of tools. Thus, no good categorization is perfect or static. As the field advances, there will be new considerations that will further stretch our concepts and force new ways of categorizing and describing assistive technology. (p. 9)

AT devices are constantly changing. Growth in the AT industry has meant an increase in the availability of devices and competent individuals must be involved when determining the appropriateness of a device for a student with SMD.

Using Phenomenology to Explore Educators' Uses of AT with Students with SMD

With the changing AT innovations to engage students with SMD in literacy activities in mind, I chose a qualitative research design that explores educators' interaction with students with SMD and the use of AT. This phenomenological approach allowed me to delve into educators' understanding of the use of AT to engage students with SMD in literacy activities. Characteristics of this research approach include striving to understand the meaning educators have regarding AT and their personal experiences utilizing AT devices, providing a rich, descriptive product of the inquiry, and using an inductive process to generate theory as opposed to deductively testing hypotheses using a quantitative approach. Because this study was exploratory, without hypotheses to test educators' uses of AT with students with SMD, a quantitative approach was inappropriate. As the primary instrument of data collection and data analysis, I generated

theory based on analysis of the participants' interviews, unobtrusive data, and my understanding of the AT phenomenon from being in the field.

Conclusion

The literature indicates that AT provides a means for students to gain academic and nonacademic skills from participation in activities. AT supports and services include a wide variety of materials and instructional accommodations to meet the individualized and often unique learning needs of students with SMD. These students are supported to learn in an environment where opportunities are provided for engagement in various learning activities, thus challenging students with SMD to learn as much as possible. AT is a means to ensure access to learning activities for students with SMD and is a legal mandate included in IDEA (2004) and NCLB (2001). Students with SMD often exhibit emergent skills and therefore require repeated exposure to concepts and materials in order to recognize and make use of the information (Giangreco, 2006). According to Browder and Spooner (2006), students with SMD have been denied access to learning activities based on negative perceptions of their potential to learn. With the implementation of AT strategies, students with SMD can be provided with opportunities to engage and learn by expanding opportunities to access materials and experiences. It is the educators' responsibility to provide rich learning environments and appropriate activities, enabling students with SMD to reach their greatest potential. In order for this to come to fruition, individualized teaching supports must be considered that challenge learning and support students' strengths (Thousand, Villa, & Nevin, 2007). In the next section, I describe the methodology used in the present study.

Section 3: Methodology

A scarcity of research exists targeting students with severe and multiple disabilities (SMD), their participation in English and language arts activities, and the implementation of assistive technology (AT) devices. However, AT considerations are mandated by federal legislation and informed by theoretical frameworks. The phenomenon of AT integration for students with SMD as experienced by educators was the focus of this study. The intent of this study was to secure sufficient information to create an understanding of the lived experiences of educators and the implementation of low and mid tech devices for students with SMD.

A qualitative research paradigm was used because I was interested in delving into the essence of the shared AT experiences of educators and deriving meaning out of the participants' direct experiences with the AT phenomenon (Patton, 1990). The qualitative research paradigm uses various means to explore and interpret the phenomenon being investigated; generating and testing hypotheses was not the intent. A qualitative research approach allowed me to understand the phenomenon from the participants' perspectives and to uncover information that might have been missed with predetermined assumptions. Marshall and Rossman (2011) noted that in phenomenological research, traditional standards such as generalizing outcomes, replicating the research design, and establishing control groups are not the objective.

Rossman and Rallis (2003) offered five general hallmarks of qualitative research. Qualitative research typically "is enacted in naturalistic settings; draws on multiple methods that respect the humanity of the participants in the study; focuses on context; is

emergent and evolving; and is fundamentally interpretive" (p. 2). These hallmarks provide a basis to explore the meaning individuals give to the phenomenon (Moustakas, 1994; van Manen, 1990) of AT integration.

The purpose of this phenomenological study was to describe educators' perceptions of the impact of AT for students with SMD in public schools in rural South Carolina, thus generating information to develop an understanding of educators' perceptions of the use of low and mid tech assistive devices to engage students with SMD in literacy activities. I explored the AT experiences of educators who serve students with SMD. Perceptions of educators who have worked with students with SMD were analyzed in order to address a gap in the research literature by providing information from those working directly with this low-incidence population.

According to Leedy and Ormond (2005), there are four characteristics of a phenomenological study: purpose, focus, data collection, and data analysis. The purpose of this study is to understand an experience from the participants' point of view. The focus of this study addresses a particular phenomenon as it is typically lived and perceived by human beings. The method of data collection included in-depth, semi structured interviews with purposeful sampling of 10 individuals along with unobtrusive collection of data included in the Individualized Education Programs (IEP) that were written by each of these educators. The method of data analysis involved the search for themes that reflected certain aspects of the educators' experiences. This chapter addresses the phenomenological study paradigm and includes discussions of the research design,

sampling strategy and participant selection, the researcher's role, data collection procedures, data analysis and interpretation, validity checks, and ethical considerations.

Qualitative Research Design

According to Smith, Flowers, and Larkin (2009), phenomenology is the qualitative research approach that provides a detailed account of individual experiences, examines how individuals make sense of their experiences, and connects these experiences to their everyday lives. Phenomenological research emphasizes subjective lived experiences of individuals. This type of research is rooted in the philosophical works of Husserl, Heidegger, and Moustakas (Lichtman, 2011) and is closely associated with the study and analysis of the written word known as hermeneutics. A phenomenological research approach examines individuals' experiences and their understandings of a particular phenomenon, along with the perceptions and views of the participants. Phenomenology is concerned with examining the lived experiences of the participants and attempts to conduct the examination in a way "which is as far as possible enables that experience to be expressed in its own terms, rather than according to predefined category systems" (Smith, Flowers, & Larkin, p. 32). Halling (2008) observed that each of us is something of a phenomenologist because in our everyday lives, we listen to stories people tell, pay attention to these stories, and reflect on our own perceptions and our relationships and experiences to these stories.

According to Creswell (2007), phenomenology describes the meaning of individuals' lived experiences. Moustakas (1994) noted that phenomenology seeks to reveal the essences and meanings of human experience, and Hatch (2002) described the

core data from this research paradigm as "the lived experiences of real people in real settings" (p. 6). Leedy and Ormond (2005) defined a phenomenological study as a "study that attempts to understand people's perceptions, perspectives, and understandings of a particular situation" (p. 139). In this type of study, the researcher has had personal experiences related to the phenomenon and seeks to gain a better understanding of the experiences of others. Smith (2007) noted Husserl's proposal regarding philosophy, science, and knowledge as being grounded in transcendental phenomenology where one seeks meaning of various types of experiences, including the individual's perceptions, imagination, judgment, and knowledge formation. Hatch noted that phenomenological research is based on participant perspectives and uses the researcher as the instrument to collect data.

Key elements of phenomenological research include the researcher describing the lived experiences of individuals who have experienced a particular phenomenon, then trying to understand these experiences by looking at the essence of these experiences (Lichtman, 2011). This research approach relies heavily on philosophical underpinning and uses bracketing to set aside preconceived ideas about the phenomenon. A research journal was used to reflect on what was happening during the interview process to become aware of preconceived ideas, feelings, and assumptions "in order to be open and receptive to what [I] am attempting to understand" (Hatch, 2002, p. 86). Bracketed items include notes about patterns emerging in the data, reminders about later analysis, and possible connections to other parts of the data. According to Hatch, bracketing is a means of making a record of impressions during the data gathering process that is used to

capture possible explanations of the phenomenon that can be systematically examined later. Blommberg and Volpe (2008) have described a qualitative research design as inductive where research is about "idea generation" (p. 8). This type of research design is proposed up front, yet remains open and emergent to permit exploration instead of being rigid and fixed. This design uses small samples of participants who are purposefully selected to delve into the essence of the theme being investigated.

The current study was designed using a qualitative research methodology because, according to Berg (2004), this paradigm assists with describing an individual's life-world. "In the case of life-worlds, researchers focus on naturally emerging languages and meanings individuals assign to experience" (p. 11). Cornett-DeVito and Worley (2005) described the phenomenological tradition as one that focuses on the immediate lived experiences of the participants and is sensitive to the uniqueness of these participants. The research questions, seeking to understand the perceptions of educators concerning the use of AT to engage students with SMD in literacy activities, lends itself to this research approach.

I also considered a quantitative approach with the purpose of studying a cause and effect relationship between students with SMD, AT use, and engagement in literacy activities. According to Ary, Jacobs, and Sorensen (2010), a quantitative research approach tests or verifies an existing theory, uses preselected instruments to collect data, uses large samples of participants, and uses statistical analyses to generate numerical data. 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.

I chose qualitative research, specifically phenomenology, because the focus of my research was on understanding the AT phenomenon from the perspective of the educators in their natural settings. I did not start with a formal hypothesis, but instead looked at what the educators do, how they think, and how they attempt to understand this phenomenon. The goals of qualitative research are not to objectively measure a phenomenon or gather numeric data to test predetermined hypotheses, but rather to produce a rich, comprehensive report used to understand a phenomenon experienced by the participants.

Research Questions

Based on the fundamental principles of phenomenological research, the following questions guided this study:

1. What are educators' experiences regarding the use of AT for students with SMD?
2. What are educators' perceptions of AT use for students with SMD?
3. What strategies do educators use to match AT to students with SMD?

Context for the Study

This phenomenological study described educators' perceptions of AT use with students with SMD. The AT experiences of educators were explored, and then analyzed to provide information from those working with this population. Interview transcripts and unobtrusive data were reviewed to better understand educators' strategies to match AT

with students with SMD. Educators may use this information for planning purposes to engage students with SMD in literacy activities. The results of this study could be used to develop trainings for educators on effective uses of AT for students with SMD.

Ethical Considerations

Ethical considerations were observed when recruiting participants for the research study by keeping the interview participants' identity 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. Pseudonyms were also assigned to schools. Glesne (1999) stated, "Ethical considerations are inseparable from your everyday interactions with research participants and with your data" (p. 113). To maintain the necessary ethical standards (Moustakas, 1994), each participant was provided with full disclosure of the nature, the purpose, and the requirements of the research study.

Procedures and confidentiality were assured by informing the research participants ahead of time of the voluntary nature of the interview. Risks and benefits were outlined, and the participants were asked to consent to participate (Appendix A) in the research study. Individuals in leadership positions at the district level, who approved this study for their respective districts, were given confidentiality protocols (Appendix B) to complete to ensure that ethical standards were followed during and after the data collection process, along with letters of cooperation from a community research partner (Appendix C).

All educators considered for participation were employees of Districts 1 and 2 where I have been employed as an itinerant teacher for students with visual impairments (TSVI) for 15 years. Individuals in leadership positions in the two districts were contacted and asked permission to solicit the assistance of the various educators as study participants. District 1 was in the process of selecting a superintendent, the fifth in 5 years, so the director of special education was contacted for permission to collect data. District 2 had a superintendent who had been in the position for one year and who approved both forms of data collection, but deferred assistance to the director of special education, who was newly appointed to that position. Even though some of the individuals in the leadership positions were new, all of the interview participants had been employed by their respective school districts for at least 5 years. During the past 15 years I had worked with each participant serving the same students with SMD.

I had written several grants for AT integration, and most participants attended workshops presented by me or they attended AT workshops sponsored by the state's AT Project with registration, travel, and substitutes funded by the grants. Jones, Torres, and Arminio (2006) noted that qualitative research sampling is purposeful in nature, as opposed to random, which characterizes quantitative research sampling. Participants were identified using purposeful sampling strategies (Hatch, 2002), a method in which the researcher deliberately chooses participants based on shared experiences.

Researcher's Role

Bloom and Volpe (2008) identified the role of the qualitative researcher using a number of characteristics. The researcher is active and involved in all steps of the

qualitative research process and brings her own experiences to the study. The researcher adopts an insider or *emic* point of view and seeks to discover and understand the meaning of a phenomenon as experienced by the participants. The researcher is reflective about her own voice and perspective, setting aside biases. She is flexible and open to change. Moran and Mooney (2002) have noted that phenomenologists study subjective acts, and then clarify the nature of the essence of these acts in order to analyze the experiences of the participants.

I have been very interested in the AT phenomenon for students with SMD since 1999 when I attended my first AT workshop and observed the effectiveness of AT integration for this low-incidence population. Since 1999, I have written several grants for in-house training of educators to use low and mid tech devices, to attend workshops off campus for AT training, and to purchase low and mid tech AT devices for educators to borrow from a loan library of AT devices that I set up and administer. Administering the loan library includes ordering materials, inventorying materials, troubleshooting materials, searching for funding for more materials and training opportunities for myself and for the educators, and searching for effective means to integrate AT by communicating or collaborating with various IEP team members to provide AT supports for students with SMD to ensure engagement in curriculum activities.

For the purposes of this study, I approached the participants personally using the network of contacts I had established during the past 15 years as I worked as an itinerant teacher for the visually impaired in the rural South. At the time of data collection, I had

served students with visual impairments in 12 different schools, plus a vocational/career center and a technology center.

I was responsible for all data collection in the form of interviews and documents, with the bulk of the data being derived from interviews. According to Gast (2009), a common characteristic of qualitative study is the position of the researcher as an insider with close personal contact with the interviewees along with acting as the data collector and the data analyst. Qualitative researchers are the instrument in their research: "To do qualitative work well (be valid instruments) the researcher must have experience related to research focus, be well read, knowledgeable, analytical, reflective, and introspective" (Gast, p. 12). In this study, I was responsible for reading and rereading the interview transcripts throughout the data analysis process looking for themes as they emerged.

Sampling Strategy and Participant Selection

Phenomenological research is conducted on small, purposive, homogeneous samples for whom the research question will be meaningful. In phenomenological research, the issue is quality, not quantity, with participants representing a perspective rather than a population because they grant the researcher access to a particular perspective on the phenomenon under study. The phenomenological approach focuses on detailed engagement with small samples, accessing a chosen phenomenon from more than one perspective and from creative and reflective efforts of the participants.

Phenomenological research focuses on individuals' experiences, their understanding of a particular phenomenon, and their perceptions of the given topic.

Participants are selected because they can grant the researcher access to a particular perspective on the phenomenon being studied.

For inclusion in the present study, participants had to meet the following three criteria: experience working with students with SMD, consideration of using AT with this population as mandated by the federal government as part of the IEP development process, and experience with reading or language arts activities for these students. Creswell (1998) noted that phenomenological study participants "must be individuals who have experienced the phenomenon being explored and can articulate their conscious experiences" (p. 111). Study participants included teachers from self-contained classrooms, speech and language pathologists, speech and language therapists, and an occupational therapist. These educators worked across grade levels, and all met criteria for inclusion in the study.

Adler and Clark (2011) noted numerous advantages regarding qualitative data collection utilizing semi structured interviews. Advantages include the development of a rapport between the interviewer and the interviewee. Interview protocol questions can be explained, and if needed, modified for each participant. Semi structured interviews are useful for discussing complex topics because of the flexibility that allows for follow up questions. They are useful when the themes to be discussed are familiar with the interviewer and the interviewee, thus providing a good response rate. Advantages of semi structured interviews outweigh their time intensiveness.

For phenomenological researchers, the focus is on subjectivities or on the generation of mini narratives. I chose 10 participants to be interviewed because this

number was expected to provide sufficient information for the development of meaningful points of similarity and difference among the participants, but not so many that I would be in danger of being overwhelmed by the amount of data generated. Phenomenological guidelines include interviews involving 10 individuals because 10 participants in the study represent a reasonable size (Creswell, 1998). Creswell noted that as few as one and as many as 325 participants have been interviewed depending on the phenomenological study. In this study, 10 participants were interviewed at four different schools because this is where students with SMD are educated in the two rural districts under study. Neither middle school in either district had any students with SMD. Each school involved at least two interviews, with one being a teacher in a self-contained classroom and one being either personnel from the speech department or an occupational therapist.

Prior to participant selection, district office leadership in School Districts 1 and 2 approved a letter of cooperation from a community research partner. This letter gave me permission to conduct the study with various educators with the school district. As part of this study, I was authorized to invite members of my organization, whose names and contact information were provided, to participate in the study as interview subjects. Their participation was voluntary and at their own discretion. I was also granted permission to work with the director of special services to conduct my study. The districts reserved the right to withdraw from the study at any time if their circumstances changed. The superintendent and the director of special services confirmed their authorization to approve research in the various school settings.

The data collected remained confidential and were not provided to anyone outside of the research team without permission from the Walden University Institutional Review Board (IRB). IRB approval was granted in August of 2011 and the approval number is 08-15-11-0130853. To ensure ethical protection of the participants, I successfully completed a web-based training course, Protecting Human Research Participants, from the National Health Institute. The certificate of completion was dated March 6, 2011 and the certificate number is 646044.

The 10 participants asked to participate in the semi structured interviews were selected from various schools and disciplines. Creswell (1998) indicated that 7 to 10 participants are usually enough when pursuing phenomenological inquiry. At the primary level, a teacher from a self-contained classroom of students with developmental delays, a speech and language pathologist with national certification through the American Speech and Hearing Association (ASHA), and a certified occupational therapist were among the individuals invited to be interviewed. At the elementary level, a teacher from a self-contained classroom for students with developmental delays and a speech therapist who had not yet achieved national certification through ASHA were invited to be interviewed. Educators from two of the four high schools in the rural districts also were invited to participate. One high school housed the self-contained classrooms for students with profound disabilities ages 3 to 21 and one self-contained classroom for students with moderate-to-severe mental disabilities. The other high school provided services for students with moderate-to-profound disabilities.

Data Collection Procedures

According to Kvale and Brinkmann (2009), conversation is a basic mode of human interaction, and through conversation, an individual can learn about people's experiences, perceptions, and the world in which they live. One type of professional conversation identified by Kvale and Brinkmann is the qualitative interview. Phenomenological interviews have been described by Fontana and Frey (2000) as one of the most powerful ways to understand another's perspectives: This was the primary form of data collection for the present study.

An interview is a conversation that has structure and a purpose. The structure involves careful questioning and listening. The purpose of research interviews is to construct knowledge by the interaction between the interviewer and the interviewee, who converse about a theme of mutual interest. However, Kvale and Brinkmann (2009) noted that a research interview is not a conversation between equal partners because the researcher defines and controls the interview. Topics of the interview are introduced by the researcher. The researcher also follows up with questions on the participants' answers.

Interviews focus on particular themes. Through an open-ended question format, interviews are neither strictly structured nor entirely nondirective. Interviewing is an active process in which the interviewer leads the participants toward certain themes, but not to specific opinions about the themes, thus producing knowledge about the topic of research. An interview is focused on certain themes and is conducted according to an

interview guide with suggested questions. The interview guide for the present study is included as Appendix D.

Twelve aspects of a qualitative interview were noted by Kvale and Brinkmann (2009). These aspects of the qualitative research interview include life world, meaning, qualitative, descriptive, specificity, deliberate naiveté, focused, ambiguity, change, sensitivity, interpersonal situations, and positive experiences. Topics in qualitative interviews address the everyday lived world of the interviewer and the interviewee. This method of data collection allows access to participants' experiences in their world. The qualitative research interview seeks to interpret meaning of the themes of the life world participants. The interviewer interprets the meaning of the participants' responses and seeks to confirm or disconfirm the interpretation of the participants' input. Qualitative interviews express knowledge in language that works with words and not numbers. Descriptive data are generated, and participants describe what they experience and how these experiences make them feel. The interviewer gathers knowledge through the descriptions of the participants' life worlds. With this type of interview, specific situations are described without regard to general opinions. Also, deliberate naiveté must be exhibited by the interviewer, with openness to new and unexpected phenomena without previously existing categories and schemes of interpretation.

Qualitative research interviews focus on a particular theme without being strictly structured with standardized questions or being entirely nondirective. The topic of the research is focused on open-ended questions where the researcher leads the interviewee toward certain themes, but not to specific opinions about the identified themes. At times,

the interviewee's statements may be ambiguous, implying several possibilities for interpretation. The researcher's role is to clarify any ambiguities to discover if contradictions are the result of a failure to communicate in the interview situation or if there are genuine inconsistencies in the life world of the interviewee.

Educators are lifelong learners, and their attitudes and opinions may change based on new information and new insights into a topic or theme. During the interview process, the interviewee may gain different insights and awareness about the targeted theme, and previously conceived descriptions, attitudes, and meanings may change. Interviewer knowledge of the theme is important. Different interviewers can produce different statements on the same topics depending on their sensitivity to and knowledge of the given topic. During the interview process, knowledge is produced through the interpersonal interactions between the interviewer and the interviewee. It is up to the interviewer to create a positive interview experience for the interviewee, thus providing a rich experience in which the interviewee may obtain new insights into her life world. Interviewing is an interactive process between the interviewer and the interviewee, and knowledge is produced regarding the specific theme of the interview.

The interview is a tool used to gather data for a qualitative research design. Hatch (2002) noted that the "central strength of interviewing…is to find out what is in and on someone else's mind" (p. 92). When selecting a participant for a one-on-one interview, Creswell (2007) noted that these participants need to be individuals who will speak and share their ideas without hesitation. Rubin and Rubin (2005) suggested finding interviewees who are "*experienced and knowledgeable* in the area you are interviewing

about" (p. 64). All of the individuals asked to participate in the present study exemplified both of these criteria. Keeping the goals outlined above in mind, I conducted interviews with educators from various disciplines in schools located in rural South Carolina. Researchers such as Creswell, Hatch, and Janesick (2004) suggested the use of various methods of data collection to validate research studies. Qualitative research utilizes "descriptive approaches to data collection to understand the way things are and what it means from the perspectives of the research participants" (Mills, 2003, p. 4). A qualitative research study employs several methods to collect empirical data and relies on the experiences of the participants (Denizen & Lincoln, 2005). Methods of data collection for this study included semi-structured interviews, because this type of interview is designed to delve deeply into the understandings of the interviewees. These interviews were considered semi structured because I entered the interview with guiding questions, but probed into areas as they arose during the interview interaction. The interview schedule was used flexibly, and the participants had an important stake in what was covered.

IEPs written by the interviewees were another data source. Many qualitative research designs use interviews as the primary data collection format along with other types of data, such as observations, documents, and audio visual materials (Creswell, 2003; Hatch 2002). Besides semi structured, in-depth interviews, IEP Section VIII, which addresses special factors the team must consider for the IEP development, was an unobtrusive source of information. The first special factor in IEP Section VIII addresses

AT services/devices by asking, “Does the student require AT devices and services?” Responses include:

- Yes, concern addressed in the IEP
- No, not a concern

Further unobtrusive data collection involved examination of IEP Section II, which included academic and functional strengths and needs of the student along with present levels of academic achievement and functional performance. Accommodations and modifications in the general curriculum were addressed in IEP Section III. IEP goals and objectives were addressed in Section IV. These are the sections where AT considerations would be addressed if the educator responded, “Yes, concern addressed in the IEP.” Collecting data from these additional IEP sections provided insight into how the educators addressed AT considerations for their students with SMD.

Prior to the interviews, each interview participant received a copy of the interview protocol (Appendix D). Discussion at that time also included items involving confidentiality, consent to participate, the length of the interview, the date and time of the interview, and permission to audiotape the interview. The face-to-face, semi structured interviews were taped for future transcription. Hatch (2002) described the semi structured format as one in which the interviewer “come[s] to the interview with guiding questions, [yet] they are open to following the leads of the [interviewee] and probing into areas that arise during interview interactions” (p. 94). During the interview process, the participants were invited to offer detailed accounts of their personal experiences with AT and students with SMD. With some prompting, all interview participants were encouraged to address

the incorporation of AT into literacy activities. If the interview participant did not mention literacy activities by Question 8, the interviewees were prompted to give an example of AT specific to literacy activities. Participants were encouraged to tell their stories and express their concerns. After each interview, I transcribed the audiotape verbatim. The interviewee received a copy of the transcribed interview to review and validate as accurate.

Data Analysis and Interpretation

Hatch (2002) described an eight-step process to gleaning important information from interview data utilizing an interpretive analysis model. These steps include:

> (a) reading the data for a sense of the whole; (b) reviewing impressions previously recorded in research journals and/or bracketed in protocols and recording these in memos; (c) reading the data, identifying impressions, and recording impressions in memos; (d) studying memos for salient interpretations; (e) rereading data, coding places where interpretations are supported or challenged; (f) writing a draft summary; (g) reviewing interpretations with participants; and (h) writing a revised summary and identifying excerpts that support interpretations." (p. 181)

This interpretative analysis gives meaning to the data by providing the researcher with a way to generate explanations regarding the content of the various interviews.

To generate these explanations, data were analyzed by attaching significance to the data, refining understandings of the participants, and drawing conclusions. Using this format, I attempted to determine a relationship between the interviewee's responses to the interview protocol and the research study questions.

According to Smith, Flowers, and Larkins (2009), any data collection strategies or research designs that capitalize on the eight-step process noted above will be effective. Detailed case-by-case analysis of individual transcripts takes a long time. The aim of this phenomenological study was to analyze the perceptions and understandings of these participants.

Transcripts of interviews were analyzed case by case through a systematic, qualitative analysis process using coding to search for themes. Rubin and Rubin (2005) noted that there are several stages in data analysis, beginning with *recognition*, in which the researcher finds the concepts, themes, events, and topical markers in the interviews. It is only after these concepts and themes are refined does *coding* begin. Coding entails developing a system of labeling the concepts, themes, events, and topical markers so that data referring to the same theme across all of the interviews can be identified and examined. With this process in mind, I focused on coding the transcripts from the interviews detailing the individuals' perspectives regarding low and mid tech assistive device use for students with SMD.

Creswell (2007) suggested that the researcher codes interview data for major categories of information that emerge as the data are reviewed. With this technique in mind, I read the interview transcripts at least twice, developing categories relating to the research questions. Using the list of codes, I reread the transcripts and color coded various statements as they related to each category. Finally, the transcripts were reread with the color codes in place to ensure that the information was categorized into meaningful segments.

The coding process provided a means to analyze data in support of the research study questions. Hatch (2002) indicated that once data are collected, the researcher needs to search for themes that begin to emerge in the collected data. This systematic analysis was then turned into a narrative account where my analytic interpretation was presented in detail. Verbatim extracts from participants are presented in Section 4 to support the interpretation of the data.

Credibility Checks

It is important to have one or more strategies for establishing quality because the researcher is setting a standard to assess the accuracy of the findings. A combination of several strategies work to establish quality of the research, including member checking; triangulation; acknowledging researcher biases; providing rich, thick descriptions; and peer debriefing.

Member checking is important because it provides the participants with a voice in the final outcome of the research. The participants ensure the credibility of the findings. Creswell (2007) provided criteria to judge the quality of a phenomenological study and listed transcription accuracy from the oral interview as a quality indicator. Gast (2009) noted two levels of member checks. Level 1 involved taking the transcriptions to the participants prior to analysis and interpretation of the results (Appendix E) for validation of accuracy of the verbatim interview responses. The second level involved taking the analyses and interpretations of the data to the participants for validation of research conclusions, prior to publication.

Triangulation involves using different data sources to corroborate research. Using triangulation to validate qualitative research involves searching for the convergence of, or

consistency among, the evidence gleaned from multiple and varied data sources. When using interviews and documents as data sources, one can be used to confirm the other.

Acknowledging researcher biases involves the instrument of data collection, myself, attempting to understand and self disclose assumptions, beliefs, and values inherent to the research study. The researcher must be forthright about his or her position and perspectives of the topic under investigation. Using self reflection, the researcher creates an open and honest narrative that will be well received by readers (Cresswell, 2003).

Creswell (2003) suggested using rich, thick descriptions. Reporting sufficient quotes and using researcher notes "transports readers to the setting and gives the discussion an element of shared experiences" (p. 196). These detailed descriptions provide evidence for the researchers' interpretations and conclusions of the data.

In this study, I utilized peer debriefing to assess the accuracy of the research findings. A peer familiar with the phenomenon being studied reviewed the data and provided feedback on the descriptions, analyses, and interpretations of the study's results (Gast, 2009).

Various quality indicators are used to convey that the research report is reliable and truthful. Validity checks were used to verify accuracy of the research project, being mindful that the research project is not about the researcher but about the participants' lived experiences.

Summary

Educators serving students with SMD have various perceptions about AT implementation. Grounded in phenomenological inquiry, this study explored and described the meaning and incorporation of AT by 10 educators. The study resulted in rich descriptions through in-depth, semi structured interviews of these educators' knowledge and AT device use. In the following section, the central concept of AT integration is explained through the educators' words. Those working with students with SMD, as well as local administrators monitoring AT considerations addressed in the students' IEPs, will find this study of interest.

Section 4: Results

This study explored the assistive technology (AT) use of educators who work with students with severe or multiple disabilities (SMD). Three questions guided this research:

1. What are educators' experiences regarding the use of AT for students with SMD?

2. What are educators' perceptions of AT use for students with SMD?

3. What strategies do educators use to match AT to students with SMD?

Results of data collection from 10 semi structured interviews and unobtrusive data from 82 Individualized Education Programs (IEPs) are reported in this section. Data are reported using rich, descriptive language verified with quotes made by specific interview participants and from the data collected from the IEPs. Specific quotes were chosen to support the various themes that emerged and are included based on the information they provide. Every effort was made to include quotes from all of the participants.

The intention of this qualitative research was to seek insight and understanding into the phenomenon of AT integration for students with SMD. This qualitative research study is naturalistic with its application to non manipulative, real world situations, and relied on my personal contact with the interview participants, thus leading to a deeper insight into the study and adding richness to the data that were collected. With qualitative research, the focus is on understanding the research problem in the naturalistic setting with less concern on generalizing the results.

The interview participants for this research actively engaged in the process of gaining insight into their behaviors regarding the AT phenomenon. Merriam (1998) and Moustakas (1994) noted that phenomenological research uses data that encompasses both the participants' and the researcher's firsthand experiences. This study consists of rich description of the data produced from the interviews with key participants and unobtrusive data. My research produced a large amount of textual data that were manually analyzed without the assistance of any computer program.

Qualitative Analysis

Each interview was transcribed verbatim (Appendix F), and the interview participants read the transcripts and verified the content for accuracy. A five-step process was followed for the analysis of qualitative data (Ulin, Robinson, & Tolley, 2005), including (a) reading the data, (b) coding the data, (c) displaying the data, (d) reducing the data, and (e) interpreting the data.

Reading the data involved reading and rereading each transcript several times until I was familiar with the content. During this part of the process, themes began to emerge, and possible explanations for these themes were identified. As the transcripts were reexamined, emergent themes were revised to determine the presence of patterns within the various themes. Rubin and Rubin (2005) noted that there are several stages in data analysis, beginning with the researcher finding "the concepts, themes, events, and topical markers in [the] interviews" (p. 207). Only after these concepts and themes are refined does coding begin.

The second step of data analysis, coding the data, involved determining where data referring to the same subject across all of the interviews could be retrieved and examined. With this process in mind, I focused on coding the transcripts from the interviews detailing educators' perceptions regarding low and mid tech assistive device use for students with SMD.

Creswell (2007) suggested the researcher code interview data for major categories of information that emerge as the data are reviewed. As such, I read the interview transcripts several times, developing categories relating to the research questions. Using the list of codes, I reread the transcripts and color coded various statements as they related to each category. Finally, the transcripts were reread with the color codes in place to ensure that the information was categorized into meaningful segments.

The coding process provided a means for me to analyze data in support of the research study questions. Hatch (2002) indicated that once data are collected, the researcher needs to search for themes that begin to emerge in the collected data.

The third step in the process of analyzing data involved displaying the data by taking an inventory regarding the themes identified in the second step. In this step, each theme was examined as a separate entity for the development of possible subthemes. The data were examined again to determine if evidence existed to support each subtheme.

The fourth step focused on data reduction. During this stage of data analysis, the goal was to narrow the focus of the analyses by studying themes that had emerged and deciding which themes were central to the study and which ones may be secondary. At

this point in the data analysis, I developed tables for each theme and explored how the themes were connected.

The final step in the analysis of data involved interpreting the data by searching for relationships among the themes. In this phenomenological research study, qualitative data from the interviews were considered the primary form of data collection with the unobtrusive data being analyzed descriptively to support or help explain the results of the data gleaned from the interviews.

McMillan and Schumacher (2006) described discrepant data as data that are an exception to the pattern or that modify patterns found in the data. During analysis of the data, one discrepant case was identified. During the interview, Participant 1 disclosed that she never had an education course, but does address fine motor skills involved with handwriting. Handwriting is a skill addressed in the balanced literacy approach addressed by Johnson (2006), so I included these data when searching for themes. The balanced literacy approach addresses both reading and writing components and includes reading aloud by the teacher, shared reading, guided reading, independent reading, writing demonstrations by the teacher, shared and interactive writing, guided writing, and independent writing. Participant 1 reported that she uses an adaptive handwriting curriculum, *Handwriting Without Tears,* that is multisensory, developmentally based, and works with children of all abilities. Participant 1 did address literacy from the handwriting standpoint using a specialized handwriting curriculum, so the content of her interview was included.

Description of the Interview Participants

A total of 10 educators were interviewed with an array of experience and very diverse backgrounds. The 10 participants included nine women and one man. All were currently serving at least one student with SMD, and all had used some type of AT device with students in the past. Interviews were begun on August 17, 2011. With the 2011-2012 school year beginning two days before, many interview participants discussed AT use from the past year.

Of the 10 participants, only one educator started in special education specifically with students with SMD. All other participants arrived at serving this population by various means. Participant 1 was not a certified teacher and had never completed education coursework, but had been serving students with SMD for 11 years. Several participants began their educational careers later in life after they worked at various jobs such as an office clerk/janitor, a warehouse staffer, and a housewife. One participant, who was a psychology and history major, ended up substitute teaching and avoided the draft during the Vietnam War. Another participant started college coursework as a rehabilitation therapist, and still another participant began her teaching career as an English teacher.

The average amount of time these individuals had been in education was close to 21 years. The average amount of time these educators had been working with students with SMD was about 13 years, and the average number of years they had been using AT was approximately 11 ½ years (Table 1). These items were addressed in Interview

Question 1, which asked the participants, “Please start by telling me about yourself—how you got into education and how long you have been working with students with SMD.”

Table 1

Demographic Information for Semi structured Interview Participants

Participant	**# of years as an educator**	**# of years with students with SMD**	**# of years using AT**
1—OT	24	11	24
2—Self-contained classroom teacher	23	20	16
3—Speech/language pathologist	6	6	3
4—Speech/language pathologist	21	8	6
5—Speech/language pathologist	25	2	4
6—Self-contained classroom teacher	20	20	17
7—Self-contained classroom teacher	41	26	6
8—Speech/language pathologist	11	9	12
9—Self-contained classroom teacher	18	8	10
10—Self-contained classroom teacher	19	19	18
N = 10	208	129	116

Each interview was conducted at the educators' respective schools, with the exception of the occupational therapist (OT). She served all of District 1, so she chose the school where the interview was conducted. All interviews were audio recorded using a battery operated micro cassette recorder.

The average time spent recording each interview was 20 minutes, with the longest interview lasting 42 minutes and the shortest interview lasting 14 minutes. All participants brought their interview protocols, which they received several days in advance, and the majority of the participants had jotted down brief notes regarding specific questions. The participant whose interview lasted only 14 minutes was very prepared, had written an answer for every question on the protocol, and hardly digressed from her answers, even with prompting from me.

Pseudonyms were created for each participant, and any identifying information discussed in the interviews, such as universities attended or names of schools where they were previously employed, were changed to ensure participant confidentiality.

As I interviewed the participants, I took notes that were later used as a reference point to ensure accuracy of the transcripts. I also noted emerging themes on my interview protocol. For example, Participant 2 mentioned integration of AT devices for the home. I had noted that Participant 1 had mentioned integration of AT devices during the school day, where the student used the device in functional situations instead of just sitting there and practicing. Early on, themes began to emerge, and I made notes to check previous interviews for connections.

Interview Themes

Data gathered through interviews and unobtrusive documents provided answers to all three research questions regarding educators' perceptions of AT use with students with SMD. Seven major themes emerged and were organized into meaningful segments that included: (a) the meaning of AT, (b) types of AT used, (c) AT concerns/the purpose of AT integration, (d) AT training, (e) strategies to match AT with the student/what educators working with students with SMD do differently, (f) AT considerations mandated by law, and (g) AT of the future.

The Meaning of AT

Each interview participant had his or her own opinion of what AT means. Several participants mentioned others' perceptions of AT, such as, "Most people think AT is high tech, like computers or electronics" (Participant 1). Some described AT as a "means of allowing students with SMD to be able to perform as their general education peers" or as a "means of giving [students with SMD] the same opportunities as those in the regular education classroom." The speech/language pathologists connected AT to communication in the following ways: (a) "AT is a device or something used with a profound language disorder to help them communicate or perform a task"; (b) "for those who don't speak, AT gives them a voice"; (c) "AT helps students get a point across by bettering their ways of communicating"; and (d) "AT is anything that helps a person communicate and assists them to function as we do." Several educators mentioned that AT is (a) "a means for my students to be more involved"; (b) "something used so students are able to participate in an activity, and AT allows my students to interact with

a book"; and (c) "a way to provide opportunities to participate in a story and gives [students] ways to interact in the classroom." One educator mentioned that "AT helps [her] to be more of a help to the children [because] a lot of children can't do things on their own."And lastly, several educators felt that AT was "anything to help the kid perform better/anything that can help [the students] function better in life" and "anything in the technology field that makes learning possible/easier for handicapped persons." Regardless of the meaning the different educators assigned to AT, all agreed that AT provides a means to enhance skills and engagement.

Types of AT Used

The second theme that emerged addressed "types of AT used by the interview participants." This theme was addressed in Interview Questions 3 and 8 (Table 2) and answered the following:

- What AT have you used?
- Can you give a recent example of an activity where you used AT with a student with SMD?

Table 2

Types of Assistive Technology Used by Interview Participants.

Participant	Question 3 What AT have you used?	Question 8 Can you give a recent example of an activity where you used AT with a student with SMD?
1	pencils grips, switches, special software for cause-and-effect, dots on glasses to operate a cursor on a computer	pencils grips, fidget toys
2	BigMack GoTalk 9	record phrases/words then touch a button or buttons one with 3-4 spaces makes the story come alive
3	BigMack adapted books	adapted book—student had to put [match] the picture on the page
4	adapted books GoTalk 9 BigMack	adapted books (a lot of books) GoTalk 9 with picture overlays
5	BigMack speech mirror language boards	BigMack with repeating nursery rhyme so students can hear themselves
6	touch screen computer BigMack audio equipment/audio recorder communication board	computer to write and identify letters/pictures language master BigMack
7	communication boards computer—reading rainbow	computer—reading rainbow
8	picture schedules buttons—Bigmack touch talk—GoTalk 9 communication book	picture schedule
9	computers, special pencils, special scissors, social stories, highlighters*, large keyboards, hearing aids/FM amplifier, graphic organizer	picture schedule *highlighter used for higher functioning kids working on their GED
10	switches, buttons, touch screen, adaptive books, auditory trainer, large keyboards, toys adapted for switches and buttons	adaptive books with page turners to help with page turning and laminated for droolers

With over 20,000 AT items available, one can see from Table 2 that the participants' experiences are very limited, with approximately 20 AT items used. The most commonly mentioned AT item educators used to engage students with SMD was the BigMack single message communication aid.

AT Concerns/The Purpose of AT Integration

The third theme that emerged included "AT concerns/the purpose of AT integration" and was addressed with Interview Question 4a: What concerns did you have that swayed you towards AT integration for students with SMD? and Interview Question 6: What do you think is the purpose of integrating AT into activities with students with SMD? Concerns that swayed educators towards AT integration included the following (the number in parentheses represents the number of educators who noted this as a concern):

- Students have limited abilities to interact with their environment (2)
- Students were unable to participate without AT (4)
- Students could learn cause-and-effect (1)
- Students were unable to communicate without AT (7)
- Educators witnessed firsthand how students benefited from AT (1)
- Items educators could make for their students were helpful, but limited (1)
- Students needed to have the same opportunities as their nondisabled peers (1)
- Technology could be used to better teach the students (3)

Using AT as a means for students to communicate their needs and wants was the main concerns educators mentioned for choosing AT integration. The inability of

students with SMD to participate was the second most common concern educators had. Several educators felt technology could be used to better teach the students and included technology as a teacher's helper and AT as a means to improve one-on-one instruction. These educators were much attuned to the cognitive, physical, and communication limitations that could hinder engagement in any type of activity for students with SMD.

The second part of this theme addressed the purpose of AT integration. One half of the interview participants felt the purpose of AT integration for students with SMD was to actively involve the students. Three participants included AT as a means to communicate, and three included AT as a means to enable students to be the best they could be or to maximize their potential. Several other purposes for AT integration were mentioned and include the following:

- To promote a level of independence in the student (1)
- To motivate [students] by providing something that will encourage them to try (1)
- To get [students] to be better than when they came to you (1)
- To make the students feel like others around them/to make them feel normal (1)

AT Training

The fourth theme addressed "AT training" and answered Interview Question 5: What training, formal or informal, have you had that assisted you with decisions to incorporate AT? As I interviewed the participants, I realized they had differing opinions of what formal and informal training encompassed. Six participants associated informal

training with receiving help from colleagues, watching other teachers, and talking to others. The others felt conferences and seminars were considered informal because of the voluntary nature to attend. For some, formal training included workshops and a course on how to choose AT. Two participants noted that they had had no formal training, but to them, formal training would be a college course for credit or training in which the district contracts with an expert for the sole purpose of instructing teachers to use technology and to provide new information.

Strategies to Match AT With Students

The fifth theme addressed two items on the interview protocol by answering Interview Question 5a: What strategies do you use to match the student with AT? and Interview Question 9: What do educators working with students with SMD do differently to engage these students in relation to students with less severe disabilities? Answers varied and included strategies such as the following (the number in parentheses represents the number of educators who noted this as a concern):

- Observation—looking at [students'] abilities/what they can and can't do (5)
- Looking at physical limitations (4)
- Looking at cognitive limitations (2)
- Collaborating with other professionals who work with the student (2)
- Trial and error (2)
- Determining students' needs based on test results (2)
- Using AT checklists (2)
- Looking at how receptive the teacher and the family is to AT (1)

- Following recommendations from others in the field who come into the class to observe and offer suggestions (1)

Most educators mentioned using more than one strategy to match the student with AT.

What Educators Working With Students With SMD Do Differently

For the second part of this theme, which addresses what educators working with students with SMD do differently to engage these students in relation to students with less severe disabilities, only one educator mentioned using an adaptive curriculum for students with special needs. According to Participant 10, this adapted curriculum "presents information in a slower manner, is interactive with lots of hands-on activities, and provides lower level skills across all domains such as socialization, cognition, speech and language, fine motor, gross motor, and daily living skills." Participant 1 stated that she probably "touches students with SMD more and is in physical contact with them more trying to get them to engage than a classroom teacher standing in front of the room." Participant 3 stated that she probably would not use AT with students whose only disability relates to speech and that she uses AT devices to play a game or read a book with her students with SMD. Participant 4 mentioned collaborating with others such as the classroom teacher or the occupational therapist to help the child function better. Participant 7 noted that he focuses on life skills instead of academic skills because three of his students are 20 years old and will be graduating this year. Only four of the 10 participants actually mentioned AT in their responses. These included looking at a variety of AT, presenting various AT to make learning more interesting, and scrutinizing

programs and AT. Several mentioned devices/more time planning to get the right device to fit the student and noted the following:

- they "look at the children themselves because some have different disabilities than others,"
- they "plan more to individualize the activities based on the students' needs,"
- they "try a different thing if something is not working to get students functioning at a higher level," and
- they "teach the way the student learns by bringing the educational process alive."

All of the educators responded that they do approach students with SMD differently than their students with less severe disabilities. With the exception of the adapted curriculum, most approaches were trial and error with no guidelines to verify the effectiveness of their choices.

AT Considerations Mandated by Law

The sixth theme addresses Interview Question 7: Why do you think AT considerations have been mandated by law and are now a part of any Individualized Education Program (IEP)? Two participants answered that they did not know or that they did not know how to answer the question. Two participants stated that some people would not use AT if it were not mandated. Several educators stated the following:

- AT helps educators figure out ways to help the students become integrated in the classroom,
- AT causes students to be productive in the classroom,
- educators have seen how helpful it is for students to have AT,

- AT is a way to get students to demonstrate their maximum potential,
- educators have seen what AT does for individuals and how it helps the individuals, and
- people realize that students with SMD can do if they are given an opportunity and given the technology/tools—given what they need so they can perform.

Educators also mentioned the students' rights and providing opportunities. Participant 8 noted, "Kids have a right to participate in the classroom and do the same things that their peers are doing." Participant 10 stated, "People with disabilities deserve the same opportunities as their nondisabled peers." Participant 3 stated, "Students with SMD should be given every opportunity they can to participate." Some educators replied that AT considerations are mandated because it is really important that children be involved, that AT allows inclusion, and that people have realized how much AT can mean to a student and how much a student can grow. Lastly, Participant 5 stated that "AT is research based and it is shown to work."

Even with the federal mandates to consider AT when developing an IEP, the unobtrusive data in the next section show that many educators do not consider AT when developing IEPs. When AT is considered and addressed in the IEP, considerations are vague or not listed at all.

AT of the Future

The last theme addressed Interview Questions 10 and 10a: What do you project is going to happen to AT incorporation for students with SMD five years down the road?

and What has to happen for these AT projections to become a reality? Responses varied; every educator had more than one opinion regarding future projections (Table 3).

Table 3

Interview Question 10: What Do You Project is Going Happen to AT Incorporation for Students With SMD Five Years Down the Road?

Participant	AT Projections five years down the road
1	Depends on the economy--High tech and low tech is expensive Hard to know all of the stuff available—keeps getting newer and newer Send child to someone who knows all the stuff out there
2	Parent buy equipment for their child Now we work the equipment to the child and not the child to the AT—instead of having general switches have more specific things Take the equipment home and the parent be responsible to keep AT safe and bring AT back to school Child takes AT from school and integrate at home—parents see validity of AT Parents integrate AT at home and support use in school
3	More high tech such as IPods—IPods have different applications (apps) that could be used just like a BigMack Lots of different options out there
4	Become more visible Become more prevalent in the classroom People won't be as afraid to use AT People will become more active in exploring ways that they can help their students
5	Addressed more Integrated into lessons across the board
6	AT would advance More teachers would probably use AT Laws would include more use of AT because AT is needed Tech would become higher/easier/won't require much thought/won't require much physical activity—push a button or click a mouse
7	Be more important to students with handicaps because of increased benefits Be more valuable to the instructor to use because of increased benefits to the students
8	More training especially at the college level Schools should provide training on professional development days Schools should bring in experts *(This participant addressed the second part of this theme in answer to the first question.)*
9	More and more people will be using AT Students will start using AT when they are young—students will be motivated to use AT and they will be taught to use AT More and more people with severe disabilities will be doing more things
10	AT incorporation will increase because the rate of technology is improving A lot more high tech will be available

The second part of this theme asked educators, "What has to happen for these AT projections to become a reality?" Five educators listed funding to implement AT, and four cited various aspects of training as concerns for the viability of AT. Participant 8 felt that training should be for both special education and regular education teachers: "We send in AT items for students to use in the regular ed. classrooms, and these educators need to understand the importance, so regular ed. needs to be trained too." Participants 4 and 9 felt that training should begin before the prospective educators got out of college and perhaps even integrated into the curriculum for student teachers. For veterans already in the field, the districts need to offer more opportunities for educators to get different training. Participant 1 felt that "AT should be used in functional situations where the AT devices are with the students all the time and not just during certain times of the day where the student sits there and practices." Participant 6 felt the state department of education will need to be included as new items are developed, so people at the state level have knowledge to pass down to the district level and local level schools. Two participants noted that people/companies need to develop technologies to meet the students' needs and then make those products available to the districts. Participant 5 mentioned that parents should be advocates and that they need to find out what is available for their child. The schools can assist with this by keeping parents educated. Participant 7 noted the need for AT to be more accessible, and Participant 10 included an awareness of AT for her projection to come to fruition. Finally, Participant 9 noted, "Someone needs to come to the classroom and show specific examples; tools; actual tech to help the students."

Great deals of data were gleaned from the 10 interviews. How these data can be used to improve instructional practices of the educators to engage students with SMD is discussed in Section 5.

Themes From Unobtrusive Data

Permission was granted from district level leadership to secure date from four sections of the IEPs of 82 students with SMD, with whom the 10 participants worked. The sections included: (II) academic and functional strengths and needs/functional behavior/present levels of academic achievement and functional performance, (III) accommodations to the general curriculum/modifications to the general curriculum/supplementary services, (IV) IEP goals and objectives, and (VIII) special factors the teams must consider for the IEP development.

I began by looking at Section VIII and how the educators responded to the first item, which addresses AT services/devices and answers the question, “Does the student require AT devices and services?” Responses included, “Yes, concern addressed in the IEP” or “No, not a concern.” Twenty-five IEPs had marked “Yes, concern addressed in the IEP,” and 57 IEPs had marked, “No, not a concern.”

Of the 25 IEPs marked, “Yes, concern addressed in the IEP,” 23 IEPS addressed AT in some capacity, such as switches, touch-and-feel books, hearing aids, and calculators. The other two IEPs vaguely addressed AT concerns in Section III under modifications in the general curriculum. Curriculum and instructional adaptations and classroom modifications were listed on those two IEPs, but neither specific AT considerations nor specific adaptations and modifications were listed. A discrepancy was

noted in 10 IEPs that addressed AT in Section III under accommodations to the general curriculum because none of the 10 students were included in the general curriculum, except for lunch and assemblies. Eleven of the IEPs had this goal listed in the following manner:

> Consultation shall be provided by the [educator], as needed, to the classroom teaching staff, related service providers, and other caregivers to assist the student with the following:
>
> - Optimal positioning;
> - Set up/environmental modifications;
> - Activity/selection adaptations;
> - Functional fine motor skill development (e.g., handwriting);
> - Functional self-help skill development (e.g., dressing, eating, hygiene, toileting; & setup/cleanup skills); [and]
> - Assessment of assistive technology and adaptive equipment needs.

This goal is vague in the sense that AT is addressed "as needed." Testing is conducted prior to the development of the IEP to decide what is needed and thus included in the IEP.

Of the 57 IEPs that stated that AT devices and services were not a concern, 36 IEPs did not address AT. However, 21 IEPs had marked, "No, not a concern," but addressed AT in some capacity. References to AT included computers, calculators, "watching a video on grocery store bagging to learn the skills of appropriate bagging," curriculum and instructional adaptations, a two basket system, "learning to listen

sounds," "adaptations to learning materials in areas such as literacy will need to include a multi-modal design," wheelchair, switches, auditory stimuli, visual stimuli, pictorial stimulus, visual prompts, tactile prompts, "picture/symbol cards to sign needs," "News-2-You curriculum with picture clues under the words," and crutches.

These IEP documents provided a source of data that helped tell the interviewees' stories from a different perspective. These unobtrusive data provided information regarding the AT phenomenon that could not be observed. According to Patton (2002), unobtrusive documents are valuable because of what can be learned directly from them. This type of data also provides paths of inquiry that can be pursued through interviewing.

Establishing Credibility

Creswell (2007) noted that there are various perspectives to establish qualitative research credibility. Dooley (2007) noted that credibility is achieved in qualitative research by utilizing various strategies such as peer debriefing, member checks, triangulation, and referential adequacy materials/unobtrusive data. This study utilized several credibility checks, including peer debriefing, member checking, triangulating data from interviews and unobtrusive data, and using rich, descriptive language.

Lincoln and Guba (1985) described peer debriefing as a process through which a peer reviews the analyzed data and questions both the methods of data collection and the interpretation of the data. The person I chose as a peer reviewer/debriefer was a 34-year veteran in education with the majority of those years spent in special education. She was responsible for prescribing and securing AT appropriate to the needs of her students with SMD. She continues to expand her AT knowledge with continuing education

opportunities that include workshops and professional development. This individual had a general understanding of the nature of the study and was able to provide feedback to refine the inquiry process. I insisted that she play the devil's advocate and question the results of this study in order to verify that I have interpreted the data accurately and that valid conclusions have been drawn from the data, which will be discussed in Section 5.

Member checking was accomplished by requesting that each interview participant review the transcription of his or her interview to validate the accuracy of the information. Hatch (2002) suggested that member checking be used to find out if interview participants agree with the content of the interview transcript. Typed transcripts of the interviews were sent to each participant for feedback, corrections, and clarifications. All 10 interview participants agreed with the analyses of their interview and signed the member check form (Appendix D) to validate accuracy.

Cohen, Manion, and Morrison (2007) defined triangulation as "the use of two or more methods of data collection in the study of some aspect of human behavior" (p. 141). One type of triangulation involves using different settings to corroborate data. When data are collected in more than one setting with interview participants from various disciplines, credibility is ensured. I ensured credibility by interviewing participants from five different locations. These participants were from three different disciplines in the education field, including classroom teachers, speech and language pathologists, and an occupational therapist. Triangulating unobtrusive data from selected sections of the IEPs with data from the interviews improved credibility of the research findings. By

comparing multiple data sources, I was able to identify common themes that supported the credibility of my findings.

Erlandson, Harris, Skipper, and Allen (1993) called interviews a conversation with a purpose. The interview protocol for the present study contained semi structured questions to capture trends not previously determined and to stimulate answers that would produce rich data. Rich, thick descriptions were used within this report to describe the data collection process, to describe the analysis process, and to describe the findings. In qualitative research, findings must be transferable. In order for data to be transferable, Erlandson et al. (2002) reiterated that the researcher must report data using thick description. A rich, thick description provides the reader with the opportunity to enter the settings and make judgments about the applicability of the data. By fully describing the AT phenomenon under investigation, both the reader of this research study and I are able to determine its transferability and relevance.

Summary

In this section, I described findings from analysis of 10 semi structured interviews and 82 Individualized Education Programs (IEPs). Data were analyzed to identify seven major themes regarding the AT phenomenon being researched. Themes included (a) the meaning of AT, (b) types of AT used, (c) AT concerns/the purpose of AT integration, (d) AT training, (e) strategies to match AT with the student/what educators working with students with SMD do differently, (f) AT considerations mandated by law, and (g) AT of the future. Credibility was established using several strategies including peer debriefing,

member checking, triangulating data, and collecting unobtrusive data. In the next section, implications for practice are discussed.

Section 5: Summary, Conclusions, and Recommendations

Introduction

The purpose of this study was to investigate educators' perceptions of assistive technology (AT) for students with severe or multiple disabilities (SMD). This phenomenological approach utilized semi structured interviews with educators and unobtrusive data collected from the Individualized Education Programs (IEPs) of students with SMD to answer the following research questions:

1. What are educators' experiences regarding the use of AT for students with SMD;
2. What are educators' perceptions of AT use for students with SMD; and
3. What strategies do educators use to match AT to students with SMD?

I explored the AT experiences of educators who work with students with SMD and analyzed the data to provide information for those working directly with this low incidence population.

Data were reviewed to identify procedures and strategies that could be considered essential components of AT integration to better meet the needs of students with SMD. Information from this study may be used by educators to align their instructional strategies with AT choice. Data analysis of the interviews was used to better understand educators' planning and practice related to students with SMD, these students' engagement in literacy activities, and the incorporation of AT to enhance participation. Concerns identified by interview participants included training, increasing knowledge and awareness of the kinds of technology that are appropriate for students with SMD, and

identifying strategies to match AT devices with students with SMD in order to provide educators materials they can use as part of their day-to-day engagements with this low-incidence population.

Interpretation of the Findings

Awareness of Available AT and Training

My first research question focused on the educators' experiences regarding the use of AT for students with SMD. Over 20,000 AT items are available, but participants' experiences were very limited, with participants mentioning the use of only 20 AT items. One half of the AT devices used were BigMacks, which are single message communication aids, to engage students with SMD. In August 2011, both District 1 and District 2 provided professional development (PD) for their entire staffs. A PD matrix in District 1 included 74 activities for participants to attend to further their knowledge. The majority of the activities were 45 minutes long. Only one activity included special educators, and that was a procedures update. Educators working with students with SMD were required to attend five of these PD activities, yet the procedures update was the only activity pertinent to the needs of these educators. The districts could use similar opportunities to provide PD to improve educators' understandings of AT integration, thus better equipping educators with AT strategies regarding selection and instruction for students with SMD. It is the responsibility of the educators to equip learners with AT supports to engage in activities. In order for this to come to fruition, the districts must provide a minimal amount of AT training. When appropriate training occurs, educators

will be able to devote their energies to provide AT to enhance students' engagement and interactions.

Increasing Knowledge

The Individuals with Disabilities Education Act (2004) is a collection of federal regulations known as IDEA and includes special education mandates the multidisciplinary teams that work with students with disabilities must consider when developing an IEP. Section VIII of the IEP includes special factors the team must consider for IEP development. The first item, "Assistive Technology Services/Devices," addresses the question, "Does the student require assistive technology devices and services?" In order for educators to make informed decisions regarding the need for AT devices, educators' perceptions of AT use for students with SMD were addressed with Research Question 2. Several interview questions addressed this item, including perceptions regarding what AT means to the educator, what the educator thinks is the purpose of integrating AT into activities for students with SMD, and what concerns the educator had that swayed him or her towards AT integration for students with SMD.

AT meant different things to educators. When the responses were analyzed, the bottom line was that AT is a means to level the education field by providing a means that "allows all students to perform a task such as their general education peers" (Participant 10). One half of the interview participants felt the purpose of AT integration for students with SMD was to actively involve the students. Seven educators noted that their students were unable to communicate, and this need to communicate swayed them towards AT integration.

Students with SMD are faced with a number of opportunity barriers because of their physical limitations, their speech and communication limitations, and their cognitive limitations. These educators recognize the need for AT integration so that students with SMD can actively participate. Encouraging active participation with AT in literacy activities is an important step in supporting students with SMD. In order to do this, educators must set the tone with their students with SMD for active participation by including the following in their instruction:

- Prompting the use of AT,
- Encouraging multiple attempts to use AT,
- Providing opportunities to enhance AT use by demonstrating use, and
- Scaffolding by gradually removing supports to lead to independent AT use.

One of the best ways an educator can support a student with SMD is to choose AT carefully because the student needs AT he or she can easily interact with at first. The educator must provide daily opportunities for the students to practice using AT. As implicated with Vygotsky's (1978) ZPD and active learning theory, educators must create learning environments utilizing AT to engage students with SMD in activities regardless of the amount of assistance a student may require to participate.

Strategies to Match AT Devices with Students

Research Question 3 asked, "What strategies do educators use to match AT to students with SMD?" Half of the interview participants use observation, looking at students' abilities—what they can and cannot do—as a strategy to match AT with the

student. Stephens and Story (2000) acknowledged that educators need to make informal decisions regarding AT. However, these informal decisions need to be validated through practice. Strategies educators identified included observation, trial-and-error, and checklists. Interpretations of these strategies lead to planning and implementation of AT. Educators must inquire and reflect on their practices in order to focus on the students' abilities. Successful integration of AT can be accomplished when educators try an AT device, reflect on their AT decisions, and collaborate with other educators. All of these steps are part of the learning process to match appropriate AT devices with the student. Purposeful, meaningful engagement is key to learning for both the educator and the student. Short et al. (1996) noted the following:

> It is because [educators] are learners that we continue to find teaching exciting and challenging. We learn, not because something is wrong with our classrooms or because we have 'deficits' as teachers but because learning is synonymous with teaching. There are always new questions and understandings for us to pursue about learning, teaching, and curriculum so that we can create even more powerful learning environments with our students. (p. 11)

Students with SMD need educational environments that are specifically organized and adjusted to minimize the effects of their disabilities and to promote learning a broad range of skills. Educators must be competent in meeting students needs and competent in promoting learning and promoting the use of skills important to the specific needs of students with SMD. Educators must provide quality instruction to assist students to reach their greatest potential, and they must consider curriculum adaptations and individualized

teaching supports to provide environments where students have opportunities to demonstrate knowledge and skills. In order for educators to make good decisions regarding their students' educations, they must be knowledgeable and remain informed. For students with SMD to achieve, educators must provide the right conditions to integrate developmentally appropriate teaching to fit the individual needs of each child. Educators must provide optimal learning experiences for their students, and they must take advantage of opportunities to learn.

A new question I have for these educators who use observation as a strategy to match AT with students with SMD is, "How do you interpret your observations?" Hawley and Rollie (2007) noted, "Quality teaching is the key determinant of student learning" (p. 5). It is up to the educators to integrate developmentally appropriate teaching to fit the individual needs of students. In order for this to happen, educators must reflect on their observations, be trained to search for the appropriate AT supplements, and to look at multiple possibilities of AT to implement.

Implications for Social Change

Walden University's definition of social change is described on their website and involves a "deliberate process of creating and applying ideas, strategies, and actions to promote the worth, dignity, and development of individuals and communities alike." The present research study may be used as a catalyst to assist educators with means to integrate AT into instruction for students with SMD on a regular basis. Educators do need to understand the value of AT and they need to possess a desire to learn more about the available AT to meet the needs of their students with SMD, but they do not necessarily

have to be experts in AT. It is educators' knowledge and skills that will determine the effectiveness of AT implementation in educational settings. Reeder, Temple, Carr, Fleming, and Tracy (2010) noted, "Increasing knowledge about assistive technology tools and how to implement those tools is imperative if the assistive technology is going to have a positive impact on student achievement" (p. 15). Educators in both District 1 and District 2 are interested in AT integration for students with SMD and want to further their knowledge.

Recommendations for Action

The findings of this research study need to be made available to the district gatekeepers who consented for this research to occur in their respective districts, the district level administrators responsible for scheduling PD, the interview participants, and colleges and universities. Data from this study can be used to assist administrators with identifying educators' needs, thus providing insight regarding PD for these educators. The data can be used to support AT activities in modified curricula for students with SMD. Knowledge gained through PD would assist educators to enhance AT integration for students with SMD. The interview participants can use these data to promote AT as a teaching tool in the instruction of literacy, as well as other activities associated with skill development. College and university programs can use the data to inform instruction and the training of potential teachers in special education regarding the benefits of AT integration when teaching students with SMD. With this research, I hope to inform practice by sharing the potential benefits of AT integration, thus encouraging special education programs to implement AT into their curricula.

Formal and Informal Training

Based on the information gleaned from the interviews, it is clear that every educator working with students with SMD should receive training using AT to engage this population in activities associated with literacy. The training needs to extend further than general background information regarding what AT devices are available. Educators need specific ways to introduce AT to these students as well as ways to scaffold, or remove supports as students become more proficient with using AT.

According to Stockley (2006), 70% of learning is informal because it is voluntary and self directed. This informal learning results from personal exploration and occurs spontaneously in everyday life situations. Informal education is different from formal education because there is no authority figure or mediator. Formal learning takes place in a planned way at schools and universities where the instructor imparts knowledge, and the learner increases his or her skill and knowledge.

Educators must find ways to continue learning on the job. Over time, relevant staff development can assist educators to view themselves as lifelong learners. Reading and discussing professional literature regarding AT and collaborating about the literature can assist educators when addressing their concerns regarding students with SMD. Educators can observe the student, and then ask others to observe, so that input from various disciplines is provided. Educators must be given opportunities to converse about AT in order for knowledge and understanding to be strengthened. Lastly, educators must have time to reflect on their practices in order to best serve this diverse population with unique educational needs. Graves (2001) summed up this type of growth through

professional collaboration by noting that educators who establish collaborative relationships with other professionals can be important assets to their school districts.

Numerous errors in the IEPs regarding AT considerations were noted. It is recommended that training be conducted on how to write measureable goals utilizing AT incorporation, instead of vague goals that may provide AT implementation "as needed."

Collaboration

Several interview participants mentioned collaboration with others when integrating AT into activities. Perhaps time can be included during team/grade level meetings for educators who want to improve their AT integration with students with SMD. Activities may include pairing educators and providing them with a list of AT devices to integrate. Each pair could then brainstorm how they would develop a lesson using specific AT devices. The various pairs could share their ideas, and each educator could then choose one AT activity he or she would like to try with a specific student. After the AT is integrated, the teachers could reconvene to share what happened with the AT device integration. This particular format allows time to collaborate and share ideas, plan, implement, and follow up to discuss successes and challenges.

AT Leaders

Another recommendation for action involves the development of AT teacher leaders. According to Reeder, Temple, Carr, Fleming, and Tracy (2010), it is important to create AT teacher leaders who can spearhead local AT initiatives. Teacher leaders are especially important in the field of AT because they provide expertise in this ever-changing field. Experienced teacher leaders may initiate PD opportunities as an ongoing

process, utilizing a strategically planned program with specific outcomes, and not simply a one time event. Teacher leaders may initiate training for themselves first, and then train others using resources secured. Teacher leaders may develop training plans that include timelines, roles, and responsibilities. They may plan for and collect data on the impact of the training; and they may provide appropriate conditions for the professional development system, including vocabulary comprehension, support, and continuous improvement. Teacher leaders may assist educators to enhance their knowledge base and expand their skills, thus impacting student learning.

Recommendations for Further Study

A continuation of this research is vital for the implementation of AT for students with SMD. As research validates the significance of AT integration, more effective instructional strategies will be utilized in curricula for students with SMD. With the inclusion of this study in current literature, the utilization of AT may become a viable instructional tool for teaching students with SMD.

Because of NCLB, educators must be highly qualified, and they must provide high quality instruction. High quality instruction for students with SMD requires expertise to identify their needs and then to design instruction to meet these needs. All students with SMD need educators who understand these students' limitations. Educators must be willing to continually observe in order to plan better and instruct well. These educators must be willing to work harder to uncover these students' unique needs and design activities using AT based on their findings. Educators must be equipped with knowledge, teaching techniques, and a desire to engage students with SMD. As

evidenced in interview data from this study, educators in Districts 1 and 2 have the desire. Formal and informal training could provide knowledge and techniques, and future research studies could validate the impact of training.

Educators are willing to continually grow in their understanding of what students with SMD need to engage in activities. Careful observation is one tool educators can use to discover the unique needs of students with SMD. One way the districts can help these educators grow in their understanding of AT incorporation is by allowing these educators to learn together over time while they are involved in the process of AT implementation. Using an activity log to keep track of AT integration is important for the development of a systematic approach for tracking services provided by the educator. Data from these activity logs may be used to determine the impact of AT on student achievement. AT goals need to be measureable in order to ensure the AT device is meeting the needs of the students with SMD.

Lyons and Pinnell (2001) noted that educators learn best when they actively participate, when they are provided with opportunities to observe new concepts in context, when they have time to discuss challenges and successes, and when they are given time to both absorb and reflect on new information. Educators can build a system of strategies to incorporate AT by carefully observing to find out what the student needs, by modeling strategies that proficient AT users demonstrate, and by accepting supports from proficient AT users as the educator tries out the strategies that have been demonstrated. Dorn, French, and Jones (1998) noted that all educators need to keep in mind that no single teacher or program can bring about comprehensive changes in the

special education program that serves students with SMD. It is important that educators work together as a team to provide AT to support the whole child. It is also important for educators to measure the outcomes of AT interventions and to use these data to inform decisions related to AT integration.

Reflection

Students with SMD are unable to learn in traditional educational settings. Students in this low incidence population, with their various limitations, must be provided with means to engage in activities. Some educators may not realize the potential benefits of AT integration and still adhere to the adage that students with SMD will not benefit from literacy instruction, but instead should be trained utilizing functional skills such as self help and activities of daily living.

Prior to conducting this study, I hypothesized potential benefits of AT integration. My thinking has not changed regarding the benefits of AT. Therefore, my challenge is to inform instruction by advocating AT use. As educators become more informed regarding the benefits of AT integration, perhaps less dialogue such as the quote from Section 1, "I would not know what assistive technology to use or how to use it" (Interview Participant 2, personal communication, March 6, 2008), will occur.

This research would not have been possible without the consent of the participating educators. These educators have answered a calling to serve this very unique yet diverse population. During these times of budget constraints, increased accountability, and the demand that all educators be highly qualified, I wanted to provide insight into AT integration and the potential benefits of its consistent use. These

educators and I have our own ideas regarding AT. Some interview participants noted collaboration as a strategy to integrate AT. Providing time to allow this integration strategy is a simple intervention and would not be as costly as a paid professional consultant.

Conclusion

AT is the key to integrating students with SMD into learning activities. It can be a great equalizer because it enhances learning and expands the world for students with SMD by providing various means to access the same curriculum as their higher-incidence disabilities counterparts and their nondisabled peers.

According to Edyburn (2007), few benchmarks are available to guide decision making about using AT when the nature of the disability is cognitive rather than physical. Basic processes associated with reading are cognitive. The English/language arts field has been caught unprepared to address issues of how technology compensates for cognitive impairments. Several factors may explain the lack of attention devoted to AT and reading.

Providing comprehensive training to utilize AT is one way to break down resistance to its use. The districts need to start small and not overwhelm the educators.

Also, educators must keep abreast of the changing technologies to provide access to the curriculum and allow for student engagement. Certain conditions must be met if interaction is to enable potential development to come to fruition. Students with SMD have a long history of limited engagement, not only to accessing educational opportunities, but also to accessing educational materials. The theoretical basis for AT

utilization is active learning, which is built on the premise that students should not be passive recipients of instruction from the educator, but should be actively involved in their learning with considerable hands-on opportunities (Downing, 2010). The key to this theory involves providing the students with opportunities to actively explore developmentally appropriate environments that were purposefully designed by adults. When AT considerations are addressed, one must keep in mind the students' needs, the strength of the current learning environment, the availability of the materials, the student's IEP, and the devices appropriate for the child.

AT is the future of education for students with SMD. It is an effective means for providing a high quality education for all students. AT is also an alternate way to engage students in activities. Comprehensive training must be provided for students and educators to utilize AT and to break down the resistance to its use.

AT solutions represent changes in traditional classroom materials, so the students with SMD can participate in the curriculum. Engaging in activities as active learners instead of passive observers can be a reality with the use of AT devices. AT supports and services include a wide variety of materials and instructional accommodations to meet the individualized and unique learning needs of this population. Students can be supported to learn in an environment in which opportunities are provided to engage in various learning activities, thus challenging students to learn as much as possible. In order for this to come to fruition, teaching strategies to engage students must be provided and using AT can be a means to challenge learning and support students' strengths.

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Appendix A: Consent Form

CONSENT FORM

You are invited to take part in a research interview of assistive technology (AT) titled *Educators' Perceptions of Assistive Technology for Students With Severe and Multiple Disabilities*. You were chosen for the interview because you work with students with severe and multiple disabilities (SMD). Please read this form and ask any questions you have before agreeing to be part of the interview.

This interview is being conducted by a researcher named Mary Jane Davis, who is a doctoral student at Walden University. Mary Jane Davis is also a teacher for the visually impaired at District 1 and District 2.

Background Information:

The purpose of this interview is to gather information to learn about the your experiences with AT for students with SMD and these students engagements in English and language arts' activities

Procedures:

If you agree, you will be asked to participate in an audio-recorded interview, lasting approximately 60 minutes.

Voluntary Nature of the Interview:

Your participation in this interview is voluntary. This means that everyone will respect your decision of whether or not you want to be in the interview. No one at District 1 or District 2 will treat you differently if you decide not to be in the interview. If you decide to join the interview now, you can still change your mind later. If you feel stressed during the interview, you may stop at any time. You may skip any questions that you feel are too personal.

Risks and Benefits of Being in the Interview:

There is the minimal risk of psychological stress during this interview. If you feel stressed during the interview, you may stop at any time. There are no benefits to you for participating in this interview. The interviewer will benefit by collecting data.

Compensation:

There is no compensation for participating in this interview.

Confidentiality:

Any information you provide will be kept confidential. The researcher will not use your information for any purposes outside of this research project. Also, the researcher will not include your name or anything else that could identify you in any reports of the interview.

Contacts and Questions:

The researcher's name is Mary Jane Davis. The researcher's Committee Chair is Dr. Ravonne Green. You may ask any questions you have now. Or if you have questions later, you may contact the instructor at ravonne.green@waldenu.edu. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Director of the Research Center at Walden University. Her phone number is 1-800-925-3368, extension 1210.

The researcher will give you a copy of this form to keep.

Statement of Consent:

☐ I have read the above information. I have received answers to any questions I have at this time. I am 19 years of age or older, and I consent to participate in the interview.

Printed Name of Participant _____

Participant's Written or Electronic* Signature _____

Researcher's Written or Electronic* Signature _____

Electronic signatures are regulated by the Uniform Electronic Transactions Act. Legally, an "electronic signature" can be the person's typed name, their email address, or any other identifying marker. An electronic signature is just as valid as a written signature as long as both parties have agreed to conduct the transaction electronically.

Appendix B: Confidentiality Agreement

Name of Signer: District 1 Leader

During the course of my activity in collecting data for this research titled *Educators' Perceptions of Assistive Technology for Students With Severe and Multiple Disabilities* I will have access to information, which is confidential and should not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information can be damaging to the participant.

By signing this Confidentiality Agreement I acknowledge and agree that:

1. I will not disclose or discuss any confidential information with others, including friends or family.
2. I will not in any way divulge copy, release, sell, loan, alter or destroy any confidential information except as properly authorized.
3. I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant's name is not used.
4. I will not make any unauthorized transmissions, inquiries, modification or purging of confidential information.
5. I agree that my obligations under this agreement will continue after termination of the job that I will perform.
6. I understand that violation of this agreement will have legal implications.
7. I will only access or use systems or devices I'm officially authorized to access and I will not demonstrate the operation or function of systems or devices to unauthorized individuals.

By signing this document, I acknowledge that I have read the agreement and I agree to comply with all the terms and conditions stated above.

Signature: Date:

Name of Signer: District 2 Leader

During the course of my activity in collecting data for this research titled *Educators' Perceptions of Assistive Technology for Students With Severe and Multiple Disabilities* I will have access to information, which is confidential and should not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information can be damaging to the participant.

By signing this Confidentiality Agreement I acknowledge and agree that:

1. I will not disclose or discuss any confidential information with others, including friends or family.
2. I will not in any way divulge, copy, release, sell, loan, alter or destroy any confidential information except as properly authorized.
3. I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant's name is not used.
4. I will not make any unauthorized transmissions, inquiries, modification or purging of confidential information.
5. I agree that my obligations under this agreement will continue after termination of the job that I will perform.
6. I understand that violation of this agreement will have legal implications.
7. I will only access or use systems or devices I'm officially authorized to access and I will not demonstrate the operation or function of systems or devices to unauthorized individuals.

By signing this document, I acknowledge that I have read the agreement and I agree to comply with all the terms and conditions stated above.

Signature: Date:

Appendix C: Letter of Cooperation from a Community Research Partner

District 1
Date
Dear Mrs. Mary Jane Davis,
Based on my review of your research proposal, I give permission for you to conduct the study titled *Educators' Perceptions of Assistive Technology for Students With Severe and Multiple Disabilities* with various educators with the school district. As part of this study, I authorize you to invite members of my organization, whose names and contact information I will provide, to participate in the study as interview subjects. Their participation will be voluntary and at their own discretion. We reserve the right to withdraw from the study at any time if our circumstances change.
I confirm that I am authorized to approve research in this setting.
I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the research team without permission from the Walden University IRB.

Sincerely,

District 1 Leader

Letter of Cooperation from a Community Research Partner

District 2
Date
Dear Mrs. Mary Jane Davis,
Based on my review of your research proposal, I give permission for you to conduct the study titled *Educators' Perceptions of Assistive Technology for Students With Severe and Multiple Disabilities* with various educators with the school district. As part of this study, I authorize you to invite members of my organization, whose names and contact information I will provide, to participate in the study as interview subjects. Their participation will be voluntary and at their own discretion. You also have permission to work with the director of special services, to conduct your study. We reserve the right to withdraw from the study at any time if our circumstances change.
I confirm that I am authorized to approve research in this setting.
I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the research team without permission from the Walden University IRB.

Sincerely,

District 2 Leader

Appendix D: Interview Guide

Interview Guide

Focus: Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities

Interview Date:

Interviewee:

Researcher/Interviewer: Mary Jane Davis, Teacher f/t Visually Impaired

Setting: _____ school in the rural South

Interview Questions

1. Please start by telling me about yourself—how you got into education and how long you have been working with students with severe or multiple disabilities (SMD)?

2. What does AT mean to you?
3. What AT have you used?
4. How long have you been using AT?
    a. What concerns did you have that swayed you towards AT integration for students with SMD?
5. What training, formal or informal, have you had that assist you with decisions to incorporate AT?
    a. What strategies do you use to match the student with AT?
6. What do you think is the purpose of integrating assistive technology (AT) into activities for students with SMD?
7. Why do you think AT considerations have been mandated by law and are now a part of any Individualized Education Program (IEP)?

8. Can you give a recent example of an activity where you used AT with a student with SMD?

9. What do educators working with students with SMD do differently to engage these students in relation to students with less severe disabilities?

10. How long have you been using AT?

    a. What concerns did you have that swayed you towards AT integration for students with SMD?

11. What do you project is going to happen to AT incorporation for students with SMD disabilities five years down the road?

    a. What has to happen for these AT projections to become a reality?

12. Is there anything else you would like to add, regarding AT for students with SMD that has not been addressed?

Appendix E: Member Check Form

Date:
Dear _____,
Thank you for participating in an insightful interview. Attached please find a draft copy of the verbatim transcripts of the interview. Please review the transcription for accuracy of responses and reporting information. Feel free to contact me should you have any questions or concerns.
Thank you again for your willingness to participate in this study.
Sincerely,

Mary Jane Davis

Appendix F: Interview Transcripts

Interview Guide
Focus: Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities
Interview Date: Wednesday, August 17, 2011
Interviewee: Participant 1
Researcher/Interviewer: Mary Jane Davis, Teacher f/t Visually Impaired
Setting: Elementary School in District1
R: Today is August 17, 2011 and I am interviewing the occupational therapist for District 1. She has read and signed the consent form, had no questions about that, was given a copy of the interview protocol yesterday, and is ready to begin.

Interview Questions

1. R: Please start by telling me about yourself—how you got into education and how long you have been working with students with severe or multiple disabilities?

   I: Umm, I'm not a certified teacher so I've actually never had an education class. I've been an OT for 24 years, and I've been in this district for-this is my 6th year. Umm, I did contract work in the school systems for probably 5 years back when I worked at the hospital. I've done every kind of OT there is.

2. R: What does assistive technology mean to you?

   I: You know we use to call it, umm, adaptive equipment and it was anything, you know, from a button hook to help someone button their shirt all the way up to really high tech environmental, they call it environmental-the thing-I don't remember what they call it now. Things to change the environment like switches or ways for spinal cord injuries/head injuries could turn lights on and off and things like that. So assistive technology to me is any of that stuff, but I think most people think it is just the high tech stuff like the computers or the electronics stuff.
3. R: What AT have you used?

   I: In the school setting or anywhere?
   R: In the school setting, since we're focusing on students with (I: OK) severe and multiple disabilities.
   I: Umm, for the not usually severe kids, I use umm pencil grips, umm I do not or have not used any dressing aids. Switches, I did at one time have a child that operated the cursor on the computer with, I don't know what it is called--the little dot that you put on her glasses and then the keyboard was on the computer so she could type that way. She was a spinal cord injury, C-5, I think. Umm, special software especially for ones that for cause-and-effect for the more severe children,

umm. What else did I use? It's one of those things you can't think of when someone asks you.

4. How long have you been using AT?

   I think OTs have always used it, but in the schools. Well, you know something else I have used—adaptive feeding equipment, umm, adapted sporks, forks or spoons, or special cups, umm things like that. (R: OK).
   R: Have you used anything, do you work with literacy at all?
   I: I guess in working with handwriting, I do indirectly. (R: OK).
   R: Can you think of any activity, any AT, umm, device or equipment that you used specifically for handwriting?
   I: I used like a tablet, not a laptop, but the tablet that had the notebook paper on it and they would have to write on there with the, umm, stylist. Or I would highlight, on those I noticed you could highlight one row and make it yellow. Stay in the yellow when you are writing.
   R: Is there any type of assistive technology you use? Do you use a specific handwriting series?
   I: Handwriting Without Tears.
   R: And is there any type of, umm, any type of AT you use with that?
   I: I don't know that it would be, I'm not sure they would call it assistive technology. You have a special little blackboard/chalkboard. It's about that big. (OT showed dimensions with her fingers/hands. About 4 inches wide and 6 inches long). And you start off by making letters on that chalkboard. You make them with chalk and then you use a little, tiny sponge. I also have a magnetic board that's the same thing and you make the letters and you always teach them the same way. And I have little wooden pieces where you make the letters out of those.

   a. R: What concerns did you have that swayed you towards AT integration for students with SMD?

      I: I guess the fact they are so limited with their ability to interact with their environment. You know, giving the kid something they could actively do. (R: OK).

5. R: What training, formal or informal, have you had that assist you with decisions to incorporate AT?

   I: I took a BabyNet course years ago, umm, back when G. C. was at the State Medical University. Umm, she actually taught it on how to choose assistive technology, umm, for children.

   a. R: What strategies do you use to match the student with AT (or the strategies you use to choose the AT you use, for the children)?

I: I guess as an OT, the first thing I look at is what physical limitations do they have. Umm, or/and what can they do, and I have to look at what cognitive level we're dealing with. And how receptive the teacher and family is to it. Sometimes they aren't.

6. R: What do you think is the purpose of integrating assistive technology into activities for students with SMD?

   I: Umm, so they can be actively involved in the classroom. And, I guess, in the perfect world it would be, umm, that the assistive technology would be used in the classroom to help them a/if they needed a communication thing or a switch that they would use it when they were doing something in the classroom. Like circle time, it would be integrated into the classroom. And not just something you sit there practice doing and then they take it away. Cuz that's the biggest problem I have had with it.
7. R: Why do you think AT considerations have been mandated by law and are now a part of any Individualized Education Program (IEP)?

   I: (Laughing) Because some people wouldn't do it if it didn't. That sounds awful. I guess the nice answer is somebody felt that it was really important that the children be involved and they--a I don't know how to answer that.
8. R: Can you give a recent example of an activity where you used AT with a student with SMD?

   I: A recent one. I guess the most recent ones; we were just playing with toys that was more designed for a leisure kind of activity thing where the child hit the switch to activate the toy.
   R: This is kind of hard since it only the third day of the new school year. But maybe something you used last school year or was this last year?
   I: That actually was last year. (R: OK). Umm, I've given out all kinds of pencil grips. (R: OK) I'm trying to think what else I hand out. I have fidget toys.
   R: What do educators (and I realize you said that you do not have, umm, teaching credentials, but you are in an education/educational setting as an occupational therapist) working with students with SMD do differently to engage these students in relation to students with less severe disabilities?
   I: Umm, I don't really know. I touch them more, you know, versus the classroom where they are standing in the front of the room. They're actually in physical contact with them more trying to get them engaged. Some try to use picture schedules and stuff (R: OK. When you say "some try to use picture schedules" is that you or are we talking about classroom teachers?) I: Teachers. I'll use them if they have them. (R: You'll use them if the teachers have them. So, you're piggy-backing on what the teachers do to reinforce what's going on in these self-contained classrooms?) I: Ya. (R: OK)

9. R: What do you project is going to happen to AT incorporation for students with SMD disabilities five years down the road?

   I: You know, I think some of that depends on the economy. Cuz some of the high tech stuff is so expensive, well even the low tech stuff, it's hard to order anything. Umm, and it changes so much and you keep getting newer and newer stuff and it's hard to know all the stuff. You need, we actually have a child now that has muscular dystrophy and they're looking at some type of computer access for him because he can't write anymore. And, umm, I think when you get to that level you almost have to send the child to somebody that knows all the stuff that is out there to pick because there is just so much to remember all of it. Does that make sense? (R: Yes, that does make sense).

   a. R: What has to happen (you said a lot of it depends on the economy and the AT changes so much, plus so much is available) for these projections to become a reality?

      I: For it to be used effectively, umm, teachers need to be educated on how to use it. Need to make sure that they understand if you are going to use it you have to use it in a functional situation and not just sit there and practice. Cuz, I think some of them just practice and practice waiting for this moment where Oh, they can do it now, umm, and they don't understand that-like with the communication device is easiest to explain, it needs to be there with them all the time so they learn that that is there voice and that's how they communicate information to other people.
      R: Any ideas on how/what can be done to educate these teachers?
      I: I think you can do that in an in-service.
      R: Well, we had a lot recently, at the beginning of the school year, not one thing addressed AT. Why do you think that is?
      I: Well, sometime special ed. is overlooked, I think, sadly. And the whole country is so focused on literacy and test scores, that that's all they see. I mean, assistive technology, even in the classroom, umm, with non-disabled would help too, but they just don't integrate it well into the classroom, I don't think.

10. R: Is there anything else you would like to add, regarding AT for students with SMD that has not been addressed?

    I: I don't think so
    R: Thank you very, very much.
    I: You're so welcome.

Interview Guide
Focus: Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities
Interview Date: August 18, 2011
Interviewee: Participant 2
Researcher/Interviewer: Mary Jane Davis, Teacher f/t Visually Impaired
Setting: High School in District 2
R: The topic is Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities. The date is August 18th and the participant has already read the consent form. Do you have any questions about the consent form, and what's involved and what's involved in the interview? (I: No, I do not). Alright, we are ready to begin. (I: Alright).

Interview Questions

1. R: Please start by telling me about yourself—how you got into education and how long you have been working with students with severe or multiple disabilities (SMD)?

   I: Alright. Well, when I was in college, actually before that, I was thinking about what I might would do, and I saw a program about a young girl and how they thought she was deaf and or had other problems and they put her in an institution because they didn't know how to deal with her or help her. When she became, when she turned like 21 or 22 she learned more about her situation and she let them know about her situation and she did have a few things wrong with her, but she made her way out. So, that inspired me to think of other children who might have similar problems and that they might need some help and they couldn't help themselves, so I was going to do that, or aspired to do that anyway. I always wanted to be a teacher, and then when I was applying for positions, there was a position opened that was part kindergarten/part special needs, and so I was the kindergarten teacher there for a long time/well for a period of time. Then, all of the sudden they went on to school and they pulled the kindergarten part out and then there was my best place-with special needs students. I had been working, umm, and I worked three years at that moment, umm, from 74-77. And then when I went back into education, I had family, then, umm, I worked since 1990.

   R: And since 1990, is that when you have been with students with severe and multiple disabilities?

   I: Yes. Yes, it has been.

   R: OK. Have you been in the same classroom all those years? (I: Yes I have.) R: How many years has that been? (I: Well, I mean…) R: From 1990-2011—20 some years? (I: That's right). R: OK.

2. R: What does assistive technology mean to you?

   I: Assistive technology is very helpful in my classroom because it means that my students can be involved in a different way. It means they can assist with some of the lessons and some of the stories that I teach, so they can become more of a part of the lesson instead of not just sitting there, but they cannot normally let other???????? phrases or words, when I get to word in the story they push the button and they can almost in a sense say the word for me. So, it just means that my students can be more involved.
3. R: What AT have you used?

   I: Umm, the BigMack, umm, well I've used a variety, you know, from just simple ones, but the ones I also like are the BigMack and the GoTalk 9, and just things of that nature.
4. R: How long have you been using assistive technology?

   I: Oh, gosh. I've been to plenty of workshops and, umm, since the middle 90s. (R: OK).
   a. R: What concerns did you have that swayed you towards AT integration for students with severe and multiple disabilities?

   I: Well, because they/also could learn cause-and-effect and they could become more involved in the lesson.
5. R: What training, formal or informal, have you had that assist you with decisions to incorporate AT?

   I: Well, as I have mentioned before, I have gone to numerous workshops where different technologies have been introduced to the group and the different ones we could use, and/umm, so that would formal and informal training. And, of course, I have a very nice association with a colleague who has introduced me to some other ideas/many other ideas.

   a. R: What strategies do you use to match the student with AT?

   I: Well, for example, if a student has some control over their hand movement/arm movement then that would be something they—the BigMack, touching the switch to activate a word or phrase would be something they could use because they want to use their arm in a different way than they had before. Umm, sometimes when you play games, and you hold it out to a certain place, then they get so involved with the comments we do with them/say with them and the compliments and the way to goes and the things that we say-they get so involved that they forget that they don't know how to do that. So we want to encourage their excitement. And if they have a concern and have a hard time doing it, then we

help them with hand-over-hand, and help them actually reach/touch the switches. (R: OK).

6. R: What do you think is the purpose of integrating assistive technology (AT) into activities for students with SMD?

   I: Well, one of the purposes is that some of the students I work with can't speak. This gives them a voice. (R: Anything else?) Well, it just gets them actively involved in the lessons.
7. R: Why do you think AT considerations have been mandated by law and are now a part of any Individualized Education Program (IEP)?

   I: There, I've said again. It gets them to start thinking about things differently and they might not think they could do a certain skill, or include themselves, but this just gives them the fact that they can. They are important and they can be included in certain skills and certain parts of class. And, as I've said, if they go and they are ordering/they want to go somewhere out in the world, they can't speak-they can push their buttons and order a meal. (R: OK.)
8. R: Can you give a recent example of an activity where you used AT with a student with SMD?

   I: Well, as I have stated before, we read stories and, umm, what we/I usually do is I record the phrase or the word, and I will????????with them. With the different students we can switch the word according to the different parts of the story and, umm, I read the story and get to that word and I call on the child and they'll know to be able touch the button or the button—actually/sometime I have one that has three or four spaces. And, umm, to me, it just actually makes the storybook come alive for them.
9. R: What do educators working with students with SMD do differently to engage these students in relation to students with less severe disabilities?

   I: Well, we have to think about the things they can do. And, we want to encourage them to do a little different thing. And if we cannot/if they don't learn the way we are teaching, we must teach the way they can learn. This is just one way of, as I said, bringing their educational process alive.
10. R: What do you project is going to happen to AT incorporation for students with SMD disabilities five years down the road?

    I: Well, I'm hoping that the, umm, instead of parents who cannot afford the cost of equipment, umm, that to buy the equipment for their student/child maybe, umm, that would also be mandated that whatever is in the IEP would have to be provided by whoever/the powers that be. That would be one thing.
    R: Now, if it is in the IEP, it has to be provided for school. So, what exactly are you saying with regards to/because we already have to provide it for school use? So, what are you saying?

I: Well, I'm saying for each individual child. Because normally, what we do is-we can order/we order some equipment and just work it to the child and not necessarily the child to it. You see what I'm saying? So, in other words, I might get three switches and that were just ordered generally. It would be nice to have the funds to go in a catalog and say, well, Child A needs this-he's getting this. Child B needs this other different switch-he's going to get this. Child C needs a whole other thing. Instead of just having general switches, we have more specific things.
R: OK. You also mentioned family. Uh, what do you see or how do you feel about the family and assistive technology—right now it's staying at school. Is that correct? (I: Right.) So, when you said/brought in family, what would you like to happen with that?
I: That they could actually take whatever equipment home and the parents take responsibility to keep them safe, and then bring it back. (R: OK.)

a. R: What has to happen for these AT projections to become a reality? You said it would be nice to order from the catalog and make a good match with the student. But what has to happen for these projections to become a reality and for these things to be taken home so that the families could use them also?

   I: I would think that the funding would need to be in place. And, I also realize there are plenty of grants we could write, but that funding for grants would only be for stuff that might be staying at schools, not things to go—I mean if a child could communicate at school, with a communicator with 3 or 4 pictures, but he goes home and then he's sitting there lost again—it would be nice for/or even matching—maybe the parent could help with some, but I know they always can't. I know this nice person who has a loan closet, but still those things need to stay at school. So, I think it would be wonderful if an initiative would come forth. A lot of strides have been made and that they are totally appreciated. I think it would be very nice for some funding projects to come forth and then each child could take these communicators and part of their daily routine and integrate them at home as well. And that the parent would see the validity of this and then expect them to use these particular pieces of equipment and make them as supportive at school as they are at home.

11. R: Is there anything else you would like to add, regarding AT for students with SMD that has not been addressed?

    I: Umm, I know at our school, we're trying/we're working on a sensory room, but it does take time. And, umm, parents or maybe parents do, but people at large don't realize that a special lighting room and special equipment is very important for their child's learning process, their learning mode, and sense of being. So, I would just like to add, that, umm, there are concerns out there. I know the funding is what it is, and that if a group needs something else they will go out into the world to be productive citizens. That would, of course, will be a priority. It's also

a priority for children who are going to learn all they can be to be as independent as possible to have what they need. Because after they go home after school, and they are not going to a work force, they still need to be able to be as independent as possible and therefore assistive technology would help them in that endeavor. (R: Is there anything else?) I don't think so.
R: Thank you very much for participating in the interview. And what I will do is transcribe this and then you can, umm, read it and validate it for accuracy. (I: Alright.)

Interview Guide
Focus: Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities
Interview Date: August 19, 2011
Interviewee: Participant 3

Researcher/Interviewer: Mary Jane Davis, Teacher f/t Visually Impaired

Setting: Primary School in District 1

R: Today is August 19, 2011 and we are going to interview about an *Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities*. The interview participant has, umm, read the consent form and the interview questions and she has no questions.

Interview Questions

1. R: Please start by telling me about yourself—how you got into education and how long you have been working with students with severe or multiple disabilities (SMD)?

   I: Umm, how I got into education, umm, it actually took me a while to figure out what I wanted to do. Umm, I always knew I wanted to work with kids, but I didn't think I wanted to be a classroom teacher. Umm, and I was actually—my undergrad was in recreation therapy and I was doing an internship at a rehab hospital in recreation therapy, and, umm, and the speech therapist there—I became more interested in what she was doing, umm, and then I pursued my master's in speech. Umm, for as how long—I've been doing this for 6 years, so for 6 years I think I have had someone with SMD. At least one every year. (R: OK.)

2. R: What does AT mean to you?

   I: Umm, well, to me it is a device or something that is used with, umm, you know with someone with a profound language disorder that is not able to communicate—to help them communicate, or to help them perform a task. Umm, just something used so they are able to participate in an activity.
3. R: What AT have you used?

   I: Umm, I have used a BigMack and adapted books.
4. R: How long have you been using AT?

   I: Umm, since I learned about the loan closet which was like 3 years ago. The first thing I checked out was the BigMack. Then, I learned about all these other things that you have. So, about 3 years.

a. R: What concerns did you have that swayed you towards AT integration for students with SMD?

   I: What concerns? Just that the student wasn't able to communicate or wasn't able to participate, umm, and once, you know, I learned about some of the stuff that you had, it just made sense to, you know, try it out. (R: OK.)

5. R: What training, formal or informal, have you had that assist you with decisions to incorporate AT?

   I: No formal training. Umm, and just what I have learned from you, umm, and that's just informal, I guess.

   a. R: What strategies do you use to match the student with AT? (How do you decide you are going to use the BigMack with them or the adapted books? Did you say adaptive books or big books) (I: U, hu) (or adaptive books with this student? How do you decide that you're going to use that particular assistive technology material with a particular student?)

      I: Well, I guess you just assess, you know, as far as what skills they do have and what they're able to, you know, push the buttons or put the pictures in the book. Just look at all their, what skills they do have. (R: When you say you assess to see what skills they have, is this a formal/informal?) I: Informal. (R: Informal assessment).

6. R: What do you think is the purpose of integrating assistive technology (AT) into activities for students with SMD?

   I: It allows them to participate or communicate when otherwise they wouldn't be able to.

7. R: Why do you think AT considerations have been mandated by law and are now a part of any Individualized Education Program (IEP)?

   I: Just because those students with SMD, umm, should be given every opportunity they can, you know, to whatever—to participate or to communicate, umm, does that make sense? (R: Yes. But, are you saying…I: Why are they mandated? R: Yes, so if they weren't mandated what would happen?) Uh, I don't know? (R: Do you think..?) People might not use the assistive technology if it wasn't mandated. (R: OK. So to get people to use assistive technology, that is why the considerations are mandated by law? Is that what you are saying?) Yes. (R: OK.)

8. R: Can you give a recent example of an activity where you used AT with a student with SMD?

   I: The latest thing or the last thing that I used was the book that you lent to me—the adapted book, you know, where the student—we were reading it and he had to put the pictures on the pages. And it was a student with a profound language

delay, who is basically nonverbal and it just allowed him to interact with the book. (R: Is that one that we made or one that was bought?) You made it. (R: Made it?) Ya. (R: Which book was that? I can't remember.) It was the I Love You book. (R: OK. So, that was at the end of last school year?) Uh, hu.

9. R: What do educators working with students with SMD do differently to engage these students in relation to students with less severe disabilities?

   I: I don't know how to answer that. Maybe you can…(R: Alright, umm. The students that you work with severe and multiple disabilities do you use something differently with them as opposed to a child that is speech only? Do you do anything different?) Well, I probably wouldn't use the AT with the speech only. Umm, I don't know. (R: Can you give me an example of something you would do?) With my speech only kids we might play a game or read a regular book. Umm, and you know, someone with SMD would not be able to really participate in those type things and that's when I would use the AT device. Did I answer the question? Not really. (R: I think you did.)
   (I: LOL. I told you I am not good at interviewing).
10. R: What do you project is going to happen to AT incorporation for students with SMD disabilities five years down the road?

    I: I don't know. I think like everything else it will be more high tech and I can see using Ipads and things like that more so than we do now, I guess. (R: Now with the kids with severe and multiple disabilities—are they going to have the capability to use this high tech Ipods?) Ipads. Uh hu, I think so. They have different apps that could be just like the BigMack, you push—I think there are lots of different options out there. (That's interesting. I've just learned something.)
    a. R: What has to happen for these AT projections to become a reality?

       I: I guess more money because I am sure that they are not cheap.
11. R: Is there anything else you would like to add, regarding AT for students with SMD that has not been addressed?

    I: No.
    R: Thank you very much, and what I will do is type this up and then you can read and sign verifying the accuracy of it. (I: OK.)

Interview Guide
Focus: Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities
Interview Date: August 22, 2011
Interviewee: Participant 4
Researcher/Interviewer: Mary Jane Davis, Teacher f/t Visually Impaired
Setting: High School in District 2
R; Today is August 22, 2011 and I'm going to interview a participant about *Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities*. The participant has read the consent form and was given a copy of the interview protocol about five days ago. Do you have any questions or concerns about either? (I: No mam) Alright, we are ready to begin.

Interview Questions

1. R: Please start by telling me about yourself—how you got into education and how long you have been working with students with severe or multiple disabilities (SMD)?

   I: I'm a speech pathologist. I got involved that way I first taught English. I decided I wanted to do something a little different. I went back to school and got my master's in speech/language pathology. And I got involved working with kids/students with severe and multiple disabilities because that is where I was placed in the school system. And, at first it was challenging, but now I am more at ease with my students because I have been working with them for a long time. I've been in this same district for about 14 years, and I've been working with kids with severe disabilities for about 8, I would say. (R: How long have you been in education all together?) Twenty-one years. (R: OK.)

2. R: What does assistive technology mean to you?

   I: It means giving children an opportunity to that don't have an opportunity to speak—give them a voice. Umm, give them ways that they can interact in the classroom by not—they can't speak—so therefore you give a way to interact in the classroom, and make them a better, well-rounded student in a lot of ways. Give them the same opportunities of those in the regular education classroom.
3. R: What AT have you used?

   I: Umm, I've adapted books. I use the GoTalk 9, the Bigmack—those are the basic ones we use in the classroom.
4. R: How long have you been using AT?

   I: About six years.
   a. R: What concerns did you have that swayed you towards AT integration for students with SMD?

I: Looking at our population—a lot of them don't speak. The only way they communicate is through gestures or through, you know, mumbling or whatever, and I just felt like they needed to be able to have a voice. That is the most important thing. Umm, let people know how they are feeling. And, it just gives them more advantages. That's important. (R: When you say it gives them more advantages, can you think off hand what the advantages are?) They can take part in the lessons, umm, if we program the Bigmack they can be a part of the lesson that is going on. They can feel a part of the lesson—a part of the classroom. I think that's important. It is important. I don't think, I know it is.

5. R: What training, formal or informal, have you had that assist you with decisions to incorporate AT?

   I: I've gone to workshops given by a person in our district teaching us how to adapt books. I have gone to the assistive technology Expo which is in Columbia most of the time, but I think it has been in Greenville lately—I don't know. I have been to the South Carolina assistive technology workshops that they offer in Columbia at the Midlands Center. Umm, and I have also gone to their loan closet up there—visited and looked at he stuff that they have.

   a. R: What strategies do you use to match the student with AT?

      I: Of course observation. Looking at their, umm, abilities—what they can and can't do. If they can move their hands or not. And I use an AT checklist, and just go from that. And, the teacher and I collaborate a lot. I mean, we have to collaborate to see what's going to be the most beneficial to them. (R: Can you tell me a little bit more about the AT checklist that you use?) It's a checklist that I found in a book because when I got interested in assistive technology to use in the classroom I was limited in my knowledge, you know, of what was best for Student A and Student B because no student is alike, so, it kind of narrows down and gives you/lets you look at the whole student and what they can and cannot do. Because sometimes we don't think about, well, this student can't really move their hand, and we don't have..I don't know, I gives me those/helps me look at those strategies better, I think/it makes the kid…(R: After you use the checklist and you determine what the child needs then, this checklist or this book you have, it provides some of the strategies to use or do you come up…?) It does. It gives you some information about what might would be best for you to, you know, what kind of strategies to use with Student A and Student B. (R: I would definitely would like to look at that.). OK. (R: OK.)

6. R: What do you think is the purpose of integrating assistive technology (AT) into activities for students with SMD?

I: Again, it gives the student voice. It gives them the opportunity to participate in the classroom. They're not just being there listening to the teacher read and taking it in that way, but their able to take part in that. And, that's important.

7. R: Why do you think AT considerations have been mandated by law and are now a part of any Individualized Education Program (IEP)?

   I: Because, I think we are looking at the whole student now. It's become more prevalent, I think, in society. You see people now that are using assistive technology even on TV, umm, YouTube—you see, you know, people that can't speak, they have their communication devices and I think people have seen what it does for individuals and how it helps individuals, and I think that's become very important because we're looking at the whole student. We're not just, you know, ignoring the fact that these children can't talk, so we're just going to figure out ways now to help them become integrated in the classroom.

8. R: Can you give a recent example of an activity where you used AT with a student with SMD?

   I: In, umm, one teacher's class that I visit often, we have story time and we take books and we have adapted a lot of books, And we use our GoTalk 9, and I will make the plates for them ahead of time so the children can have the opportunity to participate in the story. Of course, we pick out the ones that are repetitious—the lines that are repetitious, and they know they are going to be a part of that. So, that's basically that.

9. R: What do educators working with students with SMD do differently to engage these students in relation to students with less severe disabilities?

   I: I think we have to look at a variety of assistive technology. Umm, like I said earlier, we have to look at the child themselves because some have different disabilities than the others like maybe not being able to move their hands or not and so forth. I think we have to find strategies that are going to reach all of them. And, I think—and we collaborate together. I, a speech pathologist, collaborate with teacher. Umm, even the OT—we collaborate to do things that are going to help the child function.

10. R: What do you project is going to happen to AT incorporation for students with SMD disabilities five years down the road?

    I: I think it is going to become more visible. I think you are going to see where it's going to be more prevalent in the classroom, where people are not as afraid to use assistive technology, umm, become more active in exploring ways that they can help their students.

    a. R: What has to happen for these AT projections to become a reality?

       I: I think you are going to have to train your teachers, maybe in the college and university settings. I think there needs to be classes for these teachers, umm, when I was in graduate school we didn't talk about assistive

technology, and this is something I have had to really learn on my own and do a lot of digging into. And, I have the help of friends—people who know more about it than I do and I have, you know, seeked the help of people who do know more about it than me. Umm, I think it needs to be integrated into the curriculum somehow of students' teachers, speech pathologists, you know, if they are going to come into the school setting they need to be able to know how to deal with their students and do what's best for them. (R: You mentioned that you think it needs to part of training in the universities. But, what about veteran teachers—how are we going to get them or what needs to be done to get them more involved and more up-to-date as far as the technology.) As far as the district, I think they need to offer more opportunities for teachers to go to different trainings. Umm, and it's going to take other people trying to get other people on board. And sometimes we, we know as people, we don't like to change. But, if you're a teacher, and you love your students and love what you do, we can give them more ways to communicate—I don't see where that should be a problem. But, they're going to need to be trained. (R: OK.)

11. R: Is there anything else you would like to add, regarding AT for students with SMD that has not been addressed?

    I: No mam, I can't think of anything.
    R: Thank you very, very much for participating. I will transcribe this interview and then what I would like for you to do is to read it and then validate it for accuracy.
    I: OK.
    R: Thank you.

Interview Guide

Focus: Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities

Interview Date: August 26, 2011
Interviewee: Participant 5
Researcher/Interviewer: Mary Jane Davis, Teacher f/t Visually Impaired

Setting: Elementary School in District 1
R: Today is August 26 and I am here with an interview participant and we're going to discuss *Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities*. The interview participant was given a copy of the interview protocol plus the consent form in advance and she read it, signed the consent form. Do you have any questions? (I: I do not.) Any concerns? (I: No, mam.) Alright, we are going to begin.

Interview Questions

1. R: Please start by telling me about yourself—how you got into education and how long you have been working with students with severe or multiple disabilities (SMD)?

   I: Well, my name is Participant 5 and I got into education because I knew I wanted to do something to—I just didn't want to be a teacher. I wanted to do something extra. I found out about speech therapy once I enrolled in the college that I attended, and, umm, I have enjoyed it ever since. I have been in this area for about 25 years—in this school/the public school that we're at for 23 years. And, umm, I've been working with severe and multiple disabled people/children on and off throughout my career, but more so the last 2 years. (R: Where were you before you came to public education?) Before I came to public education, I was at a speech and hearing clinic. (R: And, what population did you work with there?) Umm, I had early childhood age and parents brought their students/their children there, umm, they had to pay, so they would be from—those were from like three till middle school. There was an infant stimulation program in the back where teachers worked with students with severe disabilities. It might have been spinal bifida, blind, cerebral palsy, umm, Down's syndrome, and that age range was from maybe six months to about five years old. (R: OK. So, you've worked with kids from birth to 21 in the schools?) Yes.

2. R: What does AT mean to you?

   I: It means, umm, independence. It means being able to, umm; get your point across or to better your ways of communicating.

3. R: What AT have you used?

I: I've used the Bigmack. I've used the speech mirror. I've used language boards—that's
about the extent.

4. R: And you said previously that you have been using AT for about two years. Is that correct?) I: Uh, hu. (R: With students with severe and multiple disabilities or just AT for two years period?) I: With students with severe disabilities. (R: OK. So, you've actually used AT longer?) I: Uh, hu, because I had an adult client in Beaufort and we had a speech board/language board. (R: OK. And that was when you were at the speech and hearing clinic?) I: Yes. At the speech and hearing clinic.

    a. R: What concerns did you have that swayed you towards AT integration for students with SMD?

       I: Well, what swayed me—Of course, initially I was just terrified of them because I figured I am never going to learn how to use this. Like the computer, but I found them to be very useful tools, and, umm, the children usually like things with bells and whistles, umm, so they think they are playing games, so they're excited about it. But what swayed me was, umm, I saw where and how my students could benefit from it by being to communicate without their parents being there all the time, peers, or a teacher. And, independence means an awful lot.

5. R: What training, formal or informal, have you had that assist you with decisions to incorporate AT?

   I: Well, I have had formal and informal, but formal came from the various workshops I've attended for AT through the district. And, the informal, umm, just trial-and-error. Watching other teachers or other professionals use what they use in order to get what they need from that student, or to make them better. (R: Now, when you were in college and doing your graduate/undergraduate work did you have to take any classes that were actually targeted towards AT?) They weren't. They weren't. And, I'm sure that has changed now. That was back in 1984.

    a. R: What strategies do you use to match the student with assistive technology?

       I: Of course, I try to use their pre and post tests that I have available on them. Other professionals who work with them—that's also/always important to check with them to see what we can and cannot use or what they have used to help with whatever it is they do—their goals. But, I usually use the pre and post tests, and, of course, some screening or some type of diagnostic. (R: Pre or post test for language development?) I: Yes. (R: It's not for assistive technology?) But, it can be. When I say that, umm, I use that maybe the score from the language development tool or that articulation (artic) tool to help me decide which AT might better, uh,

help that student because—for example, if that child can't make a certain sound using a Bigmack or something that might record that child's voice makes them excited and they find out did that come out of that. You know, like I said, anything with bells and whistles—it will kind of sway them to want to work. So, I do use the language or the artic or other goals, umm, even fluency because if we want fluent speech we could record a bumpy speech and then I could say OK let's try to get it—see how smooth we can get it. Children sometimes love listening to their voices, so I've paired it with that as well.

6. R: What do you think is the purpose of integrating assistive technology (AT) into activities for students with SMD?

   I: Umm, the purpose is to get them to learn/to get them to be better than they were when they came to you. And it also adds excitement and, umm, it just makes them a better person. It makes them able to do what they couldn't do when they came to you. And using AT, umm, assistive technology, umm, because we have such, well not a high demand, but because we have such fancy technology, umm, if it's a child who can't use their hands or can't use their mouth to talk, then there also things we can use with them to make them feel just like the others around them. And that is really important. Making children feel the same or making them feel normal, so to speak.
7. R: Why do you think AT considerations have been mandated by law and now are a part of any Individualized Education Program (IEP)?

   I: I think because they work. It has been shown to work, and, umm, research is everything. That's what we usually have to use to teach our children standards, etc. And what we see works time after time after time—anything that allows our students to communicate or be a better student, I believe that is the reason why.
8. R: Can you give a recent example of an activity where you used AT with a student with SMD?

   I: Umm, one is using the Bigmack, for example, to repeat/to say a nursery rhyme and then let that student try it as well and let them hear whether or not they left out any of the words or sometimes sounds of words in that nursery rhyme.
9. R: What do educators working with students with SMD do differently to engage these students in relation to students with less severe disabilities?

   I: I think, and this is what we have to do, is to consistently go over and over and over again and sometimes that's the case too when students who do not have severe disabilities. But, we try to, I feel, make it more interesting by presenting those various ATs in speech or just a regular classroom. And, umm, using those type things will give the children an opportunity to participate, to add pizzazz or a sparkle to whatever it is they have to do. Umm, because you have some that cannot write, some can't speak. So this is their avenue to be like the others or do what the teacher wants them to do.

10. R: What do you project is going to happen to AT incorporation for students with SMD disabilities five years down the road?

    I: I honestly feel like its going to be more, addressed more, and it's going to have to be integrated into lessons maybe across the board. Umm, because, as I stated earlier, research has shown that it works and it helps and it aids, and, umm, that's what we want. We want that child to be able to be productive and to be able to be on their own as much as possible.

    a. R: What has to happen for these AT projections to become a reality?

       I: I think the professionals will have to continue using them to show that they do work. Keep parents educated and parents, umm, read, read, read, and read and find out what it is that is available to their child especially if they're a special needs child or a child with disabilities. Umm, to make that child the best that child can be.

11. R: Is there anything else you would like to add, regarding AT for students with SMD that has not been addressed?

    I: No, I think that's said it all. Thank you
    R: Thank you. And what I'll do is transcribe this interview/this recorded interview and then you could read it and validate it for accuracy.
    I: OK. Thank you.
    R: Thank you.

Interview Guide
Focus: Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities
Interview Date: August 29, 2011
Interviewee: Participant 6
Researcher/Interviewer: Mary Jane Davis, Teacher f/t Visually Impaired
Setting: Elementary School in District 2
R: Today is August 29, 2011. I am with Interviewee Participant #6 to get her input on *Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities*. The participant has had the interview protocol for about a week. She received it last Monday, on the 22nd. She also received a consent form at that time. She has read it and signed it. Do you have any questions about the interview protocol or the consent form? (I: No.) Alright, we are ready to begin.

Interview Questions

1. R: Please start by telling me about yourself—how you got into education and how long you have been working with students with severe or multiple disabilities (SMD)?

   I: Well, I didn't begin my career in education until I was 41. I worked as, well, I was a mother at home first, and then I worked as an office clerk for a number years. Then I moved to the South—I lived in New York. I moved South and I couldn't find a job. I worked as a janitor for about 3 years I believe it was. And I said, Oh, I have to do something better than this for myself. I did not have a college education, so I decided I would go back to school. At first I started out in criminal justice, but I didn't care for that. So I/someone was talking to me about the field of education. I said, let me check into that and I tried. I checked into it and decided I would like that—working with the children. So I decided to go into the field of education. I ended up doing special needs kids because I think I have an empathy for them. And I do have patience with elderly people and small children. So, I decided to go into the field of education/special education. That's why I ended up here. (R: How long have you been in education?) This is my 20th year of teaching. (R: Twentieth year, and have you always been with special needs?) Yes, I have. I really enjoy teaching the special needs children. (R: How long have you been specifically with the students with severe or multiple disabilities? All 20 years?) All 20 years, yes.

2. R: What does AT mean to you?

   I: To me it means/it helps me to be more of a help to the children because there are a lot of children who cannot do things on their own. Sometimes they have orthopedic disabilities and they need assistive other than what I can bring just from my own self. So, assistive technology is really, really very important for them—those students who are not verbal, students who have perhaps cerebral

palsy and cannot use their hands as well as other children. AT is really, really very helpful to them and it helps me help them more.

3. R: What AT have you used?

   I: I have used touch screen computer. I have used the BigMack communicator. I have used audio equipment. Basically those are most of the things I have used. (R: Do you use/some of those things that you named like the touch screen computer is more high tech—we're looking at the low tech assistive technology. Have you used the BigMack and the audio recorders, things like that, for any type of literacy activities?) Yes. I've used that to help children to learn their letters and the letter sounds, and even words/beginning to say words, recognize words, or read words. I used those for that purpose.

4. R: How long have you been using AT?

   I: I've been using AT since probably the third year after I started teaching, I think. (R: So it has been about 17 years since you've been using AT?) Yes. (R: Wow.)

   a. R: What concerns did you have that swayed you towards AT integration for students with SMD?

      I: Like I said before, my/what I/the things I could make for the students was very helpful, but it was limited. You know, what I could so myself was very limited—so that's really what swayed me when I saw the technology and those different types of things I could use to better help teach the children. That really caught my eye, and I've been using AT ever since. It's really a teacher's helper.

5. R: What training, formal or informal, have you had that assist you with decisions to incorporate AT?

   I: I have gone to workshops, various workshops from time-to-time. And I've talked to other teachers. I've talked to speech therapists, occupational therapists, physical therapists and they've helped me to understand a lot about the AT.

   a. R: What strategies do you use to match the student with AT?

      I: Well, I look at the student and see what the needs are first. I try to figure out or determine what they need based on the test results I acquire from them, and my observations of what they can or cannot so—their strengths and their weaknesses. Then I try to match the student with the AT services, like that. (R: When you say you look at the student and use observation, but you also use test score—is there a specific section of the these tests that addresses AT or do you have to glean information—How do you use the test scores to decide on assistive technology?) Well, basically it's fine motor skills-that area and the communication skills—expressive and receptive—communication areas that really kind of

determine for me whether the child would need or benefit from AT. (R: And these are in formal testing protocols?) Yes, sections of them.

6. R: What do you think is the purpose of integrating assistive technology (AT) into activities for students with SMD?

   I: I guess the purpose is really to help the students do their very best they can do and to advance them as much as possible, in their learning areas and in their social areas so they can be very productive people in society.
7. R: Why do you think AT considerations have been mandated by law and are now a part of any Individualized Education Program (IEP)?

   I: Because they have seen the need. I am hoping that is the reason—that they really see how helpful it is for students to have these technologies and assistive technologies. AT is very helpful to the students and it causes them to be very productive in the classrooms.
8. R: Can you give a recent example of an activity where you used AT with a student with SMD?

   I: My most recent was with a student that I had last year. Very intelligent young man but his motor skills were very limited so I was able to use the computer to help him reach and actually write and identify letters, and picture, and words during class activities. (R: OK. That's a high tech example. Can you think of something low tech? I realize this week for students so you have to think back to the last school year.) Right. OK. I've used a language master to help with a speech student and the BigMack also to help with communication for those that were nonverbal. And they really enjoyed that because they were able to give answers without having to speak and they learned how to use it and they learned to help me use it correctly. To help them use it—I almost named a student—there's one young man who is nonverbal/he was very interested in learning, and he was very interested in participating in the classroom and he was frustrated when he could not participate because he was not verbal. But when I started using the language master and the BigMack with him that helped him very much and he started to bloom and started participating more during the lessons and was paying much more attention during the lesson when I started using AT devices with him. (R: What curriculum area were those lessons in?) Literacy basically.
9. R: What do educators working with students with SMD do differently to engage these students in relation to students with less severe disabilities?

   I: They plan more. That's the one thing they do. They spend more time in planning and they spend more time scrutinizing programs and the devices that they can use. Most teachers who do not have the need for such technologies won't have to spend that much time. So, teachers who really use AT devices spend a lot of time planning so they can get the right device to fit the student. (So, are you saying that you have to plan more because your activities are so individualized based on the students' needs?) Yes, yes.

10. R: What do you project is going to happen to AT incorporation for students with SMD disabilities five years down the road?

    I: I think it would advance. At least, I'm hoping it would advance. I think more teachers would probably use it. I think probably the laws would include more use of that because it's needed. (R: You say you see AT advancing. How do you see it advancing?) The technology would become higher. I am sure the technology would become more advanced and students would probably being able to use it much/a lot easier, I'm thinking. (R: Why will that be?) Because it probably won't require much thought, and I wouldn't say exactly thought, but maybe not a whole lot of physical activities would go with it. I think maybe push a button or click a mouse might or something might be/it will get to that point, I believe.

    a. R: What has to happen for these AT projections to become a reality?

       I: Oh, now that's a question. I guess we will need more people who are in that area. We'll probably need more people in that area to work in that area of development developing technologies that will suit students that have that need. (R: These people that are developing—how is the AT going to get from them to the educators? What would need to happen for that to become a reality?) We'll need our state department, for one, to be included and to have knowledge/to constantly search actually for technologies that can advance the children with disabilities in the classroom. That's where it needs to begin.

11. R: Is there anything else you would like to add, regarding AT for students with SMD that has not been addressed?

    I: I can't think of a thing.
    R: Thank you very much. What I am going to do is type up this interview and then I will give you a copy of it. I'd like you to read it and then validate it for accuracy. Is that OK?
    I: That's fine.
    R: Thank you again.
    I: I thought of one technology that we use that was the communication board that the teachers made to help children communicate. We use that for language and for social stories and to get children to move from one point to another to transition from one activity to another. We use it to help them learn/to be able to tell us their needs and their desires. The communication board was very good at the very beginning of my teaching career. (R: If it was so good, why have you switched or changed or gone to the BigMack and the language masters?) Well basically because it's just like another step upward. I still use the communication board occasionally depending on the needs of the child. If I see someone who would benefit with that to begin with, I'll start out with that. But, then I'll progress to the language master and the BigMack. (R: Very good. Anything else you would like to add?) No.
    R: Alright. Thank you. LOL. We can it back on if you think of something.

Interview Guide
Focus: Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities
Interview Date: August 29. 2011
Interviewee: Participant 7
Researcher/Interviewer: Mary Jane Davis, Teacher f/t Visually Impaired
Setting: High School in District 2
R: Today is August 29, 2011 and I'm here with Participant #7 and we're going to discuss *Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities.* The participant was given the interview protocol and the consent form a week ago on August 22nd. Do you have any questions? (I: I do not.) OK. Let's go ahead and begin.

Interview Questions

1. R: Please start by telling me about yourself—how you got into education and how long you have been working with students with severe or multiple disabilities (SMD)?

   I: I started teaching in 1971. I was not certified. I graduated with a BA in psychology. I was waiting to be drafted—Vietnam was still going on. While I was waiting to be drafted I filled in for a sick special ed. teacher in my hometown, and the teacher died that day of a cerebral hemorrhage, and I was asked to stay on. I got a deferment from being drafted until December of 1971 and then another deferment until of 1972. The Vietnam War wound down/or Nixon basically shut us down/shut the draft down March or April of 1972. Basically, my job kept me out of Vietnam. And I remained there 4 years in my hometown, then left to go to graduate school to get certified. I got a master's and a specialist's degree at Upstate College. My master's was in special ed. and the specialist's degree (Ed. S.) was in school administration. I taught adjunct classes at Upstate College while I was there as well as taking my graduate courses. I really became very good friends with all of the professors/special needs professors or special ed. professors as they were called back then at Upstate College. Anyway, I had left Upstate College and went several places around the state and taught special ed. I went into administration—I left the classroom after 22 years. I went into administration as an assistant principal for nine years then a full principal for three years, and decided I did not like administration as much as the classrooms and I was able to retire after that time and go back to the classroom. Basically I retired because I didn't like the hours the administrators had. I was able to retire/get my retirement check which helped balance out the differences in salary from administrator to teacher. So, everything was pretty good at that time. I was always with special needs/learning disabilities. I was certified learning disabilities, orthopedically handicapped, educable mentally handicapped, and trainable mentally handicapped. I've always enjoyed working with those students. When I retired as an administrator I had already set up the position/set to go into a position in the

school district I am in now to go into/take over a trainable class. As I said, everything was great. I enjoyed being back in the classroom. My salary was not too much less than what I making as a principal because I was getting my retirement check at the end of the month. Then the economy went bad and retired teachers' salaries were cut back to first year teachers' pay. But that's another issue. But I've worked with special needs students for about 38 years in education and other than the 12 years I spent in administration all other has been in the classroom. I taught adjunct courses for Upstate College and Capital City University. I was 16 hours away from my doctorate in special ed. administration and I got sidetracked and I haven't got back to it. (R: Wow. I had no idea of your background. So, you've been with special ed. kids with severe or multiple disabilities backgrounds for 26 years and you originally did not start out as an educator? What did you say your Bachelor's was in?) Psychology with a minor in history. (R: And you substituted and that is how you fell in love with education?) Right.

2. R: What does AT mean to you?

   I: Any technological device that would assist a person or teacher with instruction of some skill or some knowledge. Anything in the technology field that benefits or makes it easier or helps out—what other word—is assistive to the instruction of a handicapped person and makes the learning possible or some learning possible or at least make it easier in some method/some way.
3. R: What AT have you used?

   I: I've used communication boards—that's probably the biggest thing I have used. I have not worked with any especially no more complicated. Of course, computers—all of my students will have some/various computer skills and there are games some can play. So computers and some of the software that the computers have/that comes with them. That's been a big plus with a lot of my multiple handicapped students. They vary and they really connect with the computer. And I see a side of them that I don't see in working one-on-one. I can watch them on the computer and it is amazing what they can figure out on their own. So, there is more intelligence there—I pick up there is more intelligence there than perhaps I realized or what tests show. After they are on it they can find their way around certain things which I had no idea they would be able to. (R: So, you use the communication board and the computers? Have you used either of those for any type of literacy activities?) Yes. We have this program—Reading Rainbow is the most popular one I use. All of my students are basically nonreaders. I have one that might be first grade level, but they like the stories in Reading Rainbow. I haven't found anything more age appropriate on that level because most of mine are 17 and older. Reading Rainbow still keeps their interest and that's really main one I use. I do have other ones, but that's basically it as far as literacy.
4. R: How long have you been using AT?

I: Probably since I've been back in the classroom which this is my seventh year back in the classroom after leaving administration.

a. R: What concerns did you have that swayed you towards AT integration for students with SMD?

   I: I had been going to several of the AT conferences that are held every year and being exposed to what's available out there—that's been a big plus. And I wish our school districts would make that mandatory for special ed. teachers to go to those rather than it being/having to go through the trouble to take off and go. It's free and you're exposed to a lot of technology that is changing as we speak, basically. It's amazing what is out there and what's affordable and what may not be affordable now—give it a year or two and like all electronics technology gets cheaper. (R: You explained some of the training and workshops you attended. Why did you decide to use assistive technology? Your students—what concerns did have with regards to them that swayed you towards the integration of AT?) I just didn't think the one-on-one situation—I saw ways that is could be improved or actually made more effective having a one-one-one teacher when you use some of this assistive technology. That's what basically had me drawn to AT. (R: So, improving one-on-one classroom instruction?) Right. And my more multiple handicapped individuals do require one-on-one. I bring them in on group discussions and my little lectures/daily events type things. But, when it gets down really to their instruction it really has to be one-on-one with them.

5. R: (You already answered this, but I am going to ask the question anyways in case you thought of something else.) What training, formal or informal, have you had that assist you with decisions to incorporate AT? (You said you went to some of the workshops and saw what was available. Anything else?)

   I: That's mainly it. (R: Would you consider that formal or informal?) I think that's informal because basically it's volunteer and what you go to—the district courses has admitted—some of the technology here in the building—which I don't have like the Smart Board and so forth like that which I'm taking a class right now on autism and I'm finding out that these other schools—I was asked by the instructor do we have Smart Boards at schools. I said yes, they are there, but I don't have one. But the district does offer from time-to-time/has brought in technology/new technology and given workshops on that, but it hasn't really affected me. (R: That's what I was going to ask you—The technology that the district brought in—is it high tech assistive technology or instructional technology for the masses?) It's high tech instructional technology and not really assistive, so it really doesn't apply for my students. (When you were adjunct professor, which was a good while age—over 30 years—at that time was AT being considered for students with SMD?) I don't remember it being assistive—there was a company that made braces and wheelchairs. They were beginning to get into devices on wheelchairs to help multiple handicapped. But really there was nothing/everything back then

was basically instruction from the teacher, but I really can't remember. Now there was visually impaired student working on her master's that was legally blind and she had gotten a device that allowed her to read—I believe it was called an opticon. That was the first time I had seen something like that. That was probably my first introduction/my first real assistive technology device that I remember. (R: When you said earlier about how AT changes, those are obsolete now. They are smaller and better, instead of bigger and better. You said the workshops you've attended you would consider informal training. In your opinion, what do think formal training would be?) Formal training would be when/I picture that where the district contracts with some expert in a field and they come in for the sole purpose of instructing their teachers on how to use the new information/new technology. Whatever that person is being brought in for.

a. R: What strategies do you use to match the student with AT?

   I: I kind of use the try-it-and-see approach. Sometimes I'll get a recommendation—this class I'm taking in autism, which really has been one of the best courses I've taken since graduate school/it's been that long because it is all professionals that are teaching the class and they work with these people all over the state. It is through the state department and the division of autism and they…(R: So when you mention recommendations, you are saying recommendations from other professionals in the field?) We have to tell about our class. When I tell about a certain student I got and they say you might want to try this. So they make recommendations and they are actually going to come my class on September 7 and observe me as part of the class and also offer some suggestions for a couple of students I would like to see more suggestions on. They actually go out an have individual cases/caseloads of handicapped people that they actually go out and see. (R: This is autism specific? Do you feel like something would be beneficial if you have professionals in the field who could help with the severe or multiple disabilities?) Yes, some of this class—like the evaluation instruments and so forth—it's not for the physically handicapped are far as their capabilities and physical abilities and all. As far as changing behavior, this last session that I went to was on communication skills and had a session on evaluation and so of it overlaps with my students. (R: What I had asked—You said recommendations from other people in the field. Are talking about autism specific recommendations? My question was, do you think if we had people/ professionals that came in just with assistive technology and observed and recommended that might be beneficial?) I think so. If you have students that you think you have tried and don't think you really reaching or have an ability but unable to get them to demonstrate that skill to you and you tried what you know, I think it would be worthwhile to have people come in and look at the student and

talk with the individuals tell them what the situation is on a certain student and see if they had any recommendations. Is there some type of assistive technology that they could recommend/try? It doesn't hurt—you've tried everything with these individuals. Not everything works the same with these special needs students/not everything works the same with all of them. You just have to find out what works with that individual student.

6. R: What do you think is the purpose of integrating assistive technology (AT) into activities for students with SMD?

   I: Repeat that again.
   R: What do you think is the purpose of integrating assistive technology (AT) into activities for students with SMD? (Why do we do it?)
   I: To see if they reach their maximum potential in whatever it is we are instructing them. You know, since technology maybe can help identify or identify them demonstrate to the instructor, yes, I can do this. I didn't know I could do it before until I had this device or this technique here. It's another way to get them to maximize their potential.
7. R: Why do you think AT considerations have been mandated by law and are now a part of any Individualized Education Program (IEP)?

   I: Well, probably because of just what I said. It's a way that you get the student demonstrate or get the instruction to demonstrate what they do know/to demonstrate what their maximum potential/to basically capitalize on the benefits of this type of instruction/to show what they can actually do. In another situation they must not have been able to demonstrate it. Assistive technology may provide a way that they can do that. So, it's just another way…And that's the purpose of an IEP is to get the maximum potential of the student to provide for that—whatever the skills or abilities may be.
8. (R: And you may have already answered this one.) Can you give a recent example of an activity where you used AT with a student with SMD? (R: I know you mentioned the computer and Reading Rainbow. Do you do anything else?)

   I: Let's see. Computer, of course would be #1. (R: Let me ask you this. The mandatory literacy instruction that you do every morning with SIPPS—what do you do to individualize it?) It's really not that individualized in my class. We go over basic sight words and we use communication boards for the students with nonverbal abilities. It's not very well/that program itself is not/I don't follow that program as well in here because my students are older and we're more in tune of getting them on a survival skill type path, in here. That's what we do. Academic wise my students have basically capped out, so we work with school-to-work skills type things. But we do still do basic sight words. Most of their reading instruction/literacy instruction they get Reading Rainbow. I do social studies and we're doing South America right now—the continents. They get word finds where they try to find words/identify words. But, their skills—basically all of mine are nonreaders except for one and we just started mainstreaming this out to a

higher level special needs class. But most of mine/regarding mine their retention is very poor, so they can learn a word for the day and forget it the next day.

9. (R: And you may have already answered this question too.) What do educators working with students with SMD do differently to engage these students in relation to students with less severe disabilities?

   I: What special needs teachers do? (R: Yes, as opposed to teachers that work with kids with less severe disabilities. Not necessarily special needs, but you as opposed to maybe a teacher with a student with a learning disability that's on the diploma track.) Well, the level that I work with—the trainable level—you're basically not focusing on as much academics as you are on life skills, especially my class because again my class is older. I have several/three 20 year olds in here. One is going to be 21 next month. For years, I can say this because I have had most of these students for the last six years, we work with words—sight words. We've done the SIPPS program. They're not age appropriate/the materials for them, so that is why I do basically my own thing with social studies. We did hurricane tracking. We followed this recent hurricane and discussed all different facets of preparation, what possible damage it could do, how a hurricane can kill you. Today, I threw out the question—Did anyone make money from this hurricane? Which is a pretty high concept. I said "Who could make money from this hurricane?" So, I really get them to think on those things. But, these students aren't tested like the higher level special needs students and they're not on diploma tracks. But again, the things I mention to them are still subjects that they would be discussing in some of these higher level classes. And you'd be surprised at what some of them pick up and what they remember even on this lower level. Where these other teachers—they more or less are on a stricter diploma track curriculum than I am. And that's not what my multiply handicapped trainable students are on. None of them will get a high school diploma—they'll get a certificate. But what I focus on is to make sure when they leave here that they have another type of instruction to go to like a sheltered workshop. Of course, I have some that will not function in there. They'll need some type of supervision the rest of their life. So it is really a big step from my classroom to the next level. I have one student, like I said, who recently/last week got him going to a higher level—I say higher level—it's really a self-contained educable class. He goes there for reading/ELA then math on A days. We have the A/B days now. I expect he's barely going to make it in there, but at least it's something we wanted to try. (R: Does he have/when he leaves your class and goes to this class does he have any type of assistive technology to aid him in this class?) This student, No. I say that—I let him use calculators when he does money. Money is something I work with a couple of times a year that I have had them and that's a hard concept for them. Making simple change for less than a dollar. But I do let them use calculators—tried to get them to work a little, simple visual coin worksheets on their own. Then I give them a certain time to take out a calculator and go back on their own and see what you did. So the calculator is one thing that the student has used. He's very good on the computer.

R: Continuing with Interview Participant #7, on August 8th, no August 29, 2011, we're on question #10

10. R: What do you project is going to happen to AT incorporation for students with SMD disabilities five years down the road?

    I: I think it is going to be more important as technology grows the increased benefits to educating students such as my handicapped, special needs students, I think it can only become more valuable and the devices and all that's going on/that are coming out now are a just really, really good. But, yes, it is going to be more valuable, increasingly more important and when I say it's going to be more valuable—it's going to be more valuable to us/the instructors to use and more benefits for the students.

    a. R: What has to happen for these AT projections to become a reality?

       I: Well, they are going to have to be accessible. Schools are going to have to have the funding to be able to implement them in their classes. It gets down to the old need for the money. Our economy and the world economy isn't great right now, but I think it will rebound. Some of this technology—after the initial outpour of money—it could be cost effective in what it would save in some capacities it may actually save the district money. So, it's worth taking a look at. It's not all high price equipment. Or, it may be initial outpour of equipment/of money for the equipment, but then in the long run it will pay for itself, and companies that do these things often time can be good to work with as far as making these things available to districts maybe on special programs and so forth.

11. R: Is there anything else you would like to add, regarding AT for students with SMD that has not been addressed?

    I: No really. I'm at my end/ending up my career in education. Talk about being five years down the road I certainly don't think I'll be here five years down the road. This is my 38th year. But it will be interesting to follow. But I think it is a part of the future. Everything else seems to be associated around technology and new devices and learning, even the whole education instructional programs that are coming out now. So, I think it's/I want to use an old saying—the wave of the future is here. It's already here and it's just getting better. (R: Well, since you say you are on your way out, do you have any advice for the person that is going to be coming to take your place, with regards to AT and this population?) I think they need to keep up with what's out there by staying in touch with the educational industries. We're bombarded with all these catalogs. Every year teachers start off the year with all these catalogs, but I think these Expos where these things are demonstrated are really a valuable. But, I think new people coming into the field they need to be well versed. And I think most will be because they are graduating from schools that have all types of assistive technology even for their regular students. I have a daughter in college. She's a senior this year—when she was a freshman she had to actually purchase a computer from her school that was

already preloaded with all their software and the way certain classes expected her to document her work and so forth. She said it sounded a little strange to begin with, but it worked better for her. So the young people that are coming in the field—they're used to it. It won't be a shock or surprise to them. I don't think there are too many more surprises in technology to come up with. I think they're fascinating, but now surprising.
R: That's very interesting. Thank you very much. What I am going to do is transcribe this and then I would like for you to read it and validate it for accuracy.
I: Yes.
R: OK. Great. Thank you again.

Interview Guide

Focus: Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities
Interview Date: August 30, 2011
Interviewee: Participant 8

Researcher/Interviewer: Mary Jane Davis, Teacher f/t Visually Impaired

Setting: High School in District 1

R: Today is August 30, 2011 and I am going to interview Participant 8 about *Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities*. The participant was given both the interview protocol and the consent form August 17th. She has read both of them. She has signed the consent form. Are there any questions or concerns? (I: No, not at this time.) OK. We are going to begin.

Interview Questions

1. R: Please start by telling me about yourself—how you got into education and how long you have been working with students with severe or multiple disabilities (SMD)?

   I: OK. I did not go to college right after high school, Umm, I was actually working in a warehouse and I knew I could do/make something of myself, so I decided I wanted to be a teacher. I figured if I had to work it would be nice to have the summers off. That's a fallacy. We think that teachers have all of this free time and we don't. But anyway, umm, so I worked at this warehouse for 10 years, umm, second and third shift as I worked my way through college. I went to State University and I was the first one in my family to my immediate family to go to college. I was the only one, so nobody in my family really gave me any guidance as to what to do. I went to State University. I filled out of my paperwork and I was going to major in elementary education, not realizing what that was really. So, I started out in that. Then, I said, no wait a minute. I meant little children. So I changed to early childhood. Took some courses in early childhood, started Pre-Step, and then I met another college student who was in the speech therapy field. So, she said, have you ever thought about this? And she explained that they only have these small groups. And I thought I could make more of a difference if I could do more one-on-one and small group after doing the Pre-Step and seeing what the teachers have and how many kids they have at one time. So, speech was more appealing. So, I got into the speech field and I, and, umm, May of 1997, I completed my Bachelor's at State University in speech pathology. Umm, I stayed home for a year because I had a baby, Zack. Then I was able to get into graduate school, so I stayed home another 2 years as I was completing my master's in speech. Umm, when I did Bachelors, I did do my student teaching at M School.

So I had that teaching experience and I am certified. So, my first job was not actually in the schools—I worked at the hospital and at a speech clinic. So, I did outpatient rehab and we also saw some patients not on the rehab floor, but in the hospital. Umm, so after that, umm, was when I decided to take a job in the schools. I worked at M. School for two years and had several students, umm, with autism and I had the more severe. There were 2 therapists at M. School M but I had the more severe students/more involved. (R: So, how long ago was that?) That was in—this is my 10th year the schools—No ninth year—this is going into my tenth year. (R: Have you worked with students with severe and multiple disabilities the whole time you've been in education or been an educator?) Not so much at this district. Now when you say severe, would you include autism? (R: Depending on how severe they are on the spectrum. But mostly, I'm thinking of kids, umm, in (I: TMD) and you're working with them now here.) I: Right. (R: How many years have you worked with them here at this school?) This is my eighth year. (R: Really the nine years you've been in education, you've worked with them for eight years?) At School M I had some that were not even verbal like maybe had not been diagnosed as having autism and there were some with autism that were not speaking. (R: OK.) So does that count? Is that what you mean by (R: I'm looking more at the severe motor disabilities, cognitive disabilities.) I did have some at School M like that. (R: OK. So, we'll say the nine years then?) Yes. (R: And, of course, this year you have some?) Yes.

2. R: What does AT mean to you?

   I: Anything that helps a person in their environment communicate/get around. Anything that assists them to function as we do.
3. R: What AT have you used?

   I: Umm, picture schedules. I've used some of the buttons (Bigmack). I think I burrowed one from you actually—one of the big red buttons just to see if the child would be able to touch a switch, and we did try communication device. I think it was a touch talk that I burrowed from the assistive technology place in the capital. I contacted the AT Person and she sent me a device to try with a student that was here in the TMD class. (R: Did it have 9 windows—was it a GoTalk 9?) Yes, that's what it was. (R: For future reference, we do have some of those through the loan closet that I have here.) OK. The might be good for one of/a couple of the TMD teacher's students here. (R: Well, there are other ones too. There are some with just 4 messages, some with 2, and some with 1 actually and there are different communicators.) OK. (R: There are some things here that we have. So, you've used the button/Bigmack communicator, picture schedules and the GoTalk 9?) Right. (R: OK. Anything else that you have used?) Now, picture schedules, not just like—there is one student in there we use the picture schedule where he checks off. But, I've also used like books with pictures in it. Would you call it a picture schedule? (R: No, you wouldn't call it a picture schedule, but it is

considered assistive technology.) A communication book—that's what I would call it. (R: But, it is considered assistive technology.) Alright.

4. R: How long have you been using AT?

   I: Well, I've been in the schools 10 years, but actually I had/when I was in college I had a client with aphasia and we used, I think it was the same thing, that GoTalk with the 9 buttons that we had at State University in the speech clinic and I used that with him, so that's been at least 12 years ago. While I was in college I remember using that with him.

   a. R: What concerns did you have that swayed you towards AT integration for students with severe and multiple disabilities?

      I: Well, I could not understand—my main concern is speech. When I say assistive technology other things help too with functioning in the environment, but my concern is them being able to communicate. Umm, there were times when I couldn't understand the student even though they were attempting to speak. And, also the teacher/people in their environment were saying we can't understand this student. So that is why—we have to have a way that they can make themselves/their wants and needs known.

5. R: What training, formal or informal, have you had that assist you with decisions to incorporate AT?

   I: In college, I don't remember a specific assistive technology course. I know we went over the different types maybe, but not really any formal training at the college level, as far as how to evaluate, how to pick a device, how to actually test and figure out what the person needs. I remember learning about the different types of assistive technology, but really not any college level training. Umm, most of what I've learned has been more through seminars/conferences. Umm, we had a really good presentation here. Someone came here from the autism division of the Disabilities and Special Needs Board and we met at the district office for like 3 days. They went over specifically how to use/incorporate it with children with autism. (R: So, would you consider the seminars and workshops formal or informal?) I would say informal. When I think of formal, I think more of a college course that you are getting credit for.

   a. R: What strategies do you use to match the student with AT?

      I: Really trail-and-error—I want to know if the child is able to identify by pointing to a picture. So, I might start out with just 2 pictures to see if they can differentiate between the two. Are they able to point to something? I have 2 quick checklists, and one was from the AT Person in the capital. When I contacted her about burrowing a device from the assistive technology department, she sent me augmentative communication device selection checklist, and I think this is something they must have used. So I

kind of look over—I don't really do a formal assessment I guess. It's more trial-and-error because I don't really use a lot of the devices. You know, I don't have a lot of the severe students. But, I have that and I have another checklist that I used at the speech clinic where I was employed before I started teaching in the schools. (R: Is it possible for me to get a copy of the checklists?) Sure, I'll give you both. (R: Great.) And I also, I'll share this with you—when I did my master's at State University, I did my thesis—I did a survey. I sent a survey to all of the speech therapists in all of the schools systems in the state and I did a questionnaire to see how many actually use assistive technology/the training, and I got about 80% return rate. (R: Do you remember how many people actually use AT—of the top of you head?) No, I don't remember that. I'd have to try and find my hardbound copy of all of my research—I'd have to look. (R: I'm curious to see if it's changed much.) I know one of the main concerns was more training is needed. And one of my former professors wanted my surveys and information so she could continue the research. She was working towards her Ph.D. (R: That was 10 years ago. Now AT considerations are mandated by law on the IEP and I'm wondering if more people are using AT now.) The thing is, a lot of people have had no training in it. I'm sure we'll get to that.

6. R: What do you think is the purpose of integrating assistive technology (AT) into activities for students with SMD?

   I: It's needed for some students to be able to participate as their peers do. Some are not able/they're not mobile, some are not speaking but they have the right to participate in the educational environment and do what their peers are doing. So, some have to have that to be able to do that.
7. R: Why do you think AT considerations have been mandated by law and are now a part of any Individualized Education Program (IEP)?

   I: What I just said. The kids have a right just like everybody else to participate and some are not able to, umm, participate in the classroom and do the same things that their peers are doing because they are not able to move around or they are not able to communicate. So, that's needed.
8. R: You many have already answered this question. Can you give a recent example of an activity where you used AT with a student with SMD?

   I: I actually used the picture schedule last week. I have a student with severe autism who is in the TMD class here at the high school, and he has a really difficult time transitioning when it is time to leave his classroom and come to my speech room. And he wanted to hit and spit and several adults tried to calm him down. Then we used the picture schedule to show him—he was in the classroom and we had to look at the picture of the speech room and check it off. And then I brought that with me to my room so he knew when it was time to use my room

we'd be going to the gym for PE. And that worked. It calmed him down and he knew, OK, this is what were doing. So I used that just last week.

9. R: What do educators working with students with SMD do differently to engage these students in relation to students with less severe disabilities?

   I: We have to be more creative for sure. Umm, just try different things. I mean, if something is not working we have to figure out what we can do to get them functioning at hopefully a higher level than they are. We have to try everything and if something is not working we have to come up with way to get them to participate or attempt to vocalize or whatever.

10. R: What do you project is going to happen to AT incorporation for students with SMD disabilities five years down the road?

    I: Hopefully there will be more training. I really think at the college level especially. You would think with speech that we would definitely have all this training on how to help people to communicate because that's our job to help them communicate. Everyone is not going to be a verbal communicator. They might be a verbal communicator now and they might have a stroke and years down the road they can't. So, we as a speech therapist should have more college level training, I think, in assistive technology and how to evaluate and help choose a device. (R: How about these people who have been out of college and been in the field for 9, 10 years. Some of the other people I've interviewed—we're looking at 25/30 years. What about the people already in the field and college or working on your credentials—you're through with those and college really isn't an option for them? What do they need?) What you're saying about it being mandated—it's in the law now that they have to incorporate AT into the IEP well maybe the school should provide that training. We have professional development days—maybe the school should be required to bring someone in to offer that. Often, we have to attend these crazy meetings that don't pertain to special ed., you know. Why not bring someone in who could really teach us something that we really need. (R: OK. I am probably getting a little bias here because I do agree with you and I probability shouldn't.)

    a. R: What has to happen for these AT projections to become a reality? (I believe you have already answered this.)

       I: More training for sure. Umm, the teachers may not be aware of the law that says AT has to be incorporated. Or, because they are not familiar with AT, they are just not doing it. So, definitely we need more training. I think the best way would be for them to bring someone to us—you know to the schools during professional development time. And our district did that with the autism division, but everyone was not included. It was only the select few that actually have students with autism. Whereas, I think more people would have benefitted from that. (R: When you say "select few" there are a lot of teachers who do have kids who are on the spectrum.) Right, and regular ed. teachers need to be included. Even if they are not

able to incorporate it—if we're sending something in the room for the student to use such as a visual or whatever they need to understand that this is really important. So the regular ed. teachers need to be trained too.

11. R: Is there anything else you would like to add, regarding AT for students with SMD that has not been addressed?

    I: Now, the only thing, and I don't know if this is still the case, I remember when I contact the AT person from the capital to borrow that device and she said try this to see if it works. The student I used the device with was cerebral palsy, mental disability also, had some—he was able to touch the buttons and use it but he didn't want to. And so the parent/she really wasn't interested in trying that either because she said she understood him. My concern was, if he wasn't always with you or as adult he may need that. They weren't really/the Mom wasn't really supportive of it so we didn't use it. I forgot what I was going to say. Tell me the question again. (R: Is there anything else you would like to add, regarding AT for students with SMD that has not been addressed?) Oh, I know what I was going to say now. When I contacted AT person from the capital about getting a device, she said just be careful and if you do order a device for this student that Medicaid or insurance will only pay for one device for a lifetime. Do you know if that is still the case? (R: I don't know if that is the case.) See. That's another issue. Maybe there needs to be changes with Medicaid and insurance. With all these budget cuts these are never going to happen. But, like parents of children with autism had to be proactive and fight for their kids to get these therapies covered. Maybe, umm, there needs to be more legislature in place so that if they need a device or something we know that Medicaid or insurance will pay for it. Now in school, I know you have the loaner devices and we have some things we can use. Right? (R: Yes.) But as far as something the child can take home and use in their environment where does that money come from? (R: I know with the Medicaid, as far as the high tech and mobility issues in the wheelchair, the child has to have that for five years before Medicaid will go ahead and approve a new one. A lot of that has to do with growing out of the one they have.) With the communication devices, I've been told, I don't know if it is true or not, that there is one per lifetime. So that might be an issue especially if we come out with better technology as the years go by. Of course, there is going to be better technology. (R: What happens to/my question is you start with a device the child can use and they develop skills and advance and you need a higher level one because their functioning has improved and they're stuck with a lower level one—for some reason that doesn't sound right to me. And, I am definitely going to that because I am curious about it.) But, that's all I can really think of. Just getting something for someone that they can use—who is going to pay for it and are they going to be stuck with it. Like you said, if they are going to need something better. (R: That is our goal for them. To use higher functioning devices and to use the AT devices more efficiently so the student can graduate to the next level.)

R: If there is not anything else, I thank you very much. I will transcribe this interview and I will give you a type written copy and I would like you to read and validate for accuracy.
I: Sure. OK.
R: Thank you so much.

Interview Guide
Focus: Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities
Interview Date: August 31, 2011
Interviewee: Participant 9
Researcher/Interviewer: Mary Jane Davis, Teacher f/t Visually Impaired
Setting: High School in District 1
R: Today is August 31, 2011. I am with Participant #9 and she is going to give us her perspectives of assistive technology for students with severe or multiple disabilities. She was given an interview protocol and consent form on August 17. Do you have any questions or concerns? (I: No.) Alright. We are going to begin.

Interview Questions

1. R: Please start by telling me about yourself—how you got into education and how long you have been working with students with severe or multiple disabilities (SMD)?

   I: OK. I'll start by telling you that I grew up with a sister who was disabled. She's now 53 years old and there were not/the laws were not in effect for students with disabilities, so she lived at a special school. My mother was always involved helping to change the laws, you know, helping to educate children with disabilities. So, I grew up around a lot of children with disabilities and I always knew I wanted to teach. But, when I was 30, I went back to school and when I was 35 I started teaching. My first class was with students with disabilities/with severe disabilities/trainable kids. I taught that for 4 years and then I moved to working with students with learning disabilities. I did that for 2 years, and then went to working with kids with EMD, a little bit higher functioning kids, and I did that for 6 years. And then I went to working with younger children for a couple of years, and now I'm back working with trainable again. But, the reason I got into it—I wanted to try and help kids with disabilities. I knew I wanted to do that from a very young age. (R: So how long—all those years of experience—how long have you actually been in education specifically working with students with severe or multiple disabilities?) OK. This is my 18th year in education and 8 years with students with severe.

2. R: What does AT mean to you?

   I: Umm, anything that can help kids to perform better. Just anything that can help them to function better in their life.

3. R: What AT have you used?

   I: Well, I use computers, umm because it's very motivational to students. I've used special pencils to help them write better. I've used special scissors. (R: I must have put you on the spot.) I guess highlighters—I've done that. I've done a lot with pictures because too because I've taken a lot of/I started with my first

TMD class taking pictures of the students doing things, and that was a good way to communicate with them. And also, they enjoy their pictures year-after-year. They love to be able to look back on their pictures. I've used the large keyboard. I have a student/two students this year with hearing aids. One of them has an FM amplification system. I've used things like social stories and graphic organizers.

4. R: How long have you been using AT? (Longer than 8 the years you've been with the students with severe or multiple disabilities, or just with them?)

   I: Well, in my first years of working with the TMD students, I don't know that there was a lot then. Let me think. (R: Basically, the last 2 years/well this is your second year back in TMD? So, last year and the beginning of this year pretty much?) Well, before that, too—10 years.

   a. R: What concerns did you have that swayed you towards AT integration for students with SMD?

      I: Well, students that wouldn't do anything/students that just sat there and didn't communicate/students that you could tell they wanted to tell you something but they couldn't get it out. I guess that was the major thing was just seeing that kids couldn't do something that they needed to do.

5. R: What training, formal or informal, have you had that assist you with decisions to incorporate AT?

   I: I guess most of my training has been informal. Things like you would help me with years ago. You would bring things by—I didn't know anything about them and you would something by and you say you could use this. You remember that? (R: Vaguely.) That's where I learned a lot of things about AT.

   a. R: What strategies do you use to match the student with AT?

      I: Umm, mostly I would think whatever the kids needed, you know, to help them do what they wanted to do. So, I guess just observation/watching them to see what they trying to do that they couldn't do. And then trying to figure out what would motivate them to do what I wanted them to do. Does that make sense? (R: Yes, that makes sense.)

6. R: What do you think is the purpose of integrating assistive technology (AT) into activities for students with SMD?

   I: I think the major purpose is to motivate them and to also give something that will help them to be able to function better. To provide something that will encourage them to try. Maybe something that will be something that they like so that will motivate them.

7. R: Why do you think AT considerations have been mandated by law and are now a part of any Individualized Education Program (IEP)?

I: Because I think that people have realized how much assistive technology can mean to a student and how much a student can grow. People use to think that kids with disabilities couldn't do anything. I think now people realize they can do if they are given an opportunity and given the technology/tools—given what they need so they can perform.

8. R: Can you give a recent example of an activity where you used AT with a student with SMD?

   I: An example? With Student R we used a picture schedule with him last year, but then by end of the year we kind of weaned him off of it because he'll be 21 next April. So, he's going to be graduating next year. And, we're thinking in real life, he's not going to be able to use a picture schedule every day. So, we weaned him off of it at the end of the school year. Well, when he came in, he did OK the first week. The second week in school the speech teacher came to get him and he just went ballistic. And it was all because he/it took him by surprise—he wasn't ready to transition. He was doing an activity, counting the bottle caps that he likes to do/that he does well, and he didn't want to transition. Miss W. came and got his picture schedule from last year and it had speech on it. She showed it to him and it just calmed him down. She showed him that he was going to go to speech and then he going to go to PE and then he was going to come back to class and go to lunch. And, once he got that picture he was OK. It just kind of calmed him down. So, I guess that was the most recent. (R: When I asked you about assistive technology have used, you mentioned highlighter. Would you mind explaining a little about how you used the highlighter?) When I was working with a little bit higher functioning kids, these were kids who were kind of working on their GED, but they just real problems concentrating, reading, and comprehending, and so I would give them a highlighter and let them highlight the words that they really didn't understand. Then we would stop and go back over those and talk about those words. But that was the main thing I gave them a highlighter for and as we read I would have them highlight the words they didn't …(R: So you used that with higher functioning kids as opposed with kids with severe or multiple disabilities?) Yes. (R: OK.)

9. R: What do educators working with students with SMD do differently to engage these students in relation to students with less severe disabilities?

   I: I think one thing that we do differently is try to motivate them because you cannot make these kids do anything. (R: You have high school, TMD self-contained—what are the ages in here?) My youngest is 15 and my oldest is 20. (R: It would be very hard to motivate these kids, or make them do something. Well, you can't. They're teenagers.) Right and they don't understand when you tell them/it really doesn't matter to them when you tell them you're going to call their Mama. So, you really need to find something to motivate them. And, one thing, in my first year of teaching, you remember Student M—he was so lazy and he didn't want to do anything, but he knew every single word to every single Michael Jackson song. And I knew then--you know what—these kids can learn

anything they want. The key word there is want. You know, if they want to learn it they can learn it, but it's hard to motivate them/hard to make them want to do something. A lot of times they are lazy because no one expects them to anything so they just want to sit there or they want to say I can't do it.

10. R: What do you project is going to happen to AT incorporation for students with SMD disabilities five years down the road?

    I: I think there is going to be more and more people using assistive technology and if they start with them when they're young/motivate them/really teach them what they need to know there are going to be more and more people in the workplace, more and more people with disabilities in the workplace, umm, doing things that regular people do. I was also thinking about a girl I use to have that is driving a car now. And she walked like Student L with her crutches/she walked on crutches but they adapted a car for her so that she can drive. I don't know if you remember her. Her name was Student T. But, she's driving now. But, I think down the road there are going to be more and more people with severe disabilities doing more things because…(R: I know society is exposed to it more. I see it on movies, commercials, and things like that. So even general education kids—if they don't see them in school—see them on TV, too.) Yes.

    a. R: What has to happen for these AT projections to become a reality?

       I: I guess there is going to have to be money for some of this stuff. We can do some of it/we can make some things like picture schedules, but without the funding for all this, I don't know how we are going to be able to do it. I also think that we are probably going to be/needing to have more training because I didn't know what to use. I knew there could be something, but I didn't know what. I think there needs to be more training for teachers, maybe before they even get out of college as a special ed. teacher. I didn't have anything like that when I was in college. (R: That's come up in a lot of the other interviews. You are the ninth participant, and one question I've thrown out there is "What about people who/you've been teaching 18 years—you're not going to go back to school to take a class on assistive technology. How are you going to be reached? What needs to be done to reach you as far as AT.) I need someone to come in the classroom and show me the actual technology/show me the things that could help Student S. I want him to talk and his Mama says he can talk, but I've had him for over a year and he has never said a word. And, I can't even get him to point when I have the "Yes"/"No"—I can't get him to even point. So, I need somebody to come into the classroom and show me specific examples or tools that would help some of these kids.

11. R; Is there anything else you would like to add, regarding AT for students with SMD that has not been addressed?

    I: No, I think that progress is being made because or maybe it's just that I am seeing it for the first time because I have two students that are hearing impaired and I have a teacher from the deaf/blind school that comes to check their

equipment. However, I do remember, many years ago, I cannot remember that child's name who you had that went on to college. He was here at the high school. And I remember you coming over and helping him and he went on to college. And, I also had a kid that was really, really bright but he was dyslexic and you helped me with some books on tape for him. That was a big help to him because when he looked at the page he just saw scribbles. But, when he could listen it really helped him. His comprehension was good as long as it was coming in that way. And I didn't even really know what to do for him. But, I think it's getting better. That it's improving.
R: OK. Thank you very much for participating in the interview. I will transcribe the interview. Then I want you to read it and verify it for accuracy.
I: OK. I will be glad to.
R: Thank you so much.

Interview Guide
Focus: *Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities*
Interview Date: September 2, 2011
Interviewee: Participant 10
Researcher/Interviewer: Mary Jane Davis, Teacher f/t Visually Impaired
Setting: Primary School in District 1
R: Today is September 2, 2011. I am with Participant 10 and we're going to discuss *Educators' Perceptions of Assistive Technology for Students With Severe or Multiple Disabilities*. The participant was given a copy of the interview protocol and the consent form on August 25, 20ll. She's read it and signed the consent form. Are there any questions or concerns. (I: No.)
Alright. We are going to begin.

Interview Questions

1. R: Please start by telling me about yourself—how you got into education and how long you have been working with students with severe or multiple disabilities (SMD)?

   I: Umm, I've been teaching-this is my 19th year here at this same school. I'm certified in the areas of mental retardation and emotional disabilities. I basically got into special education once I started at college. I became aware of the classes and the needs for teachers in that area. So, that's what I did, and I have been here for 19 years working with children from three to thirteen with varying disabilities.

2. R: What does AT mean to you?

   I: It's a means of adaptive or assistive/a means of allowing all students to perform a task such as their general peers.
3. R: What AT have you used?

   I: Switches, buttons, touch screens, adaptive books, auditory trainer, large keyboards for the computer, toys that can be adapted using the switches and buttons.
4. R: How long have you been using AT?

   I: For 18 years. (R: So, you've been using AT since you have been teaching students with severe or multiple disabled kids?) Yes. (R: Has AT changed much from when you first started teaching 18 years ago?) Yes. It is a lot more high tech. I think there is a lot more available and an increase awareness of it, and the need for it. (R: When you say "Increased awareness" by whom?) Our vision teacher mainly, which is you, and some of the interventionists. (R: What about teachers and parents? Are they aware of AT too? Of the AT that is available?) I don't think they are that aware of it. I think there needs to be an increase in the amount of information they know.

   a. R: What concerns did you have that swayed you towards AT integration for students with SMD?

      I: Umm, I just felt like the kids needed to have the same opportunities as their non-disabled peers.

5. R: What training, formal or informal, have you had that assist you with decisions to incorporate AT?

   I: Most of it has been informal. I've had some/a few workshops that have provided information on particular pieces of equipment or ways to adapt things. Most of it has been informal. (R: OK. Would you consider a workshop formal or informal?) Formal.

   a. R: What strategies do you use to match the student with AT?

      I: I consider their functioning levels and their/the amount of mobility/the range of motion.

6. R: What do you think is the purpose of integrating assistive technology (AT) into activities for students with SMD?

   I: To enable them the same opportunities as their classmates, and to promote a level of independence for them.

7. R: Why do you think AT considerations have been mandated by law and are now a part of any Individualized Education Program (IEP)?

   I: Because people with disabilities deserve the same opportunities as their non-disabled peers.

8. R: Can you give a recent example of an activity where you used AT with a student with SMD?

   I: Using the adaptive books with my pre-school special ed. curriculum. (R: How do you use that?) You can put page turners on it to help those who have fine motor problems/help them turn the pages. Can laminate it for those who drool. (R: Anything else for that?) NO.

9. R: What do educators working with students with SMD do differently to engage these students in relation to students with less severe disabilities?

   I: In my class, I use the adaptive curriculum which is a pre-school curriculum for pre-schoolers with special needs. Umm, the information is presented in a slower manner than in the general classroom. It's very interactive/lots of hands-on. Lower level skills and it goes across all domains. (R: Such as?) Socialization, cognition, speech/language, fine motor, gross motor and daily living skills.

10. R: What do you project is going to happen to AT incorporation for students with SMD disabilities five years down the road?

I: I think it will increase because of the rate technology is improving, and I think there will be a lot more high tech equipment available.

a. R: What has to happen for these AT projections to become a reality?

I: Funding and I think the awareness of the need for AT

11. R: Is there anything else you would like to add, regarding AT for students with SMD that has not been addressed?

I: No.

R: OK. What I will do, is type up this interview and give it to you to read and then verify for accuracy. (I: OK.) Thank you very much.