Special education assistive technology: A phenomenological study of building administrator knowledge and practices

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Special Education Assistive Technology:
A Phenomenological Study of Building Administrator Knowledge and Practices

A Dissertation Presented to
The Faculty of the School of Education
The College of William and Mary
In Partial Fulfillment of the Requirements for the Degree
Doctor of Philosophy
Patricia J. McMahon
November, 2005
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DEDICATION

Those of us who decide to pursue higher education degrees learn quickly and early on that we will not survive unless we re-prioritize our lives. This dissertation represents the culmination of five intensive, re-prioritized years. My success is the direct result of my family’s understanding, cheerleading, and support. Madeline, Kenny, Joseph, and most especially my husband, Ken – this study is dedicated to you for your patience, your tolerance, and your love.
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There are many to acknowledge and thank for their guidance, assistance, and support as I worked toward completion of this program, this study, and my degree. Dr. Suzanne Creasey, thank you for allowing me the opportunity to have my first experience in coordinating assistive technology for a division. I thank Williamsburg-James City County Public Schools for their support in providing me the time to finish my writing as I got closer to the defense. Dr. Brenda T. Williams, your firm push to get me to the proposal stage truly ensured I would be finished with my dissertation prior to my daughter's graduation from high school. I would not have gotten here this quickly without that. Thank you. Dr. Michael DiPaola, I always knew I could count on your no-nonsense, “So what, now what?” queries. Thank you for encouraging deeper thinking and practical, real-world responses. Dr. Megan Tschannen-Moran, your teaching on trust, your coaching, and your consistent encouragement provided me the resources and support I needed to be successful in this challenging endeavor. Thank you for being that difference for me. Finally, for my family and friends who have been so patient in waiting for me to return to my life and to you—I’m home.

My 17 year-old daughter asked, “So, mom, when you’re done with this degree, will you finally be done?” My husband laughed as he responded, “No, Madeline. For mom, this is just the beginning.” Thank you, everyone.
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ABSTRACT

The purpose of this study was to investigate and seek to understand the varied perceptions, beliefs, and relevant assistive technology (AT) leadership experiences from the perspectives of building administrators. Using a mixed-design approach and five research questions, the researcher explored administrators' perceptions of their AT background knowledge and experiences and their knowledge of the range of AT options for students with disabilities. The sample (114 building administrators from 15 school districts in Region II of Virginia) was queried during a pilot study in the fall of 2004 and a continuation of that study in June of 2005 using a self-assessment created by Bowser and Reed (2004). Six building administrators represented a stratified, purposive, intensity sampling of the self-assessment respondents that were then interviewed in the fall of 2005. An analysis of the overall results of the self-assessment show very little variability in scores. Quantitative data results revealed that building administrators perceived their degree of leadership responsibilities and management and supervision activities related to AT as being usually evident and their degree of program improvement activities related to AT as being seldom evident. Differences in mean results by administrative role and career stage were not statistically significant. Qualitative data were inductively and deductively analyzed using the self-assessment as a framework. Analysis revealed that interviewed administrators have knowledge of AT, policies, and procedures. They saw scarcity of resources (i.e., money, personnel, time) and device abandonment as barriers and challenges and recommended that training, consistent procedures, the consideration of low-tech AT, and conducting evidence-based evaluations as methods and activities to address challenges. Leadership implications are discussed and researcher recommendations are reported.
CHAPTER ONE

Introduction

In the United States, more than 54 million Americans have disabilities (National Organization on Disability, 2005; Schettler, 2002). Since 1990, the number of students identified and served in special education programs has increased by over 46% while general education program enrollments decreased overall by 2%. In 1996-1997, more than 5.2 million students with disabilities were reportedly served in federal programs (as cited in Scherer, 2004). More than six million students with disabilities between the ages of three and 21 are educated in federally supported programs (as cited in U.S. Department of Education [USDOE], 2004b). The prevalence and incidence of identified disabilities among our children have tremendously increased since the enactment of the Education for All Handicapped Children Act (PL94-142; EAHCA) in 1975.

Since 1995, Virginia Standards of Learning (SOL) and No Child Left Behind (NCLB) legislation have provided school districts state-initiated and federal expectations for effective instruction of students with and without disabilities (Cicchinelli, Gaddy, Lefkowits, & Miller, 2003; USDOE, 2002a). Under NCLB and in conjunction with the Individuals with Disabilities Education Act (IDEA) (1997) and the Individuals with Disabilities Education Improvement Act (IDEA, 2004), it is mandated that students with disabilities have access to “high quality” general education curriculum instruction and also be held to high standards of achievement (USDOE, 2004c, p. 43). Through legislation and professional understanding of its implications, educational professionals and families have continually searched for tools and adaptations to meet student individualized needs. Access to high quality curricula can be provided in part by
incorporating technology tools and devices, or assistive technology (AT) into programs for students.

The Purpose of Assistive Technology

As originally defined by the Technology-Related Assistance for Individuals with Disabilities Act (Tech Act) of 1988, an assistive technology device is, “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 individuals with disabilities” (Tech Act, 1988, § 3(2)). An AT service may be required to directly assist a student with a disability to select, acquire, customize, adapt, or use an assistive technology device. This service may also include functional evaluations, the coordination of therapies, services, and interventions, and training and technical assistance for the student, the student’s family, and the educational staff (§ 3(3)).

Assistive technology has traditionally been defined as having two purposes. Its primary purpose is to augment a student’s strengths by counterbalancing the impact of a disability. Its secondary purpose is to provide a student with an alternate mode or method of demonstrating an ability to perform a task (Lewis, 1998). In either case, the goal is to compensate for or bypass a disability, providing a “cognitive prosthesis” or a “cognitive scaffold” to supply what is needed (as cited in Lewis, 1998, ¶ 12). This conceptual framework guides professionals in understanding and recognizing the benefits of utilizing AT tools and services for students.

Technology assists students in overcoming barriers caused by a curriculum’s inflexible original design by bridging the gap for that learner to adapt to the curriculum (Bowser, 2003; Meyer & O’Neil, 2000b). As mandated by IDEA (2004) all
Individualized Education Program (IEP) teams must consider and provide AT tools, devices, and services for students with disabilities when needed in order for a student to receive a free, appropriate public education (FAPE). Assistive technology may be added to an IEP as a related service (i.e., a service provided for the student to benefit from special education), or a supplementary aid and service (i.e., that service provided to enable a student with a disability to be educated with non-disabled students to the greatest extent appropriate (Castellani, 2005).

IDEA (2004) documents that states may receive funding for technology used in order to provide access for students with disabilities to the general education classroom. Federal law, however, does not specifically mandate policies and procedures for school districts and IEP teams (Bowser, 2003; Edyburn, 2005a). Additionally, there are no federal mandates on the leadership decisions made regarding AT devices and services for students with disabilities.

Statement of the Problem

The increase of technology and the technology needs of faculty, staff, and students require leadership from principals. Building-level general education administrators (i.e., principals and assistant principals) are required to manage, lead, supervise, and improve upon programs for students with disabilities. It is imperative that educational leaders understand that considering and using AT for and with students who have disabilities is no longer an option and is an essential leadership competency (Bowser, 2004; Bowser & Reed; 2004; Reed, 2003). Equally important in this essential competency is school administrators’ consideration of including AT in determining
district- and school-wide long range goals. These leaders must have knowledge of AT in order to effectively guide, lead, and foster appropriate decisions for students.

Significance of the Problem

Federal legislation requires that states raise the achievement of students with disabilities and “ensure that States hold these students to challenging, though modified, achievement standards that enable them to approach, and even meet, grade level standards” (“No Child Left Behind,” 2002a, ¶10) Additionally, students with disabilities must receive their instruction in the least restrictive environment (LRE) (IDEA, 2004), which for most, is the general education classroom. IDEA requires removing a student with a disability from the general education setting only when that student has not achieved satisfactorily within that setting with the appropriate aids and services in place. Essentially, inclusive services or programming, where students with disabilities remain with their general education, non-disabled peers for the majority of their instruction, remains the default setting for most students with disabilities.

While a goal of NCLB is to ensure students with disabilities have greater access to general education curricula and achieve to higher standards, schools are challenged to better design the curricula to be accessible for all students (Hitchcock & Goor, 2003). NCLB acknowledges, however, that students learn at different rates and in different ways. To adapt for this, it is required that schools provide appropriate accommodations for differences in learning so that students can succeed within the general education setting (NASSP, 2003). The provision of accommodations, however, can be particularly frustrating for teachers, parents, and administrators.
School-based IEP teams must return to a focus on student and family needs and move away from making decisions based solely on procedural processes. Teams are currently so concerned with paperwork and cost that students and their needs may get lost in the gulf between what is appropriate, what is available, and what is approved by district administration (Edyburn, 2003a). Frameworks for making technology decisions for students require collaboration and communication between professionals and families, shared knowledge, and flexibility (Male, 2003; Reed, 2003). As leaders in the AT decision-making process, building level administrators must have essential knowledge about AT tools, devices, and services.

Assistive technology implementation at the building level continues to be a challenge for schools (i.e., administrators, educators, and staff), the community, students, and students' families. Technology accessibility is a school and district responsibility. Not only are localities responsible for ensuring student access to curriculum and technology, but for those students from financially depressed and at risk families, school use may be the only access to technology these students will have (Peaseley, 2002; Scherer; 2005). Furthermore, families must be active participants in technology decisions for their children, and should express their expectations and willingness to commit family resources (Parette & McMahan, 2002) as well as ensure that AT devices are selected with the consideration of families' cultural perspectives and lifestyles (Parette, Huer, & Scherer, 2004; Scherer, 2004). Active participation shared by all stakeholders begins with the building-level administrator as the facilitator of the process.

Blankstein (2004) wrote that effective instructional leaders have the ability to foster environments where collaboration is sustained which results in enhanced student
achievement. He documented that effective leaders focus on the achievement of all students, "creating a culture where failure is not an option" (p. 94). In a collaborative environment, student success is not the sole responsibility of the building administrator, but one of the entire community. Other authors confirm the need for a unified system of service delivery where schools are learner-centered and the instruction for all students is individualized (Burrello, Lashley, & Beatty, 2001). In a unified system, administrators, faculty, and parents take "ownership of the responsibility to teach all children regardless of the social class, race, gender, ethnicity, and disability or special need" (p. 10). In a unified system, a focus on individualized instruction includes accommodations AT can provide to ensure access to the general education curriculum.

The Office of Special Education Programs (OSEP) (2000) reported that before an IEP team can appropriately consider AT for a student with a disability, there must be an understanding of a full range of technology options. Additionally, IEP teams must ensure that the device or service considered and selected is utilized in the manner in which it was intended. For effective school- and district-wide implementation of AT, educational professionals, families, and students must be fully trained in the use of devices and equipment under consideration for classroom use.

Since 1995, the need for technology-literate teachers and administrators has significantly increased. Thornburg (2002) wrote, "A digital tornado of epic proportions is sweeping across the planet at light speed, transforming everything it touches" (p. 6). Technology has impacted schools, classrooms, lifestyles, living, and the work place. While preservice teachers may be asked to take an elective course on the use of classroom-based computers, few teachers enter the field with hands-on knowledge of
assistive technology (Edyburn, 2003a; Maushak, Kelley, & Blodgett, 2001). The same is true for those leaders facilitating assistive technology decisions in schools. As technology is infused into school buildings, teachers and administrators are not provided with training and experiences in the effective use of AT (Inge, 2003; Inge, Rae, & Boster, 2004; Lancaster & Lancaster, 2002; Maushak, Kelley, & Blodgett, 2001). Additionally, there are currently few degree programs that offer training and certification in assistive technology resulting in far too few leaders in the field (Edyburn, 2003a). Continuous review of the status of education leaders’ knowledge and skills in the area of AT is needed.

Purpose of the Study

The purpose of this study was to investigate and seek to understand the varied perceptions, beliefs, and relevant assistive technology leadership experiences from the perspectives of building-level administrators. Specifically, using the results of an unpublished survey study in the fall of 2004 (McMahon, 2004), an interview process, and a published administrative self-assessment (Bowser, 2004) (see Appendix A), this researcher explored administrators’ perceptions of their assistive technology background knowledge and experiences and their knowledge of the range of assistive technology options for students with disabilities. Reflection on current research, the AT decisions made in IEP meetings, and the need for the facilitation of those decisions made by building administrators yielded the following research questions:

1. To what degree do building level administrators perceive that they
   a. lead, support, and encourage assistive technology decisions made for students with disabilities?
b. manage assistive technology services within their buildings?
c. supervise and evaluate assistive technology services in their buildings?
d. continue to improve upon their building-based assistive technology services?

2. What knowledge and experiences do building administrators have of assistive technology and the range of assistive technology options available for students?

3. To what, if anything, do building administrators attribute their knowledge of assistive technology and its application or usefulness for students with disabilities?

4. What are the perceptions of building administrators regarding their leadership role for the facilitation of assistive technology decisions made for students with disabilities?

5. What challenges or barriers, if any, are perceived by building administrators in supporting assistive technology integration?

The researcher utilized a mixed-methods approach to study the phenomena of building-level AT leadership. Initially, the researcher quantitatively explored building administrator perceptions of their AT leadership and their knowledge of the range of AT options for students with disabilities through a published self-assessment (Bowser, 2004) (see Appendix A). After collecting and analyzing the self-assessment data, the researcher conducted interviews using an open-ended interview protocol (see Appendix B) to allow administrators to share their applicable AT experiences and perceived challenges and successes experienced at the building level regarding AT program implementation. It is the belief of this researcher that the results of this study may inform leadership practice as
building administrators review the AT knowledge, experiences, and practices of other building administrators. Additionally, it is anticipated that educational administration leadership preparation programs may utilize the results of this study to provide training and instruction for the implementation of special education programs at the building level. Finally, local and state policy, legislation, and fiscal decisions may be impacted and influenced by the results of this study.

**Limitations and Delimitations**

In reviewing the findings of this study, the reader is encouraged to consider the study’s limitations and delimitations. **Limitations**, as defined by Rudestam and Newton (2001) are a study’s restrictions over which the author or researcher has no control. A researcher may be limited, for example, by access to the targeted population or by the method chosen for a study. Delimitations are, “the limitations on the research design that [the researcher has] imposed deliberately” (p. 90). Delimitations may impact whether or not the study findings can be generalized or transferred to larger or other populations.

**Limitations.** Self-assessment findings were limited by the skill areas (i.e., leadership, management, supervision, and program improvement) identified by the assessment authors, Bowser and Reed (Bowser, 2004). As offered by the assessment authors, the instrumentation was not validated prior to its publication. No attempt at validation was made by this researcher, and the assessment was taken at face value for use within this study.

During an interview process, there exists the possibility that the researcher will influence the response of the participant. Additionally, interview results are heavily reliant upon the established rapport between the researcher and the participant. Personal
biases, level of awareness, emotional states of the interviewer or interviewee, interview technique, experience, and expertise, recall error, and the participant's willingness to fully respond to questions may have impacted the level of data obtained and its transferability to other settings (Patton, 2002). The researcher utilized a triangulation of data to include multiple interviews and participants in order to obtain a variety of resources for later analysis.

The potential transferability of this study's findings is limited by the sample size obtained. While the initial self-assessment mailing and follow-up mailing of post card reminders reached the majority of potential participants, additional follow-up through email was limited as several districts did not publish principal or assistant principal email addresses on their respective school district Web sites or through the Virginia Department of Education (VDOE) Web site. Two school district Web Master sites returned the researcher's email and attachments as spam. Finally, despite several attempts to reach building principals (i.e., mailed invitation, postcard reminders, emailed reminders) for participation in the study, it is not known if principals chose not to participate because of district mandates, time constraints, or an unwillingness to contribute to the study.

Two of the school districts included in this study were school districts in which the researcher was currently employed or had recently been employed as a building and/or special education administrator. While the researcher's personal and professional relationships with administrators in these districts may have impacted and promoted individual participation in the study, those relationships should not have impacted the responses to the self-assessment items or interview questions for those who participated.
Ethical safeguards were strictly guarded throughout the process in working with these
and all other school districts.

The timing of this study coincided with 2004 legislation reauthorizing IDEA. At
the completion of this study, however, Virginia had not yet published its regulations
governing special education in the state. It was not known if Virginia regulations
governing special education for students with disabilities would change as a result of new
federal legislation.

Delimitations. Interviews and subsequent analysis of data were restricted to
building-level administrators in 15 Virginia school districts who participated in a pilot
study conducted by this researcher in the fall of 2004 (McMahon, 2004) and a
continuation of that study in June of 2005. Additionally, the interview participants in this
study represented a stratified, purposive, intensity sampling whereby a number of those
participating in the study were selected as information-rich cases strategically and
purposefully chosen based upon their self-assessment responses and accessibility.

Definitions of Key Terms

Assistive technology device. As defined originally by the Tech Act of 1988 and
again in IDEA (2004), an assistive technology device is, “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
individuals with disabilities” (IDEA, 2004, § 602(1); Tech Act, 1988, § 3(2)). No-
tech/low-tech devices are those simple devices that have no electronic features. Mid-tech
devices have “some degree of electronic functioning and almost always have some sort of
power source” (Bowser & Reed, 2004, p. 4). High-tech devices are fully electronic or computer and/or software-based, and are typically expensive in cost.

*Assistive technology service.* As defined through IDEA (2004) legislation, an assistive technology service may be required to directly assist a student with a disability to select, acquire, or use an assistive technology device. This service may also include functional evaluations, the coordination of therapies, services, and interventions, and training and technical assistance for the student, the student’s family, and the educational staff (§ 602(2)).

*Building administrator/school leader.* For the purposes of this study, a building administrator or school leader is defined as an educational administrator responsible for the leadership and supervision of special education and related services within the building. Typically, this leader chaired and provided leadership for decisions, including AT decisions, made at student IEP meetings.

*District.* The Commonwealth of Virginia defines school districts as *divisions.* Throughout this study, however, the term *district* was used to describe public institutions or agencies having administrative control over an area’s elementary and secondary schools.

*Free appropriate public education (FAPE).* Students with disabilities receive FAPE when their special education and related services are provided at public expense, are supervised by appropriate public personnel, meet the school district’s standards for education, and conform with the student’s IEP (IDEA, 2004, § 602(9)).

*Inclusive/inclusion classroom.* An inclusive classroom contains students with and without disabilities learning the same content, modified as appropriate, from the same
teachers. Appropriate modifications and accommodations are made throughout the day to adapt to individual learning differences (Tomlinson, 1999).

*Individualized education program (IEP).* As mandated through federal legislation, an IEP is a written statement outlining the disability of the child and the impact of that disability on the child’s academic involvement and progress in the curriculum. Additionally, it describes the individual, specially designed program provided for a student found eligible by a school district to receive special education and related services (IDEA, 2004, § 614).

*Individualized education program team (IEP team).* This team, composed of educational professionals, parents, the student identified as having a disability, as appropriate, and others design and document the IEP for the student (IDEA, 2004, § 614).

*Region.* Virginia school districts are organized by superintendent “study groups” called Regions. For the purpose of this study, one Region (i.e., Region II) was selected as the sample for self-assessments and interviews. The Region II sample contained 15 school districts and 351 public elementary, middle, and high schools.

*Student with a disability.* As defined in federal legislation, a student or “child with a disability” is one who is found to have an identified disability through school district identification and who, by reason thereof, requires special education and related services (IDEA, 2004, § 602(3)). IDEA 2004 identifies ten categories of disabilities (i.e., mental retardation, hearing impairments, speech/language impairments, visual impairments, serious emotional disturbance, orthopedic impairments, autism, traumatic brain injury, other health impairments, and specific learning disabilities).
Universal design. This term, also known as Universal Design for Learning (UDL) was originally defined in the Tech Act of 1988 and was added to IDEA, 2004 (§ 602(35)). For the purposes of this study, universal design includes the creation and development of curriculum, software, electronics, and media that are originally designed to meet a wide range of abilities (Rose, Meyer, Strangman, & Rappolt, 2002).

Summary

As the prevalence and incidence of students with identified disabilities in our schools increases, educational professionals will be challenged by federal and state mandates and expectations to meet individual needs and provide an appropriate and high quality education for all students. Educational services can be effectively implemented, in part, through the inclusion of all students within the general education setting and by providing appropriate assistive technology devices, tools, and services. Focusing on individual and cultural needs of students, families, and the community, and making data-based decisions where collaborative environments are encouraged and technology training is ensured, will foster administrative accountability resulting in higher student achievement.
CHAPTER TWO

Literature Review

In reviewing literature and research related to assistive technology leadership, it is useful to have background knowledge of the legislative and educational history of AT. This chapter will review legislation and litigation surrounding the implementation of AT in schools, previous research conducted involving AT in educational environments, and the role of leadership and technology. Finally, literature will be reviewed and the Bowser and Reed self-assessment (Bowser, 2004) (see Appendix A) will be described as a tool for administrator AT leadership reflection.

Legislation and Litigation

In the early 1980s, conversations and research surrounding technology use with people who have disabilities sparked interest in the United States. Professional conferences, published articles and documents, competitive research, a United States Senate Committee investigative study and privately funded research determined that technology could benefit those with physical and mental impairments (Golinker, 1997; McMahon, 2003; OSEP, 2000) and documented a lack of professional technology knowledge and training (Douglass, 2004). The 1986 Amendments to the Vocational Rehabilitation Act (PL 99-506) outlined direction to states to insure the provision of rehabilitative technology services for individuals with disabilities. In 1993, Section 504 of this Act (29 USC 794) mandated educational organizations’ obligation to provide accessible technology to students (Peters, 1999). Additionally, in 1998, Section 508 was added to ensure access to electronic media in the workplace and subsequently in schools.
(Reimer-Reiss, 1997). As evidence of Section 508 accessibility, Web sites documented with ‘Bobby’ symbols represent compliance with the legislation (Scherer, 2004).

In 1988, Congress enacted the Technology-Related Assistance for Individuals with Disabilities Act (Tech Act) (PL 101-407). This act, amended in 1994 and reauthorized as the Assistive Technology Act (ATA) in 1998, was designed to "encourage the development of consumer responsive, comprehensive, statewide services focusing on facilitating interagency cooperation, and flexible and effective funding strategies to meet the needs of individuals with disabilities" (as cited in Reimer-Reiss, 1997, p. 3). Initially, the Tech Act provided funding to states to meet this goal. Virginia was one of the first states to receive this funding; and used the funds to establish the Virginia Assistive Technology System (VATS) through the Virginia Department of Rehabilitation (Peters, 1999). Additionally, the Tech Act provided organizations the first recognized definition of AT and outlined its importance. Although created more than twenty years ago, this same definition is echoed in current legislation, policies, and regulations.

The first federal law to include language defining the use of AT in schools was the Individuals with Disabilities Education Act (IDEA) of 1990 (PL 101-476). Prior to this, AT was considered rehabilitative in nature and used only for remediation (Warger, 1998). Federal legislation informed school teams that if AT services or devices were determined to be a need for a student with a disability to receive a Free Appropriate Public Education (FAPE), the AT device and/or service was to be made available to that student. The ability of the student to receive his or her instruction within the general
education setting needed to be considered, and documentation of the AT devices/service selected was to be added to the student's IEP.

With the IDEA Amendments in 1997 (PL 105-17), and echoed in the reauthorization of IDEA in 2004 (PL 108-446), states received new direction on AT with students who have disabilities. The direction required that AT devices and services must be considered at every IEP meeting (PL 105-17, § 602). Prior to the 1997 Amendments, AT was provided only when it was requested or available. Federal law now mandates for every student with a disability, the IEP team must consider whether or not AT devices and/or services are needed for that student to have access to the general education curriculum. As a result, states and individual school districts have become more active in including AT in their policy and technical assistance documents to be in compliance with law. States continue to identify, however, a continued perceived need for improved technical assistance to districts and schools (Bell, 2001).

Since the enactment of specific AT law, assistive technology terms and technology requirements have been incorporated into other legislation. The Americans with Disabilities Act (ADA) (1990) and the Telecommunications Act (1996), for example, have documented recognition that technology is used by everyone and access to that technology is essential for all to be productive adults in today's society (Edyburn, 2003a; Kreitzer, 1998; Peters, 1999; Scherer, 2004). The Television Decoder Circuitry Act of 1990 required closed-captioning requirements benefiting those with hearing impairments (Peters, 1999). Given federal legislation, availability and the need for technology knowledge, and educational access, educational organizations must prepare students for technology use as adults.
Commissioned Study in Virginia

In a study report commissioned by and submitted to the VDOE Office of Special Education Services (Inge, 2003; Inge, et al., 2004), researchers reported findings related to AT policy implementation issues in Virginia. The AT policy knowledge of special education directors was quantitatively analyzed. Studies surrounding AT issues in the state began in 2001 with the initiation of a state-wide Assistive Technology Task Force (AT Task Force) and continued until the beginning of 2004 when the Task Force disbanded and leadership and consultation were divided among the Regions of the state. The study was requested by VDOE to fill an identified void and to assist the state in policy-making decisions regarding AT implementation. The needs assessment also contributed to a larger project through the University of Kentucky and OSEP.

Directors of Special Education in 115 school districts and state-operated programs were surveyed using a 56-item questionnaire, and a $2,000 grant incentive was offered to each district to ensure the return of the survey. Other central office personnel, however, may have completed the survey in some districts. The survey, designed by the National Assistive Technology Research Institute (NATRI), queried directors on their knowledge of AT training available to personnel in their school districts, services available to students with disabilities, IEP processes and procedures, the evaluation of AT programs, overall district technology planning, personnel issues, and barriers to implementing AT (Inge, et al., 2004).

Respondents indicated AT assessments were typically provided by a person or team of professionals, often as part of the IEP team and process. Districts typically do not provide AT-specific written information to parents or provide only information sheets on
procedures and services. Directors (37.4%) relayed that AT planning is part of the overall district technology plan, and 20% indicated there was no plan at all. Of those districts that had written information on AT, the information was provided primarily to special education teachers, speech therapists, and school administrators. A small percentage of districts (21.7%) provided “training for educational and related-services professionals” (Inge, et al., 2004, p. 69), but 64% responded that training was provided for those for whom AT knowledge was essential. Training for school administrators was not specifically noted, but 35.7% of respondents indicated that AT “forms” were distributed to them (p. 72). Training, staffing, funding, and time were identified as barriers to AT implementation. Specific step-by-step AT procedures were in place in only 13% of the school districts and 33.9% reported no district-wide AT implementation plans being developed. Most school districts reported the requirement that IEP teams receive approval for and/or requisition AT devices from a central location/office for students with disabilities, and 60.9% of school districts reported they would not employ additional AT personnel.

The researchers noted that the reported lack of program evaluation is “understandable, considering the AT field is in its infancy in terms of the federal IDEA, 1997 statute related specifically to AT in schools” (Inge, et al., 2004, p. 137). Focus on training, awareness, AT team development, and service delivery were recommendations for the VDOE and local school districts. Those school districts that reported having AT budgets documented fewer challenges in training. Pre-service education programs were also noted as an ideal time and place for AT professional training.
Assistive Technology and the Teaching and Learning Process

Research supports that integrating technology into the learning process can improve educational outcomes (Duhaney & Duhaney, 2000; Hatley, Minnick, & Marfilius, 2003; Johnston, 2004; Lewis, 1998) increase student independence (Douglass, 2004; Johnston, 2004; OSEP, 2000; Stepien, 2001) and enhance the self-image of students with disabilities (Duhaney & Duhaney, 2000). Additionally, research findings reveal that utilizing technology in the teaching and learning process promotes cooperative learning and interaction among peers (Duhaney & Duhaney, 2000; Johnston, 2004; OSEP 2000; Stepien, 2001) and teaches motivational strategies (e.g., gaining learner attention, student-created technology products, and learner empowerment) (Duhaney & Duhaney, 2000; Johnston, 2004). In 1993, The National Council on Disabilities asserted that providing AT for students with disabilities makes inclusive education possible, reduces student dependency, promotes successful employment, improves quality of life, and saves money (as cited in Goor, 1995). Traditional classrooms and lessons can be made more powerful for all students by providing students access to technology-rich resources, multi-modal lessons, and tools that foster independence.

MacArthur, Ferretti, Okolo, & Cavalier (2001) stated that most empirically-based studies lack validity and reliability, with most sample sizes too small and too many confounding issues reported and interpreted. Edyburn’s (2001, 2002, 2003b) reviews and of AT literature documented that most AT articles focused on practice with an overabundance related to post-secondary education. Edyburn’s (2004) comprehensive one-year research synthesis of the literature (i.e., 220 articles) documented relevant literature focused on implementation, integration, instructional design, technology
outcomes, and content-based (e.g., reading) technology results. Three articles reviewed by Edyburn addressed administrative technology training, specifically. He suggested considerable research was needed on integrating AT into the general education curriculum. No research reviewed has addressed building-level administrator knowledge and training about AT devices, tools, and services.

The National Assistive Technology Research Institute (NATRI) is charged with examining the effectiveness of school AT planning, development, implementation, and evaluation of services and disseminating the results of those examinations (Bausch & Hasselbring, 2005). One goal of this organization is to provide research in order to assist school personnel in developing and improving AT services. Preliminary findings of NATRI research has documented students with high incidence disabilities (e.g., specific learning disabilities, other health impairments) using AT less often than students with low incidence disabilities (i.e., those disabilities that occur less frequently such as sensory impairments or severe disabilities). These findings may indicate confusion in the field on determining for which students AT should be or is being provided. Given that high incidence disabilities by definition occur more frequently in the population, it would be expected that AT would be found in greater use by that population of students.

Special education and general education teachers use technology personally, professionally, and in their teaching. In 2001, special education teachers reported that 85% of them used technology in literacy instruction, 97% believed that technology will facilitate student learning, and 91% reported they will continue to expand their personal and professional use of technology (MacArthur, et al., 2001). Special education teachers in the NATRI study reported using a variety of AT devices (i.e., low- to high-tech) in
their teaching and professional business but reported using higher tech items (e.g., computers) more frequently (Bausch & Hasselbring, 2005). When observed, however, lower tech items (e.g., pencil grips and non-mechanical items) were seen frequently in classrooms; indicating to the researchers that teachers may not think of low-tech items as being AT.

Research conducted by NATRI (Bausch & Hasselbring, 2005) documented students with disabilities reportedly used AT more often in special education classrooms than in general education settings. AT service providers were not receiving the training they needed to do their jobs effectively, and general education teachers relied on these specialists to provide information about AT. Finally, professional development provided to teachers focused most often on the use of specific devices and not how to apply the AT tool or device to accessing the curriculum.

**Classroom implementation.** Integration of AT for students with disabilities into the general education setting requires planning and programming. Current federal mandates document increased expectations for integrating technology into school curricula and implementing building-wide strategies to “optimize benefits of technology in schools” (Mullen, Kealy, & Sullivan, 2004, p. 341). Additionally, as IEP teams consider the need for computers, software, and other AT devices and services to address student disabilities, the cost, appropriateness, and benefits must be weighed. Technology can play a role in educating students, however “technology by itself cannot teach students” (Scherer, 2004, p. 213). As administrators consider the variables involved in technology integration, they must be well aware of the implications of their technology decisions (Lewis, Graves, Ashton, & Kiely, 1998).
Students who have difficulty with writing typically struggle with complex planning, evaluation, and revision processes (Hallenbeck, 1996; MacArthur, et al., 2001). Students with learning disabilities frequently use word processing as a strategy for improving their writing skills. Text entry, however, can impose barriers for these students. As a result of a 1994 yearlong large sample size study (Lewis, et al., 1998), for example, the effects of several text entry methods were examined. Additionally, comparisons were made between the writing achievement of students with learning disabilities and their general education nondisabled peers. The results of this study provided important information for IEP teams making decisions about providing AT for students with learning disabilities in order to increase the quality of writing. Only the accuracy of writing was documented as improved. In addition, the authors noted the attitude of students using technology did not change over time. Students did not appear to be more motivated by the technology.

Wissick (2005) reported assistive technologies (e.g., alternative keyboards, word processors, word prediction software) can improve the effectiveness of student written language skills as well as assist in the assessment of those improved skills. As IEP teams consider the need for computers and software as AT to address disabilities in written expression, the cost, appropriateness and benefit must be weighed. For older students especially, if word processing increases the amount of time it takes to enter text while not increasing the quality of the work that is produced, frustration, lack of motivation and confusion may result.

Utilizing assistive technologies for students with disabilities in inclusive settings has been studied by researchers inquiring about the effectiveness of providing AT to
support the learning of history content (Okolo, Ferretti, & MacAuthor, 2005), solving student behavior problems (Garrison & Neyhart, 2005), and providing access to the general education curriculum (Castellani & Jeffs, 2005). Children with disabilities in early childhood education programs have shown improvements in their development when AT is used as a tool to assist their daily, functional participation with non-disabled peers (Mistrett, 2005). Ayes and Langone (2005) wrote of computer-based instruction, the evaluation of software for use with students with disabilities, and the effectiveness of incorporating Power Point presentations and visual media in instruction. Assistive technology has been implemented in classrooms, and student success within the general education curriculum has been documented.

Implementing and integrating AT programs and services can be challenging. Lack of research studying practice, lack of awareness and training – for both general and special education teachers, inadequate funding, poor administrative support, and lack of time impose barriers to learning and technology use (Douglass, 2004; Edyburn, 2003b; Inge, et al., 2004; Johnston, 2004; OSEP, 2000; Schettler, 2002). Assistive technology and access to technology, however, have been identified as areas crucial for students and their post-high school successes (National Organization on Disability, 2005; Stodden, Galloway, & Stodden, 2003; USDOE, 2004a). Hands-free keyboards, the use of the internet, telecommunication and hearing devices, voice-activated software, and software programs for studying and writing provide students and adults access to activities that may otherwise be unavailable to them.

Student access. When high expectations for achievement are provided and access to the general education curriculum is ensured, students with disabilities are more
effectively educated (as cited in USDOE, 2004c). The provision of effective educational services must include the appropriate supports, related services, and aids required for those students to have access to the general education curriculum (IDEA, 2004) and subsequent adult success. A 20-year longitudinal study conducted with individuals with learning disabilities highlighted the variables that predicted successful outcomes for these individuals as adults (Goldberg, Higgins, Raskind, & Herman, 2003). The qualitative study documented lifelong critical influences of the disability and identified “the need to reevaluate current educational practices used to enhance the lives of persons with LD” (p. 234). Specifically, educational services should focus on, “self-awareness, proactivity, perseverance, goal setting, the use of effective social support systems, and emotional coping strategies” (p. 234).

With the increase of inclusive classrooms, the use of AT is essential for the provision of FAPE and is critical for student success (Douglass, 2004; Johnston, 2004). Students working below grade level, for example, may become frustrated by questions above their abilities. For these students, providing an adaptive computerized testing format may accommodate the students’ needs and encourage them to complete assignments and assessments (Clark, 2004). With a combination of teacher collaboration, training, curriculum modifications, and instructional resources, students with disabilities can find academic and social success in the inclusive general education classroom (Johnston, 2004). Assistive technology devices and services can become the aids and resources specified in federal legislation that foster proactivity and perseverance.

Assistive technology devices and services are often underutilized in schools. Without adequate knowledge and training of the devices being considered, educators may
falsely believe that simply placing a device in the classroom or writing it into an IEP will improve student learning (Forgrave, 2002; Johnston, 2004; Lewis, 1998; OSEP, 2000; Reimer-Reiss, 1997). Additionally, educators are not always proficient in adapting software applications to meet the individual needs of learners (Johnston, 2004; Lewis, 1998). In 1990, the Council for Exceptional Children (CEC) warned that technology is not a panacea for educating students (as cited in Kreitzer, 1998). Assistive technology supports teaching; it does not replace it (Stepien, 2001). Educational leaders must be armed with information to support and inform technology decisions made in schools (Mullen, et al., 2004; USDOE, 2004a).

Educational leaders must consider student equity and access when making technology decisions. "Pivotal problems of adequate technological training for students, teachers, and parents and the equitable distribution of resources to poor students" (Mullen, et al., 2004, p. 343) and students with disabilities bring the issue of cultural disparity to the forefront. In a 2004 National Organization on Disability survey of people with disabilities, respondents reported they rely on AT; indicating they would not have their independence without it (National Organization on Disability, 2004).

IEP teams must consider the cultural and linguistic background of the student and family prior to making AT decisions. Families may make decisions based upon cultural norms (e.g., preferring that AT not call attention to a student’s disability) consequently impacting the student and family’s willingness to learn how to use and maintain the device (Parette & McMahan, 2002). While gender and ethnoracial empirical research regarding AT selection and use is scarce, family cultural and linguistic diversity should be respected (Parette, Huer, & Scherer, 2004; Rintala, 2002).
Promising practices. To better understand the justification for incorporating AT into educational programs, it is helpful to know more about learning processes. The Center for Applied Special Technology (CAST) (n.d.) reported on a field of research that began in the 1960s with the Russian psychologist, Lev Vygotsky. This research documented that the human brain with its multifaceted connections incorporates three networks or systems of learning. Recognition systems detect patterns indicating what and where an object is and assign meaning to the patterns we see or experience. Strategic systems produce patterns (e.g., tell us how to do things) and help to generate the mental and motor patterns necessary to respond to what we have recognized. Affective systems evaluate patterns and assign them meaning; helping us to set priorities about which are the most important and fostering the deep engagement we need in order comprehend and learn what is recognized (CAST, n.d.; Meyer & O’Neil, 2000a; Rose, et al., 2002).

Although recognition patterns are the first step to learning, students must then have strategies for acting upon those patterns and the deep engagement needed for those patterns to be meaningful (i.e., learned). The student must be interested and motivated (e.g., engaged) in learning the task at hand. If any of these factors are missing within the process, learning will not occur. Assistive technology incorporated into the educational environment may foster the engagement and motivation needed for student learning (CAST, n.d.).

Emerging research utilizing neuro-imaging techniques has helped researchers better understand learning differences and the relationship of brain functioning and technologies for learning and communication (Meyer & O’Neil, 2000a; Rose, et al., 2002). Resulting suggestions have included the need to incorporate multi-sensory
approaches and multimedia in teaching to provide flexible curricula that meets the needs of all learners. Digital technology provides teachers with the flexible tools to adjust their curricula. Internet sites, intranet networking, networked software programs, integrating digital programs with traditional teaching methods, and incorporating cooperative and collaborative learning furnish teachers and students with potentially successful and effective learning design (McMahon, 2003; Meyer & O'Neil, 2000b; Tomlinson, 1999).

Universal design for learning (UDL). Federal mandates require schools to provide adaptive equipment, services, and communication devices for students with disabilities (IDEA, 2004). Educational leaders must be aware not only of the mandated standards, but also of universal design theory and practice. The Tech Act of 1998 first provided the definition of universal design as, “…a concept or philosophy for designing and delivering products and services that are usable by people with the widest range of functional capabilities” (§ 3G). This definition is now mirrored in IDEA (2004) with the concept and mandates for funding and professional development expanded in Part D of the reauthorization.

Universal design is a concept originally coined in architecture and meets mandates required as part of the Rehabilitation Act of 1973 (§ 504 and § 508) and the ADA (1990). A prevailing attitude within the architectural field is the necessity to prevent the need for extensive, expensive remodeling of existing structures to be compliant with ADA mandates by creating adaptable designs to meet the needs of our diverse abilities populations (Chang, Tremblay, & Dunbar, 2000; O’Brien & Caires, 1999; Rose, et al., 2002; Rydeen, 1999). Conceptually, architects, designers, consultants, and educators must create user-friendly environments where the needs of those with
disabilities are met by designing structures and environments that also benefit those without disabilities (Chang, et al., 2000; Higbee, 2000; Meyer & O’Neill, 2000a; O’Brien & Caires, 1999). Curb cuts are an example of universal design. Originally, curb cuts were created to accommodate for individuals in wheel chairs to have access to sidewalks and streets. This ADA mandated accommodation also benefits mothers pushing strollers, children on scooters and skateboards, and people pulling suitcases at airports. With universal design and UDL, barriers are removed for those with disabilities while increased and improved access is provided for all.

The ability to differentiate instruction is expected of all teachers (Marzano, 2003; McBride, 2004; Tomlinson, 2001; VDOE, 2000b). When providing instruction in a differentiated manner, a teacher restructures or redesigns the classroom by modifying the curriculum and providing necessary accommodations for individual students (Tomlinson, 1999). Differentiated instruction is not enough. When a curriculum is universally designed, the content is modified and accommodations are built in during the creation of the curriculum. In effect, using technology and universally designed curricula is a proactive measure that benefits all students by providing built-in flexibility for the teacher and class. No one method or design will work for all students in all schools. An effective teacher facilitates successful learning by promoting flexibility, ensuring that instruction is differentiated and that universal design features are appropriately sought and utilized.

Universal Design for Learning (UDL) is endorsed by OSEP, but has only recently been introduced to educators (O’Neill, 2001). The Center for Applied Special Technology (CAST) conceptualized this variation to universal design as applied to
education. Universal design for learning is a paradigm for teaching, learning, and developing and selecting curriculum materials in order to maximize learning while reducing or eliminating resistance (Hitchcock & Stahl, 2003; Meyer & O’Neil, 2000a; O’Neill, 2001). Universal design for learning extends the concept of universal design by applying flexibility to curricula materials and requiring that teachers utilize these flexible materials to provide all students access to the curricula. By universally designing curriculum, adjustments are made at the front end of the planning process to meet the needs of the diverse learning styles and preferences of all students. Instead of teaching students to accommodate for their learning style differences in order to meet the curriculum, UDL changes the curriculum by adjusting it to meet the needs of the students (Hitchcock & Stahl, 2003; Meyer & O’Neil, 2000a). The key to UDL is individualization.

Educators often utilize universal design without realizing it. Providing handouts and copies of PowerPoint slide presentations in advance, Internet resource sites, and access to instruction via electronic/computer sources furnish students with disabilities increased access to instruction while providing benefit and ease of use for those students without disabilities and differing learning styles. Enlarged print/font, color copies, text-to-speech computer applications, visuals, cooperative grouping, and multi-sensory instruction versus lecture-style teaching all provide alternative learning options for diverse student populations. Incorporating a multitude of teaching and learning methodologies into lesson design can improve classroom climate as well as accommodate for students with disabilities (Higbee, 2000; Marzano, 2003; Tomlinson, 2001).
The reauthorization of IDEA (2004) added an increased emphasis on the need to include universal design in assessment, instruction, professional development, and research. One added component to this reauthorization included the requirement that the provision of textbooks and instructional materials for students with disabilities (i.e., blind/visually impaired or those with print disabilities) be in accessible formats. In response to this, the National Instructional Materials Accessibility Standard (NIMAS) was adopted. This standard is used “in preparation of electronic files suitable and used solely for efficient conversion into electronic formats.” Additionally, states are directed through IDEA to coordinate with the National Instructional Materials Access Center (NIMAC) or provide assurances that instructional materials published after the date that NIMAS were published in the Federal Register will be provided in accessible formats (§ 674 (e)).

Universal Design for Learning will not eliminate the need for AT. Assistive technology fosters access to the general education curricula provided in part by incorporating technology tools and devices. AT allows a learner to adapt to an inflexible curriculum and results in increased access to it. For example, a student with a visual impairment may require that all print is enlarged. The device utilized to enlarge the print materials is not a part of the curriculum, but an AT tool that ensures that student’s access to the curriculum. In contrast, a UDL curriculum would include versions of text that are enlargeable and/or digitized so that the print could be digitally read to the student with the vision impairment. Those same print versions would then also benefit those students with poor decoding skills or even those students trying to multi-task in order to complete a project in an expedited manner (Meyer & O’Neil, 2000b). While UDL may reduce or
eliminate the need for an assistive tool, some students may still require AT in order to access the curriculum.

Special Education and the Role of Educational Leaders

As reported throughout the literature, instructional leadership requires a leader to set high expectations, achieve and maintain district, state, and federal academic standards, communicate a vision and mission, develop teachers as leaders and build capacity within the organization, and foster positive relationships, school culture, and a climate conducive to learning (Bowser & Reed, 2004; Caggiano, Holm, McMahon, & Smith, 2004; Hancock & Lamendola, 2005; McEwan, 2003). Effective leaders are described as visionary coaches, affiliative (i.e., able to create harmony among constituents), democratic (i.e., value input from others), pacesetters (i.e., able to meet goals), and commanding (i.e., demonstrating a clear direction). Leadership styles highly impact school climate and effect positive change (as cited in Blankstein, 2004).

At the time of this study, federal mandates required an increase in training requirements for school personnel working in special education (IDEA, 2004). Several studies reviewed documented the use of technology as a training option. Internet technology, for example, has utilized live, long-distance training to paraprofessionals in those areas related to providing services to students with disabilities (Morgan, Forbush, & Nelson, 2004). This training delivery option was rated positively by the training participants. Another recent study used a Web-based software program to train teachers of English language learners (Ochoa, Kelly, Stuart, & Rogers-Adkinson, 2004). This training option allowed for collaboration among teams and provided realistic portrayals
of the types of students and disabilities preservice teachers will likely encounter in the field.

Research conducted on educating school personnel on the use and implementation of AT has included using word predication software to increase typing fluency for students with significant physical disabilities (Tumlin & Heller, 2004). In this case, researchers found that the positive impact and effect of AT is typically dependent upon the degree of student disability, the skill teaching by the education professional, and pre-intervention skills of the student. In another study querying the success of an inclusive classroom for students with multiple disabilities, training in AT devices and services was deemed essential for students with disabilities. When AT consultants were brought in to train both the general and special educators through workshops and study groups, students and faculty became more proficient in the use of chosen AT devices (Johnston, 2004).

Lack of administrative support has been viewed as a barrier to appropriately implementing AT in schools (Peters, 1999). Yet, while training is an option for school personnel, research has shown an insufficient number of trained leaders within the AT field. Schools of higher education have few certificate programs for AT and little training is offered (Edyburn, 2003a). Training in technology, in general, however is being offered. A study conducted by Dawson & Rakes (2003), for example, documented the positive influence of technology training on administrative integration of technology into their schools. Surveyed principals reported the amounts and types of technology training they had received, their ages, gender, years of experience, and the extent of technology integration in their individual buildings. The researchers reported that younger principals
were more likely to integrate technology, but gender had no effect. Years of experience did not have an impact on technology integration. Overall, principals reported the training they received promoted the integration of technology into their schools.

Effective decision-making requires a level of self-confidence (Kouzes & Posner, 2002; Senge, Kleiner, Roberts, Ross, & Smith, 1994). The effective leader initially clarifies her own goals, recognizing that before she can inspire others, she must be inspired herself (Kouzes & Posner, 2002). She reflects on her own passions, concerns, ideals, hopes, and envisions how these themes can positively impact the organization. Once leadership goals are fine-tuned, insightfulness into the organization is required in order to determine whether or not the clarified vision is one that will provide a sense of meaning for others. Finally, Kouzes and Posner cited that visioning and decision-making are part of the relationship process requiring trust in the credibility of the leader. Flowing from this trust and credibility is the potential for participative management.

The available literature does not differentiate in leadership definitions for successful general education versus special education programs. Educational programs designed for students with disabilities prior to IDEA (1997) were intended to weed out students determined marginal in intelligence and performance (Burrello, Lashley, & Beatty, 2001). Students with disabilities were once placed solely in separate, segregated classrooms and received instruction from special education teachers; away from their general education peers. With the advent of IDEA, the requirement for LRE led to the inclusion of students in general education curricula and programs; prompting general education teachers and administrators to accept accountability for special education student achievement (Caggiano, et al., 2004; CEC, 2001; Murdick, Gartin, & Crabtree,
2002; Walther-Thomas & DiPaola, 2003; Walther-Thomas, Korinek, McLaughlin, & Williams, 2000). No Child Left Behind legislation substantiated educator and administrator accountability for special education requiring building-wide and district efforts for the achievement of students with disabilities.

The publication, Implementing IDEA: A Guide for Principals (Warger, Eavy, & Associates, 2001), provided guidance to ensure the quality of building-level special education services and programs. Warger, et al., suggested the school community must share the responsibility for leadership. Collaboration between teachers, administration, parents, central office staff, and members of community-based settings were reported as evidence of leadership and program success. Mentoring and strong decision-making processes can be observed in successful schools, and school relationships document a collective concern for the education of students in special education programs. Information needed to implement and maintain successful programs and services must be readily available and provided by the principal to those involved with students. Finally, parents must be actively invited to participate and engage in programming decisions for their children.

Blankstein (2004) wrote that enhanced student achievement results in part, from effective instructional leaders who have the ability to foster environments where collaboration is sustained. These leaders focus on achievement for all students, “where failure is not an option” (p. 194). They ensure resources and support are provided for the realization of the school mission, and there is a focus on building capacity from within the organization (Hancock & Lamendola, 2005). Burrello and colleagues (2001) unified system cites the need for administrators and faculty to take “ownership of the
responsibility to teach all children regardless of the social class, race, gender, ethnicity, and disability or special need” (p. 10).

The Role of Leadership and Technology

A new phenomenon is emerging in our schools where there is a growing emphasis on utilizing technology to manage data, provide for personal professional needs, and provide for instructional planning and presentation (Brooks-Young, 2002; CEC, 2003; Council for Chief State School Officers, 2000; “Electronic Transfer,” 2005; IDEA, 2004). One impetus for this is NCLB legislation and a federal administrative philosophy that technology opens doors to education and provides an efficient tool for analyzing achievement data. Despite the legislative push and state authority recognition of the benefits of technology, “budget deficits in many states are forcing states to focus their technology spending more narrowly” (p. 8). State technology directors have reported that their deficit challenges were a direct result of decreased federal funding for technology. Budgets and funding for assistive technology have been equally affected by NCLB, the reauthorization of IDEA (2004) and the expiration of ATA in 2004.

As defined by the Interstate School Leaders Licensure Consortium (ISLLC) (Council of Chief State School Officers, 2000), school effectiveness is the result of leaders who promote student achievement by meeting six educational administration standards. As applied to special education and AT program leadership, effective leaders “emphasize the importance of quality for all students” (Walther-Thomas & DiPaola, 2003, p. 127). These skills and characteristics are mirrored in the literature as essential for ensuring effective school programs.
In Virginia, guidelines for uniform performance standards and evaluation criteria are provided to all school districts for the evaluation of school leaders (VDOE, 2000a). Administrators are evaluated by their supervisors in five areas: (a) planning and assessment, (b) instructional leadership, (c) safety and organizational management for learning, (d) communication and community relations, and (e) professionalism. It is expected that school leaders are able to analyze and apply data, collaboratively develop a school improvement plan, plan and support instructional programs, and allocate fiscal resources. Instructionally, school leaders should have a clearly communicated vision and ensure aligned curricula. There must be provisions made for staff development, and quality instruction must be supported through appropriate evaluations and effective problem-solving. Discipline must be maintained and the daily operations of the building must be managed, safe, and in alignment with district goals. The school leader is expected to be an effective communicator with parents, students, teachers, staff, and the community. The leader facilitates and fosters collaborative relationships and is a model of professionalism, and moral and ethical standards. Finally, an administrator is responsible for the success or lack of success in a building and engages personally in professional growth and development while providing service to the school, the district, and the community.

*Professional Standards for Educational Technology Leadership*

As leadership for technology is studied, consideration should be made of published standards recommended by professional organizations. National professional organizations have established technology leadership competencies, indicators, and standards for building, district, regional, and state educational leaders as well as standards
for those personnel responsible for the direct provision of AT services for students with
disabilities. National standards addressing competencies for leaders include technology
standards among their objectives (i.e., see Council for Exceptional Children [CEC], 2003;
Technology Standards for School Administrators [TSSA], 2001; VDOE Technology
Standards for Instructional Personnel, 1998). Other organizations suggest technology
leadership competencies that imply, but do not address AT, specifically, (e.g., see ISLLC,
2000) or address AT competencies but not specifically for building-level leaders (i.e.,
NASDSE, 1998). Finally, professional standards suggesting AT leadership competencies
and indicators have been addressed only recently in the field (i.e., Bowser & Reed, 2004;
Quality Indicators for Assistive Technology [QIAT], 2004). A comparison table of
technology competencies and national standards can be found in Appendix C.

recommendations for essential knowledge and skill base for special education
administrators and those teachers planning to become special education administrators.
Included within its instructional planning recommendations was one goal related to
assistive technology: “Develop and implement a plan to provide instructional and
assistive technologies” (p. 117). Additional goals throughout this document provided the
recommendation for administrators to be able to design and implement professional
development, interpret laws and policies governing general and special education,
advocate for students with disabilities, and find sources of funding. Essential
competencies for special education technology specialists were also developed mirroring
and expanding upon the International Society for Technology in Education (ISTE)
national educational technology standards and performance indicators for teachers (Edyburn, 2005a).

The National Association of State Directors of Special Education (NASDSE, 1998) also recommended essential assistive technology competencies for personnel working with students with disabilities. This document was provided to assist states in developing State Improvement Plans (SIP) and to meet IDEA (1997) amendments. While not official NASDSE competencies, they addressed standards in AT, the provision of cost effective approaches to providing services, and a document of recommendations to assist states in preventing due process hearings resulting from inappropriate AT assessments. Leadership implications included the need for a basic knowledge of AT services and devices, collaboration and communication among all transdisciplinary team providers, the utilization of data in assessment, planning, and implementation of AT, and the ability to provide professional development, identify resources and serve as a resource for others.

The Quality Indicators for Assistive Technology Services (QIAT, 2004) Consortium, a national grassroots group of individuals, schools, policy-makers, AT practitioners, and professionals developed research-based descriptors to serve as overarching guidelines for the provision of AT services for students with disabilities. It was the Consortium’s hope that these descriptors would assist school districts in ensuring compliance with federal legislation (i.e., IDEA, NCLB), state regulations, improving AT services, providing for University faculty to incorporate into preservice teacher programs, and guiding educational leaders in the creation and establishment of AT policies and procedures. The indicators fall under eight categorical descriptions: (1) consideration of
AT needs; (2) assessment; (3) including AT in the IEP; (4) AT implementation; (5) evaluating effective use of AT; (6) AT transition; (7) administrative support; and (8) professional development and training. It was the Consortium’s recommendation that administrative leaders (i.e., those who support and lead the development and delivery of AT services) ensure that

- written AT procedures are in place and widely disseminated,
- job descriptions include the requirement for AT responsibilities,
- AT competent personnel are employed,
- AT is included in technology planning and budgeting processes,
- professional development is accessible, and
- an agency-wide AT process evaluation is in place.

In 1998, Virginia, through the VDOE, enacted Technology Standards for Instructional Personnel (8 VAC 20-25-10 et seq.). Local school districts were mandated to include eight standards in their technology plans and teacher preparation programs (Peters, 1999). As documented in this statute, all instructional personnel (i.e., those school personnel required to hold a VDOE license, including administrators) must demonstrate proficiency in (a) the effective use of a computer system, (b) apply computer productivity tools professionally (i.e., software for student learning and personal use), (c) knowledge of technology terminology, (d) utilizing technology to exchange and access information, (e) locating, evaluating, and utilizing hardware and software in support of the SOLs, (f) utilizing technology for data collection, problem solving, and communication, (g) planning lessons that integrate technology to meet the needs of diverse learners (which implies the use of AT but does not specifically address it), and (h)
knowledge of ethical and legal issues associated with technology (Technology Standards for Instructional Personnel, 1998). Schools of higher education are required to provide pre-service teachers and administrators seeking licensure with 18 hours of professional studies, none of which specifically address assistive technology, to meet the above requirements. Additionally, those instructional personnel seeking relicensure must also demonstrate proficiency.

In 2001, the TSSA were published by the TSSA Collaborative. This technology initiative documented the collaborative efforts of national and international organizations constituting the TSSA Collaborative (i.e., American Association of School Administrators, National Associations of Elementary and Secondary School Administrators, National School Boards Association, North Central Regional Educational Laboratory [NCREL], Kentucky and Mississippi State Boards of Education, University of North Carolina, etc.) in conjunction with ISTE to produce acceptable and expected technology standards for all school administrators. “The impetus for the development of these Standards was the recognition that administrators play a pivotal role in determining how well technology is used in our schools,” (Bosco, as cited in TSSA Collaborative, 2001. p. 1). After completing and publishing educational technology standards for students and teachers, the TSSA Collaborative defined the specifics of what preK – 12 administrators, district-level directors, and superintendents must know and have expertise in as they lead the technology efforts in their buildings and districts.

In order to integrate technology throughout a school system, the TSSA defined the framework, standards, and performance indicators for administrators: (1) Leadership and vision, (2) learning and teaching, (3) productivity and professional practice, (4)
support, management, and operations, (5) assessment and evaluation, and (6) social, legal, and ethical issues (TSSA Collaborative, 2001). Educational leaders are encouraged and expected to develop and communicate shared vision, lead technology integration, identify, use, and evaluate technologies, facilitate their use, model effective use of technology, develop, implement and monitor policies, use data in making decisions, promote responsible and healthy practices, and ensure equity of access of technology. The TSSA acknowledged the variations in school districts and schools and recommended that leaders apply the framework and standards appropriately for individual situations.

*Leadership Functions and Implications for Assistive Technology*

In determining in which areas to assess administrator knowledge and practices in the area of assistive technology, Bowser (2004) suggested, “One way to help describe an administrator’s role in AT is to look closely at the tasks common to all school administrators and identify how these tasks might apply to assistive technology programs” (p. 1). Bowser wrote that administrators are responsible for providing leadership and supervision to faculty and staff and managing building-level programs and resources associated with those programs. Additionally, administrators are responsible for providing leadership in improving building-level programs. A published, self-assessment questionnaire designed by Bowser and Reed, *Administrative Self-Assessment for Assistive Technology Services* (as cited in Bowser, 2004) (see Appendix A) identified leadership responsibilities (i.e., *leadership*) and three additional administrative activities (i.e., *management*, *supervision*, and *program improvement*) as required for administrators as they relate to AT. The four areas of leadership responsibility and activities are described in Table 1.
<table>
<thead>
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<th>Responsibility/Activity</th>
<th>Descriptive Characteristics</th>
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| Leadership             | • Overall knowledge of AT and its benefit  
|                        | • Knowledge, modeling, and enforcement of social, legal, ethical requirements and their implications for programming  
|                        | • Shared development and communication of AT vision  
|                        | • Support and encouragement for functional AT use  
|                        | • Equity of access to AT  
|                        | • Advocacy for AT at regional and state levels  
| Management             | • Develop processes, systems, and written guidelines  
|                        | • Allocate resources (i.e., human, fiscal, physical)  
|                        | • Respond to parent requests for AT  
|                        | • Ensure accountability on the part of the organization and its players (i.e., cost and efficiency)  
| Supervision            | • Provide training to ensure a level of understanding among all staff, as appropriate  
|                        | • Promote collaboration in AT-rich environments  
|                        | • Include AT in faculty performance evaluations  
|                        | • Provide for conflict resolution  
| Program Improvement     | • Identify and remove barriers  
|                        | • Provide ongoing evaluation of AT program  
|                        | • Integrate program into district and state plans  

*Note:* Bowser & Reed (2004).
Reed (1999) wrote that schools have difficulty making AT decisions because they see AT as isolated decisions requiring specialists and specially trained personnel for implementation. To remedy this, Reed suggested that AT should be integrated into the existing evaluation procedures and seen as a necessary component discussion of every IEP meeting. This recommendation was made again by the QIAT Consortium in 2004. Reed (1999) suggested six steps toward improved AT services in schools. According to Reed, administrators should: (1) Develop a shared vision for AT services, (2) Establish a leadership team for the implementation of the shared vision, (3) Work collaboratively to develop AT policies, procedures, and forms, (4) Ensure there is access to AT and that trials are conducted, (5) Provide professional development, and (6) Ensure resources are available through a network of support services and personnel.

Bowser and Reed's (2004) monograph, *A School Administrator's Desktop Guide to Assistive Technology* provided an additional self-guided reflection tool for building level administrators leading decisions made at IEP meetings. What follows is a narrative description of Bowser and Reed's overall AT leadership responsibilities (i.e., those described by the developers as leadership) and the three additional types of leadership activities required for administrators of AT for students with disabilities (i.e., those described as management, supervision, and program improvement).

*Leadership.* Kouzes and Posner (2002) wrote about leadership as being a relationship between leaders and their constituents. "What leaders say they do is one thing; what constituents say they want and how well leaders meet these expectations is another" (p. 23). In educational organizations, the building administrator's leadership directly impacts the performance of faculty and staff and their effectiveness in meeting
school goals (Bowser & Reed, 2004; Culver, 2004). Research literature has identified the characteristics of effective leaders as honesty, forward-looking, competency, and the ability to inspire (Kouzes & Posner, 2002). When queried, teachers ranked character-based behaviors (e.g., setting an example and showing respect), strong instructional knowledge (i.e., the principal as an exceptional teacher), and the ability to nurture as characteristics of effective school leaders (Culver, 2004). As the technology leaders for a school, administrators must have a working knowledge of technology programs in their buildings.

Technology may or may not have a bearing on students' educational outcomes, the ultimate effectiveness, "...as with all educational interventions—depends upon the appropriate implementation of that technology in meeting teaching and learning goals" (Schneiderman, 2004). Given the continuous advancements in technology and the expectations and mandates from federal and state governments that schools integrate technology into their curricula, educational administrators are faced with the challenge of finding appropriate and relevant technology to meet individual student needs.

"Technology is...neither intrinsically effective nor ineffective in improving education" (p. 33). What may appear to be a well-designed, appropriate piece of software or hardware would be useless in the classroom if not implemented effectively. In an era of standards-based reform and the requirement to use scientifically-based research in making instructional decisions (USDOE, 2002b), administrators must be knowledgeable of available technology and how the technology can be used to meet school goals—and use that knowledge to inform educational practice (Bowser & Reed, 2004).
Bowser and Reed (Bowser, 2004; Bowser & Reed, 2004) specified that administrators must be knowledgeable about leading AT programs and services. Their overall leadership responsibilities include knowing AT and the legal requirements related to AT. Leaders in administering AT programs model ethical practices, promote, support, and encourage functional use of AT, and support their faculty and staff in using AT to improve student education and highlight student achievement. Leaders of AT consider equity of services and reflect on their advocacy of AT policies and practices.

Building administrators responsible for leading or facilitating decisions made for students with disabilities should know that not all technology used with a student is considered AT (Bowser & Reed, 2004). Instructional technology may be used with all students throughout a school building. When that same technology, however, or other more specific low-, mid-, or high-tech devices are used “to increase, maintain, or improve [the] functional capabilities” of a student with a disability, that device is assistive technology for that student and becomes part of his or her IEP (p. 3). For example, a teacher may decide to purchase a portable keyboard (e.g., Alphasmart®) for each student in the room in order for each to have quick and convenient access to writing, saving, and printing essays electronically. That same classroom may have a student with a physical disability that prevents the student from being able to write legibly. For most students in the classroom, the portable keyboards are instructional technology that benefits all. For the student with a disability, the keyboard is AT because he would not otherwise have access to the curriculum without the device. In determining if a device is instructional or assistive, Bowser and Reed suggested the IEP team should consider what would happen to the student if the device or tool were taken away. If when taken away, the student can
no longer adequately complete the required task, the device is assistive technology for that student.

The International Society for Technology in Education (ISTE) developed *National Educational Technology Standards for Students* which included a requirement that students use computers early in their education in fulfillment of information literacy goals (Chang, Mullen, & Stuve, 2005). Administrators, as instructional leaders in a school, must be familiar with the types of computers available (i.e., desktops, laptops, handhelds or personal digital assistants (PDAs)) and their appropriateness both for the instructional task and the students' "physiological and cognitive readiness" (p. 40). In a study conducted with kindergarteners and their use of PDAs in their classrooms, for example, the children were found to be proficient with the manipulation of the PDA stylus and operations, showing motivation and interest (Chang, et al., 2005). The researchers reported these kindergarteners showed a level of PDA proficiency potentially greater than shown on desktop computers. They were better able to focus with the smaller device size, "game appearance and interactive components" (p. 42) and appeared increasingly motivated to complete tasks. As with any hardware or software, however, educational leaders must determine the relevance of the device to the instructional task.

The reauthorization of IDEA (2004) required IEP teams to consider AT for every student with a disability. Little specific direction, however, was offered by the federal government or the VDOE on how to monitor how this was being done at the building level (Edyburn, 2005b; McMahon, 2004; Peters, 1999) which has resulted in a lack of uniformity in policies and procedures within districts (McMahon, 2004). Administrators must be accountable for a monitoring system to ensure IDEA mandates are being met at
each IEP meeting. They must ensure AT is considered at every IEP meeting, that
evaluations are taking place in order to choose appropriate devices, tools, and services,
and that AT devices are provided and maintained with training and services obtained, as
needed (Bowser & Reed, 2004).

Building administrators do not have to be AT experts in order to ensure federal,
state, and local mandates and guidelines are met for students with disabilities. Principals
and assistant principals typically do not provide direct services to students nor do they
make IEP decisions in isolation of the IEP team. Administrators provide leadership by
establishing a vision that includes the incorporation of AT into the overall building plan,
ensuring access to resources and the expertise of outside sources, leading by example,
modeling technology use, and supporting a culture where the use of AT is encouraged
and supported for students (Bowser & Reed, 2004).

Management. Administrators of AT programs and services develop, implement,
and monitor policies and guidelines for AT services at the building level. They must
know how to respond to parent requests and ensure faculty use of assessment data in
making AT decisions. Funding and the allocation of funds must be considered and time
and resources must be allocated for faculty and staff to gain knowledge in AT use and
services. Additionally, AT leaders should consider AT knowledge and skills when
recruiting new faculty and staff (Bowser, 2004). Those who manage assistive technology
tasks develop effective AT processes and services, allocate resources for the provision of
services, and ensure that AT services are “equitable, effective, ethical, legal, and cost
efficient” (Bowser & Reed, 2004, p. 18).
No Child Left Behind mandated that schools make data-driven decisions about instruction (USDOE, 2002b). Administrators are held accountable for the instructional decisions made by teachers in their buildings. Achievement test results, formative test scores, and documented observational data are used to design instruction and modify that instruction, as appropriate, for individual students. Teachers "must...become nimble and adept at interpreting data to adjust lesson plan, improve instruction, and manage classrooms to bolster each student’s performance on assessment tests" (McBride, 2004, p. 38), and administrators must insure that teachers have the skills to do this. Choosing the appropriate data collection technology and providing teacher training in the use of that technology to interpret the data is the responsibility of the administrator. "Differentiated instruction...is vital to effective positive change in student performance, because the one-strategy-fits-all approach doesn’t work in a real classroom" (p. 38). The result of instruction must be student achievement. Technology can provide a bridge to that achievement through data collection and interpretation.

As leaders and financial managers, building-level administrators must be cognizant of the potential cost for all technology used within their schools. "Hundreds of companies, from computer giants to attic inventors, have produced thousands of software and hardware aids that can mitigate the problems posed by even the most severe physical disability" (Shapiro, 1994, p. 220). During the 2003-2004 school year, schools spent an average of $103 per student on technology for the general education curricula alone. The majority of those funds (i.e., $71 per student) was applied toward the purchase of hardware ("Electronic Transfer," 2005). Assistive technology devices can add to those technology expenses. Furthermore, with school districts providing increased access to
technology, the rate of abandonment for specific AT devices can range from 8–75% (Judge, 2002). Building-level and central office administrators have a responsibility to effectively manage the financial and practical aspects involved with technology integration. Decisions made on the purchase and integration of technology must be cost-effective.

Administrators must have the ability to manage technology initiatives and develop AT policies and operating guidelines, but they may not always do so (McMahon, 2004). Without effective management, schools, teams, and individuals risk choosing and implementing devices and services that are later discontinued. One Local Resource Team (LRT) discovered the results of device misuse and mismanagement through an AT research project funded by and obtained through the Tech Act of 1988 (Reimer-Reiss & Wacker, 2000). One hundred fifteen of these individuals agreed to participate in this study. Devices received by participants in this study ranged from computers to canes and included items such as software and augmentative communication devices. At the completion of the study, results indicated that 46.7% of recipients had used their devices for only one to three years. More than six percent (6.4%) of these devices had never been used. Almost 68% of the sample were still using the original or an updated version of the device obtained through the 1988 grant.

Factors related to assistive device discontinuance include lack of consumer involvement and input and consumer perception of the product. Consistent with the literature, consumers are likely to discontinue using a product if they were not involved in the shared decision to obtain and are not trained to use it. Conversely, consumers tend to continue using a device when they have had prior opportunity to test it for ease of use,
effectiveness, reliability, and comfort (Reimer-Reiss, 1997; Reimer-Reiss & Wacker, 2000). Additionally, technology devices can become quickly outdated, and newer versions of software and hardware are continually marketed and foster a need or desire for the consumer to purchase the newer, updated version. These results highlight the need for building-level leaders and IEP teams to implement cost-efficient and appropriate decisions for the acquisition of AT devices and for leaders to be knowledgeable of AT processes and procedures.

While Congress originally provided seed money to the states through the Tech Act, federal funding decreased and was proposed to be faded out completely by 2004 (“A Resource Guide,” 2001; ATA, 1998; Boswell, 2002). With the reauthorization of IDEA in 2004, federal funding for the anticipated reauthorization of the Assistive Technology Act was budgeted (Van Kuren, 2005), however, states are required to complete grant requests to obtain the funds. In Virginia, $81,300,000 was allocated specifically for instructional technology for the fiscal year 2005 (“Electronic Transfer,” 2005). While AT requirements are included in the most recent IDEA legislative amendments, federal and state funding for AT in the future remains a grim improbability. Furthermore, abandonment of expensive AT wastes already limited funds despite the increasing demand for devices and services (Peters, 1999; Reimer-Reiss, 1997). As AT needs increase, states and localities realize they will be facing severe financial struggles to meet the technology needs of their students. Educational administrators must be prepared to effectively manage AT budgets and lead appropriate decisions regarding the selection of AT devices. Additionally, they must be able to identify AT that is already available in the
building or district and make technology available for potential staff member training (Bowser & Reed, 2004).

Bowser and Reed (2004) suggested administrators develop operating guidelines and policies to ensure consistency in decision-making and decrease the likelihood of implementation, time, and access conflict. An administrator need not be an expert in AT to do this. When building leaders understand assistive AT the legal and ethical responsibilities for its provision, and can identify internal and external resources, they “begin to develop answers to many of the procedural questions that arise as IEP teams consider every child’s need” (p. 19). Operating guidelines for a building and a district ensure efficient, ethical, and legal management decisions and consistent equity of access.

**Supervision.** Building-level leaders are responsible for recruiting, hiring, and supervising faculty and staff. Administrators must consider if their current faculty and staff have functional, acceptable knowledge of AT services and devices and if that knowledge leads to ethical and legal practices. Collaboration in “AT-enriched environments” must be supported and encouraged (Bowser, 2004, p. 9). Additionally, administrators must ensure all faculty and staff involved with students with disabilities using AT are trained in the use of the AT device (Bauder, 1999). Assistive Technology knowledge and practices should be part of faculty and staff evaluations and personnel decisions.

At the preservice or in-service level, teachers should be required to receive training and demonstrate a level of expertise in following the standards established by ISTE (as cited in Maushak, et al., 2001) and Virginia’s Technology Standards for Instructional Personnel (Peters, 1999). Within the ISTE standards are recommended
foundations in technology for all teachers that include being able to “plan and participate in activities that encourage lifelong learning and promote equitable, ethical, and legal use of computer/technology resources [and to] demonstrate awareness of resources for adaptive assistive devices for students with special needs” (¶ 9).

The President’s Commission on Excellence in Special Education recommended in its 2002 report that a new cadre of special education teachers and researchers be recruited from the current ranks of practicing special education teachers. These teachers must be fluent in research-based service delivery models and best practices of AT (USDOE Office of Special Education and Rehabilitative Services [OSERS], 2002b). The recommendation includes that preservice programs must be comprehensive and offer programs that will adequately prepare educators to deliver research-based instruction. Educational leaders must recruit professionals knowledgeable in all special education programs, including those involving AT, and ensure that current teachers are trained.

Training in the use of AT devices is essential and enhances AT classroom use (Bowser, 2004; Johnston, 2004). Teachers report, however, that they do not have adequate training in the knowledge and use of AT (Bauder, 1999). Administrators must be prepared to find and support collaborative consultants knowledgeable in the AT devices and services being considered for individual students and classrooms. One study of an inclusive classroom documented this need. Participants in this study (Johnston, 2004) discovered AT consultants fostered communication between general and special education teachers resulting in their increased proficiency in the use of the AT devices selected. While collaboration is not always viewed as highly important by surveyed teachers (Culver, 2004), collaboration among inclusive classroom team members is
"...necessary to actualize the full potential of assistive technology for students with disabilities in inclusive settings” (Johnston, 2004, p. 273). Future training requested included a “move from training and support to mutual collaboration” (p. 274) where consultants would be asked to spend more time in the inclusive classroom to observe teachers implementing the AT devices. Through on-site observation, the consultant and teachers develop a shared understanding of the students’ technology needs as well as the status of the AT classroom implementation.

Faculty and staff involved with students using AT must be aware of students’ needs and of the AT being used. Not every faculty and staff member, however, needs to have the same level of AT knowledge (Bowser & Reed, 2004). Teachers need to have access to information about AT and available resources as well as to a student’s IEP as it relates to what the teacher is teaching. For example, if a student requires a “talking” calculator as AT, it would be essential that the math teacher be aware of this need, have access to the technology, and know how to use it. That same child’s English teacher, however, would not likely need to have this information or be required to have the device available in her classroom. Building administrators would not need to be experts in the use of a “talking” calculator, but should be able to identify the training resources in order to ensure that the appropriate teachers are proficient in the use of the device.

For training to be effective, it must be long-term, applicable, relevant, and continuous (Bauder, 1999). Teachers in Kentucky reported they did not benefit from distance training formats (i.e., online, video formats, etc.). They preferred hands-on and individualized training provided by those knowledgeable in the AT devices and services needed for students in their classrooms. Additionally, given other staff members (i.e.,
paraprofessionals, resource teachers, and volunteers) work with those students using AT, training is required building-wide. On-line and distance learning professional development continues to be available for a variety of instructional teaching needs (McBride, 2004). Administrators supervising AT programs must be cognizant of the specific training needs of the building and be able to offer or implement training programs applicable to those needs (McMahon, 2004). Additionally, as recommended by Bowser and Reed (2004), administrators should look for appropriate AT use during classroom observations and teacher evaluations.

Program improvement. Building-level leaders are required to implement, build upon, and improve instructional programs. Long-range and system-wide plans that include AT, evidenced-based practices, AT assessment and professional development are necessary components of an effective educational organization (Bowser, 2004). Building-level administrators must continually evaluate current AT programs and services and encourage subsequent improvements as a result of evaluations. Strategic and technology planning, both at the building and district level, should always include AT considerations, services, and supports as part of an overall technology program (Bowser & Reed, 2004).

The Office of Special Education Programs [OSEP] (2000) recommended technology be integrated in three phases. The first phase supports project development where technology approaches are tested for their feasibility. The second phase requires effectiveness research to subject the project to field-based requirements. The third phase provides for the evaluation of the project’s implementation. Finally, the project is studied across multiple settings and contexts to determine effectiveness and sustainability. Whether integrating building-wide technology or AT on a smaller scale, the requirements
are the same. Administrators must have the skills to lead and supervise the process, manage the details, and ensure program improvement (Bowser, 2004).

Burrello and colleagues (2001) described unified systems for leadership and service delivery that require high expectations, collaboration, defined roles, and accountability to promote equity and excellence in our schools. Successful technology implementation requires a unifying framework that includes planning, professional development, the integration of AT into the curriculum, continued technical assistance, evaluation, and sustaining institutional change (Lancaster & Lancaster, 2002; OSEP, 2000; Warger, 1998). Reed (2003), formerly of the Wisconsin Assistive Technology Initiative (WATT) recommended administrators receive specialized training to understand the requirements of AT service delivery in the IEP process. Administrators, however, may not always have the skills or knowledge to ensure appropriate AT procedures are in place and may feel these responsibilities are better relegated to central office administration (McMahon, 2004). To promote seamless integration, organizations must recognize the interrelatedness of these components. Implementation requires comprehensive study and review and must incorporate supportive administrative policy (OSEP, 2000).

Part of an effective AT program plan is the need to identify and remove barriers. As reported by Bowser and Reed (2004), effective building administrators work to build capacity among their faculty and staff; encourage and foster individual participation in decision-making and improve processes. Procedures manuals, the dissemination of information, the development of forms, and AT device acquisition and implementation are responsibilities shared by members of the building community. For some school
districts, this participation may be as part of a district-wide team rather than one that is building based. Building administrators who focus on program improvement model similar participation, encourage and provide access to professional development, and provide opportunities for collegial support. Once programs are in place, administrators should consistently review and evaluate its effectiveness and appropriateness to the needs of the individual building.

Summary

A new paradigm has emerged where disabilities are considered a natural part of the human experience (ATA, 1998) and not cause for segregation and dependence (Galvin & Donnell, 2002). Educators are challenged to find culturally appropriate ways to meet student needs while ensuring families are knowledgeable about how to promote independence, self-direction, inclusion, and a level of functional competence. To involve families in decisions regarding assistive technology for their children, they must be made to feel empowered to participate actively in those decisions. Schools must work toward establishing partnerships between professionals and families (Walther-Thomas & DiPaola, 2003; Walther-Thomas, et al., 2000), increasing communication and ensuring trust (Judge, 2002; Marzano, 2003; OSEP, 2000; Tschannen-Moran, 2004). Additionally, partnerships based upon collaborative agreements can foster the pooling of respective resources to provide for mutually agreed-upon student-centered goals.

Educational administrators are responsible for leading, managing, supervising, and improving upon AT programs and services at the building level. In an era of increased legislation and mandates for inclusive programming and technology integration, administrators must be effective and proficient in leading AT decisions at the
building level. Decreased budgets and a lack of available AT training for administrators provide additional challenges for educational leaders. As administrators take on the role of AT leader, they must continually seek training and updated information, be knowledgeable of emerging technology practices, foster collaboration and communication among teachers, staff, and families, and encourage the practical, cost-effective, relevant, efficient, and appropriate use of AT devices and services.
CHAPTER THREE

Methods

The purpose of this study was to investigate and seek to understand the varied perceptions, beliefs, and relevant assistive technology leadership experiences from the perspectives of building-level administrators. Specifically, using mixed-methods research, this researcher explored administrator perceptions of their AT background knowledge and experiences and their knowledge of the range of AT options for students with disabilities with the hope that this information will assist administrators in leading AT decisions for students with disabilities. Quantitative methods, using a published, administrator self-assessment (Bowser, 2004), and qualitative methods, in the form of interviews were employed. The overarching research focus questions included the following:

1. To what degree do building-level administrators perceive that they
   a. lead, support, and encourage assistive technology decisions made for students with disabilities?
   b. manage assistive technology services within their buildings?
   c. supervise and evaluate assistive technology services in their buildings?
   d. continue to improve upon their building-based assistive technology services?

2. What knowledge do building administrators have of assistive technology and the range of assistive technology options available for students?
3. To what, if anything, do building administrators attribute their knowledge of assistive technology and its application or usefulness for students with disabilities?

4. What are the perceptions of building administrators regarding their leadership role for the facilitation of assistive technology decisions made for students with disabilities?

5. What challenges or barriers, if any, are perceived by building administrators in supporting assistive technology integration?

It is believed that the results of this study may inform leadership practice as building administrators review the knowledge base of their peers as well as what has worked or not worked for other administrators in the field of AT. Quantitative data provided evidence of the range of knowledge and experiences identified by study participants. Additionally, by grounding the study qualitatively in naturalistic inquiry, there was opportunity to gain broad and diverse insights into the many perspectives of AT leadership. Through the sharing of building administrator leadership perspectives from their “real world settings” (Patton, 2002, p. 39), administrators and other educational leaders will be able to utilize shared ideas that may help them to foster AT integration in their own schools.

**Quantitative Phase**

The first research question was addressed through a quantitative research design as participants reported their leadership, management, supervision, and program improvement knowledge and experiences as being always evident, usually evident, seldom evident, or not evident on an administrator self-assessment (Bowser, 2004) (see...
Appendix A). The self-assessment was used to survey building-level administrators in Region II of Virginia as to their perceived and reported range of AT leadership knowledge and experiences. Results from a Fall, 2004, pilot study and those from the current study were combined and reported descriptively for the quantitative phase of this study.

As part of a research seminar course required through the College of William and Mary in Virginia, (i.e., EPPL 765, Applied Field Research Project), this researcher conducted a pilot study of principal knowledge and experiences pertaining to AT leadership (McMahon, 2004). The purpose of this pilot study was to gain information on the AT knowledge and experiences of general education principals (i.e., public elementary, middle, and high school) in order to forecast the types of professional development they may require to implement AT programs in their buildings. In this dissertation study, the pilot study was expanded with results from both studies combined to provide an in-depth look at AT leadership perceptions.

Among the results of the pilot study was documentation of what principals reported they have no control over and proficiency in, and the frequency of always evident, usually evident, seldom evident and never evident responses on the assessment in those same skills areas (e.g., policy-making and implementation, strategic and long-range planning, personnel recruitment, and professional development planned and provided at the building-level). Of those administrators who responded (n = 24), there were noted differences in some principals’ reported proficiency in leading, managing, supervising, and improving AT programs (McMahon, 2004). To answer the first research question, data from both the pilot study and dissertation study were included in these results.
Region II

At the time of this study, the Commonwealth of Virginia’s school districts were organized by Superintendent “regional study groups.” Each of these eight Regions included 12 – 21 school districts and was chaired by one of the Region’s district Superintendents. Each Region contained Governor’s schools, Regional Technical and Career Centers, and special education programs and schools. For this study, only public elementary, middle, and high school administrators were surveyed. None of the regional schools or specialty centers or their building leaders were included.

Region II included school districts in the historic Southeastern portion of the state called, “Hampton Roads,” (i.e., “Tidewater,” and the “Peninsula,”) and the “Eastern Shore.” Hampton Roads was the 27th largest metropolitan area in the United States in 2005. At the time of this study, district student population sizes in Region II ranged from one of the smallest in the state with less than 1,500 students and three schools to one of the largest (in both the state and in the country) serving more than 74,000 students in more than 81 schools. School districts were rural, urban, and suburban and ethnically diverse in population with up to 50% African American students reported in more than one school district and 21% minority reported in another. The majority of schools in the Region had earned full state accreditation as reported by their respective Web sites.

Quantitative Research Sample

During the pilot study, Bowser and Reed’s (Bowser, 2004) self-assessment was sent to a stratified, purposeful, accessible sample of principals (n = 71) in three school districts on the Peninsula of Region II in Virginia. The sample was chosen, in part, based upon accessibility and convenience for the researcher and included two school districts in
which this researcher had either worked or had contacts in and an additional school district within close proximity to the researcher's home, place of work, or the College of William and Mary. Twenty-four administrators responded to the self-assessment within the limited timeframe of the study representing 33.8% of the total study sample. Two of these participants returned completed self-assessment surveys and wrote that they did not wish to be contacted for further study opportunities. Five sample participants responded through email that they chose not to participate in the study.

The dissertation study provided for an in-depth continuation of the 2004 pilot study by surveying the remaining principals in Region II of Virginia. This purposeful sample of building administrators included those principals identified through the VDOE Web site as being elementary, middle, and high school principals in the remaining 12 school districts in the region as well as those administrators who did not participate during the pilot study. Building administrators who did not respond during the pilot study (n = 42) were invited to participate again during the dissertation phase. The remaining building administrators in Region II (n = 280) were then asked to complete the Bowser and Reed (Bowser, 2004) self-assessment. Finally, returned self-assessments were analyzed using SPSS (2002) software for descriptive statistics.

This study specifically identified the quantitative self-assessment sample as being those administrators leading AT decisions in the building, and all self-assessments were mailed directly to the building principal. The address label identified the recipient to be the principal or the "building administrator responsible for special education." The majority of the surveys were completed by the principal. In the combination of the pilot
and dissertation phases of this study, a total of 351 building-level, Region II administrators had been invited to complete the self-assessment surveys.

**Instrumentation**

The instrument used for both the pilot study and the dissertation was the Bowser and Reed questionnaire, *Administrator Self-Assessment for Assistive Technology Services* (Bowser, 2004). This self-assessment, published in *Closing the Gap* magazine in 2004, is a non-validated tool for building administrators used to assess their current knowledge and practices related to AT leadership. The 33-item, closed-form, self-assessment used a four point, unidimensional response scale (see Appendix A) and was designed by the authors to assess administrator knowledge and experiences within the following skill areas as they pertain to assistive technology: (a) leadership, (b) management, (c) supervision, (d) program improvement. Administrators completing the assessment are queried to rate their knowledge and experiences for each item as being always evident, usually evident, seldom evident, or not evident.

In designing the assessment, Bowser suggested, “One way to help describe an administrator’s role in AT is to look closely at the tasks common to all school administrators and identify how these tasks might apply to assistive technology programs” (Bowser, 2004, p. 1). Bowser wrote that administrators are responsible for providing leadership and supervision to faculty and staff, and for managing building-level programs and those resources associated with those programs. Additionally, administrators are responsible for providing leadership in improving building-level programs. The self-assessment addresses each of these areas.
Prior to the initiation of the pilot study, the researcher contacted the authors of a published self-assessment (Bowser, 2004), Penny Reed and Gayl Bowser, by phone and email in order to obtain permission for the use of their self-assessment in the small scale project. Permission was obtained and a copy of the Fall 2004 study results were later emailed to both authors, as requested. The researcher then received emailed permission from these authors to use their self-assessment in the dissertation study. A copy of this completed dissertation was mailed to both researchers.

In the dissertation study, the self-assessment (see Appendix A) and an introductory cover letter (see Appendix D) were mailed to all potential sample participants. Additional background and demographic information were requested of each respondent in order to allow respondent comparisons (i.e., leadership role, school level, years of experience as an administrator, location of school, student population size, special education population size). Participant confidentiality was maintained as each self-assessment was coded in order to track which participants had responded and to allow for the strategic selection of potential interview participants at a later date.

Data Collection

A self-assessment (see Appendix A), an introductory cover letter (see Appendix D), and a self-addressed, stamped, envelope was mailed to all sample participants in the fifteen identified Virginia Region II school districts during June of 2005. Each participant was informed of the study, its purpose, the name and affiliation of the researcher and the promise of participant confidentiality. Participants were informed they could choose to complete the evaluation online and choose not to participate. Additionally, participants were told they could request copies of the completed study at its completion. Tangible
incentives (e.g., pencils, pencil grips, and an offer for participation in a free administrative AT training workshop) were offered to encourage completion of the self-assessment and follow-up interview. Follow-up by the researcher in the form of mailed postcards two weeks after the initial mailing, emailed reminders in June and July of 2005, and another offer to complete the self-assessment online (i.e., via the www.surveymonkey.com Web site) were used to increase the likelihood of obtaining completed self-assessments from non-participants.

Self-Assessment Data Analysis

Self-assessment results within Bowser and Reed’s (Bowser, 2004) four skill areas (i.e., leadership, management, supervision, and program improvement) were reported by percentages, mean, frequency, and cross tabulations for comparisons within and between school districts. During the pilot study, cross-tabulations were conducted to compare principal responses with their years of experience. Demographic information consistent with the pilot study (McMahon, 2004) was included on the self-assessment (see Appendix A).

The self-assessment results from the pilot study were combined with the dissertation study results and coded for participant identification and follow-up prior to entering quantitative response data into a data analysis software program to calculate descriptive statistics. Each forced-choice answer in the self-assessment was coded and analyzed for percentage, frequency, means, and cross tabulation as reported by the four sections of Bowser and Reed’s (Bowser, 2004) study (i.e., leadership, management, supervision, and program improvement). Demographic information was also analyzed for percentage, mean, and frequency. A 36.5% response rate was obtained. Comparisons of
responses within schools districts and between school districts were completed and recorded.

Qualitative Phase

Research questions two through five were addressed through the qualitative portion of this study. The researcher sought to understand from the perspectives and experiences of selected building administrators what varied perceptions, beliefs, and relevant experiences of the leaders were as they relate to assistive technology. Selected leaders from public schools were interviewed using an interview protocol (see Appendix B) and their responses analyzed by theme.

This phenomenological study represented a naturalistic inquiry into building administrator knowledge and practices of AT leadership and was used to gain a deeper understanding of the nature or meaning of the everyday lived experiences of people (Van Manen, 1990). Phenomenology, as applied to research, focuses on a person’s lived experiences as expressed and described by that person. “Phenomenological inquiry attempts to describe and elucidate the meanings of human experience...to get beneath how people describe their experience” (Rudestam & Newton, 2001, pg. 38). Naturalistic inquiry represents the study of a phenomena in its natural environment where questions are open-ended and asked “under conditions that are comfortable and familiar” to the participants (Patton, 2002, p. 39).

Rossman and Rallis (2003) noted the purposes of phenomenological inquiry as being “description, interpretation, and critical self-reflection” (p. 98). During the interviews, for example, some participants described their experiences regarding the overall direction of AT integration within their school and district and the roles various
personnel play in the success of the AT program or service. Both during and after the interviews, the researcher inductively analyzed participants’ statements and lived experiences in relation to AT leadership. In addition, the researcher and participants engaged in self-reflection about the topic and co-constructed meanings about AT leadership throughout the study as they shared, discussed, and processed thoughts and responses.

*Interview Sample*

Purposive and intensified sampling techniques were used to select interview participants for the qualitative portion of this study. Purposive or purposeful sampling involves the strategic selection of cases; the specific type and number of cases depending on the resources available and the purpose of the study (Patton, 2002). In this study, participants were selected from administrators who completed and returned the self-assessment, identified themselves as being willing to participate in an interview (i.e., via the self-assessment demographics questions) and met the qualifications for consideration as an interview participant.

The researcher chose participants in schools in which she could gain access. The VDOE website listed all 15 Region II schools and their current principals, addresses, and phone numbers. Each of those (n = 351) were mailed a self-assessment for completion, and self-assessments were analyzed prior to selecting interview participants. Those identified for interview included only building administrators at the elementary, middle, and high school levels who responded to the self-assessment and included those from both the pilot and dissertation study. A total of six building administrators were interviewed: three from the top quartile range of self-assessment responses including one
strategically selected elementary, middle, and high school administrator, and three from the bottom quartile range of responses including one strategically selected elementary, middle, and high school administrator. As indicated during the pilot study, seven self-assessment participants were not considered as potential interviewees as they specifically requested to not be included. Additionally, participant selection was based on the researcher’s ability to access the sites through contacts within the school districts and the willingness of the participants to be interviewed.

Patton (2002) wrote, “There are no rules for sample size in qualitative inquiry” (p. 244). A purposive, intensified sampling will allow for “information-rich cases that manifest the phenomenon intensely, but not extremely” where alternative participant perspectives can be co-constructed (p. 243). Within a phenomenological study, the researcher must find “participants who have experienced or are experiencing the phenomenon that is being explored” (Rudestam & Newton, 2001, p. 92). As such, choosing six participants for interviews provided “discriminate sampling” as the researcher strategically chose those participants who responded on either end of the self-assessment spectrum in order to “enhance the possibility of comparative analysis to saturate categories and complete the study” (p. 93).

Data Generation

The interview portion of this study required the researcher to contact each selected building administrator by telephone and email and confirm that he or she would participate in the study. At the time of this initial contact, the building administrator was asked to identify several potential dates and times for the interview. Dates and times for interviews were then scheduled. If the administrator’s email address was not available via
the district Web site, the researcher requested the email address be provided in order to send the interview protocol (see Appendix B) and consent form (see Appendix E) in advance of the interview. Each building administrator was informed the interview would be digitally recorded for later transcription. The building administrator was also informed of follow-up phone calls or face-to-face interviews, which might be requested as the data was analyzed. In addition, the administrator was asked to provide consent for the follow-up, if necessary. During the telephone or email contact, participants were asked to return the consent form to the researcher prior to or at the time of the scheduled interviews.

Data triangulation uses a variety of data sources in a study (Patton, 2002). The interview responses from each building administrator was digitally recorded and later transcribed to form a document for analysis. This document helped to triangulate the results of the self-assessments and interviews used in this study. The purpose of the interview protocol (see Appendix B) was to elicit the participants’ world views (Rossman & Rallis, 2003) and was used by the researcher at each interview to ensure the same line of inquiry was pursued of each participant (Patton, 2002). The researcher developed categories and topics to explore but remained open to pursuing emerging topics that the participant brought up and respected how the participant framed each response. The interviews began with this introduction for each interview participant:

The purpose of this study is to understand the varied perceptions, beliefs, and assistive technology leadership experiences building administrators have. I’m wondering what knowledge and experiences you have as the leader responsible for leading IEP meetings, and what you may know of assistive technology and the
range of assistive technology options available for students with disabilities in your building.

Following the introduction, an initial, open-ended question was asked of each participant: "Would you describe for me an IEP meeting during this past school year where an AT device or service was discussed or selected for a student?" The researcher asked for clarification and/or elaboration on the opening question prior to asking additional questions. Additional questions for all participants as indicated in the interview protocol (see Appendix B) included:

- Where have you gained your knowledge of assistive technology and its application or usefulness for students with disabilities?
- How do you perceive your leadership role for the facilitation of assistive technology decisions made for students with disabilities?
- What challenges or barriers, if any, do you perceive exist in supporting assistive technology integration at the school level?

Subsequent follow-up questions were based upon participants’ emerging responses, and the foci for these questions were based upon the reported leadership implications for assistive technology integration and consideration.

*Interview Results*

In naturalistic inquiry, researcher insights that occur during data generation both guide further data generation and inform the process of analysis (Patton, 2002). This emergent method process assists in developing an understanding of the multiple perspectives held by participants. Rossman and Rallis (2003) describe phenomenological studies as, “primarily open-ended; searching for the themes of meaning in participants’
lives" (p. 276). As such, the data analysis sought to identify broad themes within participant responses. This was accomplished through inductive analysis to identify categories within the data as follows.

The interview data generated for this study was coded in the following manner. The researcher became familiar with the data by reading the transcripts/summaries and/or listening to the digital recordings multiple times. Each interview represented a separate case study. The unit of analysis was a sentence. The researcher assigned a code label that captured the meaning of that sentence for each transcription. The meanings of subsequent sentences were compared and an existing or a new code was assigned. It was recognized that codes are dynamic. When a category seemed to be too broad, too narrow, or in need of reconceptualization, the researcher worked to refine the coding category.

A cumulative list of codes and definitions was maintained in an electronic file and updated as the researcher generated or refined codes (see Appendix F). The researcher noted categories that needed reconsideration and addressed these regularly. Patterns and themes apparent during the beginning stages of data analysis were noted. Care was taken, however, "not to allow these initial interpretations to overly confine analytical possibilities" (Patton, 2002, p. 437). Rather than seeking only confirming evidence, the researcher was sensitive to exploring alternative explanations and was open to emerging data.

After inductively analyzing the data, Patton (2002) suggested that a researcher may then deductively analyze a document according to an existing framework. Through deductive analysis, the data is tested and authenticity affirmed. Deductive analysis is interpretive in that the researcher deduces the relationships between the initial coding and
the framework being compared. After analyzing and reporting the first level of codes inductively, a level of deductive analysis was employed as these codes were analyzed according to Bowser and Reed’s (Bowser, 2004) self-assessment of leadership responsibilities and activities (i.e., *leadership, management, supervision, and program improvement*) as an AT leadership framework.

Member checking was completed throughout this study. Lincoln and Guba (1985) described the process of the member check

...whereby data, analytic categories, interpretations, and conclusions are tested with members of the stakeholding groups from whom the data was originally collected...[as essential]...if the investigator is to be able to purport that his or her reconstructions are recognizable to audience members as adequate representations of their own (and multiple) realities (p. 314).

Informal member checks were used during interviews to determine if the researcher’s understandings of the participant’s message matched the participant’s intent. The researcher verified her understanding of all participants’ responses during the interviews by asking for clarification and/or elaboration, as appropriate. Participants received a summary of the interview by e-mail and were invited to clarify or correct the summary to accurately represent their meaning and intended messages.

*Trustworthiness*

Rossman and Rallis (2003) reported the trustworthiness of a study’s results as being dependent upon how well the study’s design is built and conforms to standards for acceptable and competent practice. In naturalistic inquiry, trustworthiness is “that quality of investigation (and its findings) that [make] it noteworthy to audiences” (Schwandt,
In this study, the researcher maximized depth by conducting at least six interviews of school leaders who impacted AT decisions for students with disabilities. To maximize breadth, the researcher strategically selected two participants at each level (i.e., elementary, middle, and high schools) whose responses on an AT self-assessment (Bowser, 2004) represented intensively different perspectives (i.e., upper and lower quartiles as measured by the mean scores of their responses). As recommended by Rossman and Rallis, four dimensions of trustworthiness were considered in the design of this study (i.e., transferability, credibility, confirmability, and dependability).

**Transferability.** Transferability refers to the extent the findings can be applied to other settings (Schwandt, 2001). The researcher asked if the findings of this study would be useful and applicable to individuals reading the research. In consideration of how readers would be able to transfer the findings of this study to their own contexts, “thick description” was used in presenting the data (p. 255). Thick description provides the reader detailed, concrete descriptions “in such a way that we can understand the phenomenon studied and draw our own interpretations about meanings and significance” (Patton, 2002, p. 438). Thick description allowed the researcher to write case studies using the participants’ own messages while providing readers details to make their own judgments and apply the information to their individual settings and experiences.

**Credibility.** Credibility, a second dimension of trustworthiness, addressed how well the findings matched the informant’s perceptions (Schwandt, 2001). For this study, credibility was ensured through member checks. Three levels of member checks (i.e., during the interviews, following the interviews, and a grand member check at the conclusion of the study) were implemented. Member checking included the researcher...
ensuring that each participant was given a written summary of his or her interview within 48 hours of that interview as well as a copy of his or her individual case study (i.e., grand member check) for input on the accuracy of which the researcher represented the participants' views and voices.

Confirmability. Confirmability addresses a third dimension of trustworthiness: whether or not the data and interpretations of that data can be traced primarily to the focus of the inquiry rather than the researcher’s beliefs and expectations (Schwandt, 2001). As described by Schwandt, confirmability is, “concerned with establishing the fact that the data and interpretations of an inquiry [are] not merely figments of the inquirer’s imagination” (p. 258). Using a naturalistic inquiry approach to design interview questions and engage the interview participants helped to ensure that the reported findings represented the perspectives of the informants and not the background experiences and perspectives of the researcher.

A reflexive journal and Researcher as Instrument Statement (see Appendix G) were also produced by the researcher. Through recording on a regular basis, “a variety of information about self and method,” the reflexive journal contributed to the confirmability of the results (Lincoln & Guba, 1985 p. 327). The Researcher as Instrument Statement documented the researcher’s perceptions, philosophies, and beliefs prior to the collection of data for the study (Rossman & Rallis, 2003). Reflexivity requires self-questioning, self-analysis, and the necessity for the researcher to remain cognizant of her own perceptions and the potential for those perceptions to impact the findings (Patton, 2002). For this study, continuous reflexive journaling provided a record of the researcher’s personal inquiry, perceptions, and interpretations. Additionally, an
emergent form of open-ended questioning (see Appendix B) allowed the participants to share their own stories.

*Dependability.* The final dimension of trustworthiness, dependability, reflects the potential differences, results, or variability should the study be conducted again as well as the consistency of the findings across similar studies (Schwandt, 2001). This researcher could not claim dependability for this study. Within the context of this study, the results were dependent upon individual participant’s experiences and interactions with their individual environments and contexts (i.e., schools, districts, prior education, training, etc.). Given this interaction, it would be impossible to infer a cause and effect relationship within the results. Should the study be conducted again, the results would be dependent upon the individual contexts, training, and experiences of future interviewed participants and researchers.

*Authenticity*

The researcher attended to the criteria for establishing authenticity, the potential for the research to enact social change. As participants were given multiple opportunities to share their perceptions (e.g., through member checking), *fairness* was achieved (Dimock, 2001). In qualitative research, researchers aim for “balance” or “fairness,” wrote Patton, as opposed to “objectivity” (2002, p. 51). Fairness, as described by Lincoln and Guba (as cited in Patton, 2002), assumes that there are “multiple realities or truths...adversarial rather than one-perspective in nature...[and] assume[s] that the subject’s reaction to the reporter and interactions between them heavily determines what the reporter perceives” (p. 575). This study utilized multiple member checks through the process of data collection and analysis, as previously described. Participant interaction
with the results provided opportunities for authenticity and fairness beyond the initial learning that might have occurred as participants responded to interview questions. Participants expressed through interviews that, “This is important work,” and “What an interesting study!” Others shared information beyond the content of the study as they spoke of their building responsibilities, the “many hats” that they wear, and of the events of their day.

As suggested by Dimock (2001), the researcher noted comments by participants that suggested growth in understandings of self as a leader of assistive technology (i.e., ontological authenticity), growth in understanding of the constructs of assistive technology leadership (i.e., educative authenticity), intention to make use of the results (i.e., catalytic authenticity), or empowerment to act based on the results (i.e., tactical authenticity). One administrator, for example, after discussing AT in her building commented that she needed to spend more time at IEP meetings (ontological authenticity). Another administrator stated that he needed to have additional training in the provision of AT services (educative authenticity). Yet another administrator proclaimed that he would ensure all principals in his district received AT training (tactical authenticity).

**Triangulation**

In a phenomenological study, “triangulation refers to [the] soliciting [of] data from multiple and different sources as a means of corroborating evidence and illuminating a theme or a theory” (Rudestam & Newton, 2001, p. 100). In this mixed-methods research study, triangulation of data “strengthen[ed] [the] study by combining methods” (Patton, 2002, p. 247) and included a quantitative analysis of the results of self-
assessments from the pilot study, quantitative analysis of self-assessment results from the dissertation study, and qualitative analysis of thematic data obtained from the interviews of multiple participants. Triangulation of data and methods allowed for potential corroboration of evidence obtained from the different data sources and methods and assisted with the generalizability of the findings (Gall, Gall, & Borg, 2003; Patton, 2002).

**Ethical Safeguards**

Approval through the College of William and Mary Protection of Human Subjects Committee was obtained in advance of collecting or generating any data. The study was found to comply with appropriate ethical standards and was exempted from the need for formal review. A participant introductory cover letter (see Appendix E) relayed that completion and return of the self-assessment documented consent for participation in the study and notified the participant that he/she might be asked to participate in an interview at a future date. Participants were asked to provide written informed consent (see Appendix D) prior to their participation in the interview. The informed consent form and introductory letter identified contacts (i.e., the researcher and the William and Mary Chair of the Protection for Human Subjects Committee) for participants to speak with should they have complaints or concerns about the study. Participants were over 18 years of age. They were informed prior to and during interviews and as part of the introductory cover letter and informed consent form of the voluntary nature of the study and their right to decline to answer any question or to withdraw from the study at any time.

**Summary**

Rossman and Rallis (2003) emphasized research should be conducted with the goal of improving some social circumstance. To that end, this mixed-methods research
study was generated to seek administrator AT knowledge that might be useful to different audiences. Through the quantitative reporting of self-assessment results and qualitative sharing of the “voices” from the field, it was hopeful that building administrators would gain a deeper understanding of the ways in which their colleagues experience AT leadership as it relates to serving students with disabilities. The results of this study will provide leaders in the AT field and university faculty the opportunity to understand the ways in which selected administrators think about and understand their work in AT leadership thus potentially providing data that may feed plans for administrative training and support.
CHAPTER IV

Data Results and Analysis

Using mixed-methods research, this researcher explored administrator perceptions of their AT background knowledge and experiences and their knowledge of the range of assistive technology options for students with disabilities. This chapter begins with a description of the research sample for the self-assessment survey and a quantitative examination of research question one and its subparts. Following this, the research sample for the qualitative portion of the study is described and the results of inductive case study analysis and deductive cross-case analysis are reported to address the final four research questions. Finally, a summary of the chapter will lead into the discussion of conclusions and recommendations in Chapter V.

Quantitative Results

The first research question of this study was addressed through a quantitative design as participants reported their perceptions of their leadership, management, supervision, and program improvement through responses on a published, self-assessment survey (Bowser, 2004) (see Appendix A). Responses from principals, assistant principals, and other building-level leaders represented their range of AT knowledge and experiences as building administrators. Results from a pilot study completed in December, 2004 combined with results from a continuation of that study completed in July, 2005 are reported in this section.

Research Question One

A total of 351 building administrators in 15 school districts in Region II were asked to complete and return the Bowser and Reed (Bowser, 2004) self-assessment
survey (see Appendix A). One survey was mailed to each of these schools, and the envelope was addressed to the principal or the building “building administrator responsible for special education.” Researcher follow-up for non-respondents included mailed post card reminders two weeks after the initial survey mailing and personal emails to each administrator. Incentives provided to increase administrative response included tangible gifts (i.e., pencils and pencil grips) included in the initial mailing and the opportunity to be entered into a drawing to receive a free AT workshop following the study. After the initial mailing, two self-assessment surveys were returned to the researcher by the Post Office with addresses of the schools unknown. Additionally, one survey was considered invalid as it was completed by someone who reported herself as being a teacher and not an administrator, and three surveys were received incomplete. Subtracting these invalid self-assessments left a total of 345 schools as the overall potential research sample.

Combining the results of the 2004 pilot study and the current study, a total of 126 (36.5%) participants responded to the self-assessment survey. Of those who responded (n = 126), invalid or unusable results included eight respondents who reported through email that they did not wish to participate. Two respondents returned by mail a blank self-assessment. Two respondents completed only a few questions of the self-assessment online at the www.surveymonkey.com Web site. The remaining 114 valid and usable results included self-assessment surveys from respondents who reported themselves as being principals, assistant principals, one who defined herself as a building level “program administrator,” and two who described themselves as “special education instructional leaders.” One respondent did not identify an administrative role in the
Table 2 provides frequency and percentage information on self-assessment respondents’ roles.

Potential participants were given the option to return the completed self-assessment by mail, by email attachment, or through the www.surveymonkey.com Web site. The majority of respondents (78.9%) returned self-assessments by mail and most dissertation study self-assessments (67%) were completed and mailed in the provided self-addressed, stamped envelope within two weeks of the June 2005 mailing. Nineteen respondents (16.7%) chose to complete the study on the Web site and three respondents (2.6%) returned the self-assessment via an email attachment. Finally, two respondents (1.8%) provided the researcher the completed self-assessment through their school district’s internal mail system.

Table 2

**Respondent Roles**

<table>
<thead>
<tr>
<th>Administrative Role</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principals</td>
<td>76</td>
<td>67.3</td>
</tr>
<tr>
<td>Assistant Principals</td>
<td>34</td>
<td>30.1</td>
</tr>
<tr>
<td>Others</td>
<td>3</td>
<td>2.7</td>
</tr>
<tr>
<td>Not Reported</td>
<td>1</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*Note.* Only principals (n = 24) responded to the pilot study. Frequency represents combined results from the pilot and current studies.

Only district elementary, middle, and high school building administrators were asked to respond to the self-assessment. Of the 114 respondents, 64.9% (n = 74) were elementary administrators. Middle school administrators encompassed 18.4% (n = 21) of the sample, and 16.7% (n = 19) were high school administrators. Twenty-four (21.1%)
administrators responded to the pilot study in November of 2004. Ninety (78.9%) additional administrators responded to the dissertation study in June, 2005.

Fifteen school districts in Region II were included in this study. The school districts ranged in size from a total of three schools (i.e., one elementary, one middle, and one high school) to a total of 80 elementary, middle, and high schools. The response rate for the school districts in this sample varied widely (see Table 3). Additionally, ten respondents using the www.surveymonkey.com Web site did not identify their school districts. Given the restrictions of the Web site, it was not possible to code individual responses to determine the respondent's school district when other demographic information (i.e., respondent name and/or school name) was not provided.
### Table 3

*Response Rate by School District*

<table>
<thead>
<tr>
<th>District</th>
<th>Total Schools</th>
<th>Surveys Completed</th>
<th>Percent of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>2</td>
<td>1.9</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>3</td>
<td>2.9</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>5</td>
<td>18</td>
<td>17</td>
<td>16.3</td>
</tr>
<tr>
<td>6</td>
<td>34</td>
<td>10</td>
<td>9.6</td>
</tr>
<tr>
<td>7</td>
<td>41</td>
<td>12</td>
<td>11.5</td>
</tr>
<tr>
<td>8</td>
<td>48</td>
<td>8</td>
<td>7.7</td>
</tr>
<tr>
<td>9</td>
<td>21</td>
<td>6</td>
<td>5.8</td>
</tr>
<tr>
<td>10</td>
<td>19</td>
<td>3</td>
<td>2.9</td>
</tr>
<tr>
<td>11</td>
<td>80</td>
<td>20</td>
<td>19.2</td>
</tr>
<tr>
<td>12</td>
<td>12</td>
<td>12</td>
<td>11.5</td>
</tr>
<tr>
<td>13</td>
<td>3</td>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>14</td>
<td>44</td>
<td>7</td>
<td>6.7</td>
</tr>
<tr>
<td>15</td>
<td>4</td>
<td>1</td>
<td>1.0</td>
</tr>
</tbody>
</table>

*Note.* Total schools (n = 104). Ten administrators using the Web site did not identify a district affiliation.

Sixty-six elementary administrators, 20 middle school administrators, and 16 high school administrators responded to the query asking for the total number of students and special education students in their buildings (see Table 4). As reported by self-assessment survey respondents, the total numbers of elementary students in their schools ranged from...
195 – 871 with special education populations ranging from 4% - 18.4% of the total population of students. At the middle school level, student numbers per building ranged from 300 – 2000 with special education populations reportedly between 4% - 26% of the total population. High school student population numbers ranged from 525 – 2460 with special education student populations ranging between 7% - 19% of the total population of students.

Table 4

*Student Population by School Level*

<table>
<thead>
<tr>
<th>School Level</th>
<th>Student Population</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary</td>
<td>Total</td>
<td>195</td>
<td>871</td>
<td>560.5</td>
<td>140.51</td>
</tr>
<tr>
<td></td>
<td>Sped</td>
<td>15</td>
<td>140</td>
<td>58.95</td>
<td>26.84</td>
</tr>
<tr>
<td>Middle</td>
<td>Total</td>
<td>300</td>
<td>2000</td>
<td>918.38</td>
<td>404.07</td>
</tr>
<tr>
<td></td>
<td>Sped</td>
<td>12</td>
<td>350</td>
<td>134.25</td>
<td>84.14</td>
</tr>
<tr>
<td>High</td>
<td>Total</td>
<td>525</td>
<td>2460</td>
<td>1605.5</td>
<td>554.10</td>
</tr>
<tr>
<td></td>
<td>Sped</td>
<td>60</td>
<td>400</td>
<td>222.19</td>
<td>124.82</td>
</tr>
</tbody>
</table>

Finally, the self-assessment queried building administrators on their years of administrative experience. Of those who responded to this question (n = 108), years of experience were reported as ranging from one year to 36 years. For the purposes of this study, years of experience were defined by four categories. A *novice* was an administrator with one to three years of experience. An administrator in his or her *early career* was one with four to eight years of administrator experience. A *mid-career*
administrator reported nine – 20 years of experience, and a late career administrator reported more than 20 years of administrative experience.

Overall, at the elementary level, assistant principals reported one to 30 years of experience and principals reported two to 35 years of experience. Middle school principals had between five and 22 years of experience, and their assistant principal colleagues reported two to 36 years of administrative experience. At the high school level, principal administrative experience was reported as being between seven and 27 years. Assistant principals at the high school level had between one and 31 years of administrative experience.

Quantitative Analysis

The purpose of this study was to investigate and seek to understand the varied perceptions, beliefs, and relevant assistive technology leadership experiences from the perspectives of building-level administrators. As stated in a previous chapter, the self-assessment survey was used in this study in order to answer the first of the overarching research questions:

1. To what degree do building-level administrators perceive that they
   a. lead, support, and encourage assistive technology decisions made for students with disabilities?
   b. manage assistive technology services within their buildings?
   c. supervise and evaluate assistive technology services in their buildings?
   d. continue to improve upon their building-based assistive technology services?
The research question was addressed through a quantitative research design as respondents reported their leadership, management, supervision, and program improvement knowledge and experiences as being always evident, usually evident, seldom evident, or not evident on an administrator self-assessment (Bowser, 2004) (see Appendix A). Responses from the self-assessment were coded by item and entered into SPSS (2002) software for descriptive statistics (i.e., mean, frequency, percent, and cross tabulations). The mean responses for each self-assessment question are reported in Appendix H. Each subcomponent of Research Question One is reported separately.

**Question 1a: To what degree do building administrators perceive that they lead, support, and encourage AT decisions made for students with disabilities?** The Bowser and Reed (Bowser, 2004) self-assessment survey contained nine statements relating to an administrator’s perception of his or her leadership and its relationship to AT services (see Appendix A). As reported by building administrators, mean leadership responses ranged from being seldom evident to always evident on the self-assessment. One hundred fourteen building administrators recorded a mean response that their leadership for AT services is usually evident (m = 3.13; SD = .47). Beginning or novice administrators, early career, mid-career, and late career administrators perceived their leadership of AT services in the usually evident range (see Table 5). Overall, principals (m = 3.10; SD = .46), assistant principals (m = 3.18; SD = .52) and those identified as “other” (m = 3.30; SD = .17) reported their leadership of AT services as being usually evident. A one-way analysis of variance (ANOVA) documented no significant difference between responses of principals, assistant principals, and others (F = .485; p = .617) or between levels of administrator experience (F = 1.97; p = .124).
Table 5

Leadership Mean Responses by Administrator Years of Experience

<table>
<thead>
<tr>
<th>Experience</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novice</td>
<td>18</td>
<td>1.89</td>
<td>3.88</td>
<td>2.94</td>
<td>.55</td>
</tr>
<tr>
<td>Early Career</td>
<td>37</td>
<td>2.22</td>
<td>3.89</td>
<td>3.19</td>
<td>.40</td>
</tr>
<tr>
<td>Mid Career</td>
<td>39</td>
<td>2.22</td>
<td>4.00</td>
<td>3.12</td>
<td>.46</td>
</tr>
<tr>
<td>Late Career</td>
<td>14</td>
<td>2.67</td>
<td>4.00</td>
<td>3.29</td>
<td>.40</td>
</tr>
</tbody>
</table>

Note. N = total number of administrators who reported years of experience on self-assessment survey.

Reviewing the mean results for individual questions (see Appendix H) revealed usually evident responses on all but two of the nine items. Participants reported the highest mean response in this section and on the self-assessment overall (m = 3.71; SD = .544; n = 114) on an item representing the degree of administrative support of faculty in the use of AT. Three quarters of the sample (74.6%) indicated that the leadership responsibility to support faculty and staff in using AT to improve the education of students with disabilities is always evident in their buildings.

Administrators reported it is usually evident that they have knowledge and recognize the benefits of AT for students with disabilities, know the legal requirements (with 52.6% of the sample reporting this was always evident for them), and have established a vision for AT use within their buildings. It is usually evident that the administrators in this sample promote the functional use of AT in collaborative environments (with 52.6% indicating this was always evident for them), acknowledge the importance of AT, and ensure equity of access to AT (with 53.3% indicating this responsibility was always evident).
In contrast, the lowest mean response for items in this section, and the lowest mean response on the self-assessment overall (m = 1.80; SD = .94; n = 114) was reported on an item querying administrators on their advocacy of AT programs and implementation. It is *seldom evident* that administrators advocate on regional and state levels for policies, programs, and funding opportunities that support the implementation of the district AT plan. There was much variability in the responses of this item, however results were skewed toward administrators not taking on this responsibility with 47.4% of the sample reporting advocacy was *not evident* for them and 34.2% reporting this as being *seldom evident*.

**Question 1b: To what degree do building administrators perceive that they manage AT services within their buildings?** Eight statements describing an administrator’s management and its relationship to AT services are part of the *management* portion of the self-assessment survey (Bowser, 2004) (see Appendix A). Building administrators reported a mean response of 2.68 (SD = .65; n = 114) indicating that they perceive their *management* of AT services as being *usually evident*. Mean responses reported by those in different roles documented principals (m = 2.69; SD = .62) and assistant principals (m = 2.67; SD = .71) in the *usually evident* range and “others” (m = 2.22; SD = .39) in the *seldom evident* range. Table 6 shows a mean result of administrator *management* of AT in the *usually evident* range regardless of years of experience. A one-way ANOVA test revealed no significance difference in *management* responses by role (i.e., principal, assistant principal, other) (F = .762; p = .469) or by level of experience (i.e., novice, early career, mid-career, late career) (F = 1.10; p = .351).
Table 6

*Management Mean Responses by Administrator Years of Experience*

<table>
<thead>
<tr>
<th>Experience</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novice</td>
<td>18</td>
<td>1.63</td>
<td>4.00</td>
<td>2.67</td>
<td>.68</td>
</tr>
<tr>
<td>Early Career</td>
<td>37</td>
<td>1.38</td>
<td>3.88</td>
<td>2.61</td>
<td>.61</td>
</tr>
<tr>
<td>Mid Career</td>
<td>39</td>
<td>1.38</td>
<td>3.88</td>
<td>2.60</td>
<td>.58</td>
</tr>
<tr>
<td>Late Career</td>
<td>14</td>
<td>2.00</td>
<td>4.00</td>
<td>2.94</td>
<td>.71</td>
</tr>
</tbody>
</table>

*Note.* N = total number of administrators who reported years of experience on self-assessment survey.

A review of individual self-assessment item results (see Appendix H) documented mean responses in the *seldom evident* to *usually evident* ranges. Administrators reported it is *usually evident* that they ensure all appropriate employees know how to respond to a parent’s request for AT (\(m = 3.35; SD = 69; n = 114\)) with 89.5% of the sample reporting they usually or always do this, and require that staff use data to make AT decisions (\(m = 3.12; SD = .87; n = 113\)). Also in the *usually evident* range were items related to ensuring written guidelines for AT processes are in place (\(m = 2.86; SD = 1.09; n = 111\)), ensuring time is available for staff to implement AT (\(m = 2.81; SD = .97; n = 108\)), and ensuring cost-effective and efficient AT decisions are made (\(m = 2.65; SD = 1.09; n = 106\)).

The remaining items in this section documented *seldom evidence* for administrators. The lowest mean result in the *seldom evident* range (\(m = 1.98; SD = 1.04; n = 110\)) was recorded for the item querying administrators on their development, implementation, and monitoring of policies and written operating guidelines (with 42.1% of the sample reporting this activity as being *not evident* for them). Additionally, it is *seldom evident* that the administrators in this study allocate funds and human resources...
for AT implementation (m = 2.20; SD = 1.12; n = 103). Finally, it is *seldom evident* that this sample recruits professionals with AT knowledge and skills (m = 2.29; SD = .97; n = 107).

*Question 1c*: To what degree do building administrators perceive that they supervise and evaluate AT services in their buildings? Bowser and Reed (Bowser, 2004) included seven statements addressing an administrator's *supervision* and its relationship to AT services (see Appendix A). The mean result for 114 respondents in this section was 3.01 (SD = .61) indicating that the building administrators in this study perceived their *supervision* of AT services as being *usually evident*. Results reported in Table 7 show that administrators reported their *supervision* of AT as being *usually evident* regardless of their years of experience. When compared by administrative role, principals (m = 3.02; SD = .58), assistant principals (m = 3.01; SD = .64), and “others” (m = 2.52; SD = .83) perceived their degree of *supervision* activities as being *usually evident*. A one-way ANOVA test revealed no significant difference between *supervision* responses by role (i.e., principal, assistant principal, other) (*F* = .979; *p* = .379) or by level of experience (i.e., novice, early career, mid-career, late career) (*F* = 1.589; *p* = .197).
Table 7

Supervision Mean Responses by Administrator Years of Experience

<table>
<thead>
<tr>
<th>Experience</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novice</td>
<td>18</td>
<td>1.86</td>
<td>3.86</td>
<td>2.93</td>
<td>.57</td>
</tr>
<tr>
<td>Early Career</td>
<td>37</td>
<td>1.57</td>
<td>4.00</td>
<td>2.99</td>
<td>.57</td>
</tr>
<tr>
<td>Mid Career</td>
<td>39</td>
<td>1.57</td>
<td>4.00</td>
<td>2.94</td>
<td>.62</td>
</tr>
<tr>
<td>Late Career</td>
<td>14</td>
<td>2.43</td>
<td>4.00</td>
<td>3.32</td>
<td>.51</td>
</tr>
</tbody>
</table>

*Note.* N = total number of administrators who reported years of experience on self-assessment survey. Response items were skipped by some respondents in this section.

Individual item review for the supervision section of the self-assessment (Bowser, 2004) (see Appendix H) revealed mean responses in the *seldom evident*, *usually evident*, and *always evident* ranges. Mean results revealed 61.4% of the sample indicated it is *always evident* that they ensure the ethical and legal implementation of IEPs (m = 3.56; SD = .63; n = 111). Administrators in this sample reported it is *usually evident* that they ensure staff has a necessary level of AT understanding (m = 3.06; SD = .78; n = 113), facilitate and support collaboration in AT-rich environments (m = 3.33; SD = .73; n = 110), and foster an environment low in conflict (m = 3.32; SD = .78; n = 110).

Additionally, it is *usually evident* that administrators use assessment results to make decisions about personnel assignments, responsibilities, and training (m = 2.87; SD = .99; n = 110). The lowest mean response reported in this section (m = 2.41; SD = 1.01; n = 106) was documented on item 22 querying the level that administrators address AT as part of staff evaluation and supervision. It was also noted to be *seldom evident* that this sample assesses staff member knowledge, skills, and the use of AT (m = 2.43; SD = .91; n = 108).
**Question 1d:** To what degree do building administrators perceive that they continue to improve upon their building-based AT services? Nine statements addressing a building administrator’s program improvement and its relationship to AT services (see Appendix A) round out the Bowser and Reed (Bowser, 2004) self-assessment. Not all building administrators responded to the items in this section. The mean response for 109 administrators ($m = 2.27; SD = .76$) indicated that these respondents perceive their leadership and involvement in the program improvement of AT services as being seldom evident. Those administrators with more years of experience (i.e., late-career) reportedly perceived their degree of program improvement as being in the usually evident range (see Table 8), however a one-way ANOVA test revealed differences of responses by experience (i.e., novice, early career, mid-career, late career) were not significant ($F = 1.675; p = .177$). Principals ($m = 2.28; SD = .73$), assistant principals ($m = 2.23; SD = .84$) and “others” ($m = 2.15; SD = .83$) perceived their degree of program improvement as being in the seldom evident range. A one-way ANOVA test revealed no significant difference between program improvement responses by role (i.e., principal, assistant principal, other) ($F = .072; p = .931$).
Table 8

*Program Improvement Mean Responses by Administrator Years of Experience*

<table>
<thead>
<tr>
<th>Experience</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novice</td>
<td>16</td>
<td>1.11</td>
<td>4.00</td>
<td>2.33</td>
<td>.79</td>
</tr>
<tr>
<td>Early Career</td>
<td>36</td>
<td>1.00</td>
<td>3.78</td>
<td>2.09</td>
<td>.68</td>
</tr>
<tr>
<td>Mid Career</td>
<td>38</td>
<td>1.00</td>
<td>4.00</td>
<td>2.26</td>
<td>.75</td>
</tr>
<tr>
<td>Late Career</td>
<td>14</td>
<td>1.11</td>
<td>4.00</td>
<td>2.60</td>
<td>.83</td>
</tr>
</tbody>
</table>

*Note.* N = total number of administrators who reported years of experience on self-assessment survey. Response items were skipped by some respondents in this section.

Individual item review for the program improvement section of the self-assessment (Bowser, 2004) (see Appendix H), revealed sample mean responses in the *seldom evident* and *usually evident* ranges. A number of items in this section were skipped by administrators completing the survey. The highest mean response in this section (i.e., item 27) queried administrators on their identification and removal of barriers impacting AT service delivery \( (m = 2.55; SD = .90, n = 106) \). Administrators reported their identification and removal of barriers as being *usually evident*. Also in the *usually evident* range were responses to an item related to administrators ensuring evidence-based AT practices \( (m = 2.53; SD = .89; n = 105) \).

The lowest mean response in this section was documented for an item querying administrators on the level in which they maintain a comprehensive process to develop, implement, and monitor a long-range, and system-wide AT plan \( (m = 1.95; SD = .92; n = 102) \). Additionally, it is *seldom evident* that the administrators completing this section use multiple AT assessment methods to evaluate AT resources \( (m = 2.29; SD = .94; n = 106) \), assess AT training needs for staff \( (m = 2.26; SD = .96; n = 105) \), ensure school-wide AT
professional development (m = 2.24; SD = .96; n = 105), conduct ongoing AT service evaluations (m = 2.17; SD = .89; n = 105), implement continuous improvement procedures for AT services and systems (m = 2.04; SD = .91; n = 103), or integrate AT into district strategic plans or instructional technology plans (m = 2.19; SD = 1.00; n = 104).

Quantitative Results Summary

Building administrators reported their perceptions of the degree of their AT leadership responsibilities and activities as being *always evident, usually evident, seldom evident, or not evident* on the self-assessment survey (Bowser, 2004) (see Appendix A). An analysis of the overall survey results shows little variability in scores. Quantitative data results revealed that building administrators perceived their degree of leadership responsibilities (i.e., having adequate knowledge of AT, legal requirements, advocacy of AT, etc), management activities (i.e., attending to AT policies and procedures implementation, responding to parents, funding and resources, etc.), and supervision activities related to AT (i.e., ensuring AT professional development is in place, fostering collaboration and conflict resolution, etc.) as being *usually evident*. Participating administrators perceived their degree of program improvement activities related to AT (i.e., maintaining long range AT plans, integrating AT into IT plans and budgets, evaluating AT programs, etc.) as being *seldom evident*. No significant differences were found among reported degrees of AT leadership, management, supervision, or program improvement across administrator roles (i.e., principal, assistant principal, others) or levels of experience (i.e., novice, early career, mid-career, late career).
Qualitative Results

Research questions two through five were addressed through the qualitative interview portion of this study. Selected leaders from public schools were interviewed using an interview protocol (see Appendix B) and their responses digitally recorded, transcribed, coded and analyzed by theme. Both during and after the interviews, the researcher inductively analyzed participants' statements and reported lived experiences in relation to their perceptions of their AT leadership. In addition, the researcher and participants engaged in self-reflection about the topic and co-constructed meanings about AT leadership throughout the study as they shared, discussed, and processed thoughts and responses. The following section identifies the research sample and reports results by case study and cross case analysis.

Interview Sample

As described in Chapter two, purposive and intensity sampling techniques were used to select interview participants for the qualitative portion of this study (Patton, 2002). Additionally, discriminate sampling was used in order to select potential interview candidates from either end of the self-assessment response spectrum whom had experienced the phenomenon (i.e., AT knowledge and experiences) being explored (Rudestam & Newton, 2001). Six participants were strategically selected from 34 administrators (i.e., 17 from the upper quartile and 17 from the lower quartile self-assessment results) who completed and returned the self-assessment and met the qualifications for consideration as an interview participant.

As described in a previous chapter, each completed self-assessment survey was coded with data entered into SPSS (2002) software. Once the overall self-assessment
survey analysis was complete, the results were listed in ascending order and separated by lower and upper quartiles. Twenty-eight self-assessments were identified as lower quartile and 29 as upper quartile in range. Self-assessment survey results were then decoded to compare with the original listing of building administrators and schools in order to determine if those whom had responded had requested not to participate in the interview process and to determine if any of the self-assessments were completed anonymously by respondents. In the lower quartile range, 11 respondents were eliminated from the interview sample per respondent request or an inability to identify the administrator on the self-assessment. At the upper quartile range, 12 respondents were not considered as potential interview candidates for the same reasons.

After eliminating those respondents who did not meet the criteria for interviews, 17 respondents remained at the lower quartile range and 17 at the upper quartile range. These 34 respondents became the sample for the strategic selection of interview participants. Keeping the lower quartile and upper quartile groups separated, each self-assessment code was written on a piece of paper for interview participant selection. As stated previously, the interview sample included three administrators at the lower quartile (i.e., one elementary, one middle, and one high school) and three at the upper quartile (i.e., one elementary, one middle, and one high school). As each code was selected, it was listed and again compared with the original list of administrator names and schools. At the completion of the process, the researcher had listed two groups of administrators from which to request interviews.

The researcher contacted by email and then by phone, the first elementary, middle, and high school administrator on each quartile range list. Among the
administrators on the lower quartile list, the first three selected were not reachable, did not have email or working phone numbers, or had left their building positions and were removed from the interview sample, as a result. When an administrator was eliminated, the researcher attempted to contact the next administrator at that level (i.e., elementary, middle, high). The three administrators from the lower quartile who did agree to participate included an elementary school assistant principal, a middle school principal, and a high school assistant principal. Through this strategic selection, four of the 15 Region II districts were represented in the interview sample.

The same process for selecting and scheduling interviews was used for administrators at the upper quartile range. Initially, the researcher emailed the first elementary, middle, and high school administrator on the upper quartile list; inviting him or her to participate in the interview. This was followed by phone calls within 48 hours of the initial email. Five administrators on the upper quartile list were eliminated as interview candidates because they were no longer in their building positions, did not return emails or phone calls, did not have email or voicemail, or could not otherwise be reached. When a candidate was eliminated, the next administrator on the list at that level was contacted. The three building administrators interviewed from the upper quartile range of responses included an elementary school principal, a middle school principal and a high school assistant principal.

*Interview Data Generation*

Each selected interview candidate was contacted initially by email and then by phone. Confirmation of participation, time, and place of the interview was made during the phone call. Following confirmation of the interview, each participant was sent the
interview protocol (see Appendix B) and the consent form (see Appendix E) by email attachment and was asked to return the consent form prior to or at the time of the interview.

During each interview session, the researcher reminded the participant that the conversation would be digitally recorded. Each participant agreed to the recording of the interview, and signed consent forms were given to the researcher. Interviews were 20-40 minutes in length. An interview protocol (see Appendix B) was used for each interview. This guide listed each of the questions to be explored and ensured consistency by the researcher to pursue to the same line of inquiry with each participant (Patton, 2002). Each interview began with this introduction:

The purpose of this study is to understand the varied perceptions, beliefs, and assistive technology leadership experiences building administrators have. I’m wondering what knowledge and experiences you have as the leader responsible for leading IEP meetings, and what you may know of assistive technology and the range of assistive technology options available for students with disabilities in your building.

Following the introduction, this initial, open-ended question was asked of each participant: “Would you describe for me an IEP meeting during this past school year where an AT device or service was discussed or selected for a student?” The researcher asked for clarification and/or elaboration on the opening question prior to asking additional questions. Additional questions for all participants as indicated in the interview protocol (see Appendix B) included:
• Where have you gained your knowledge of assistive technology and its application or usefulness for students with disabilities?

• How do you perceive your leadership role for the facilitation of assistive technology decisions made for students with disabilities?

• What challenges or barriers, if any, do you perceive exist in supporting assistive technology integration at the school level?

Subsequent and additional questions were asked as follow-up and were based upon the emergent nature of each participant’s responses as they related to the topic of AT leadership. Informal member checking occurred throughout each interview as the researcher paraphrased participant responses and asked follow-up questions to determine if her understandings of message matched the participant’s intent. Understanding of the participant responses was further verified through clarification and elaboration, as needed, until the conclusion of the interview.

Within 48 hours of each interview, the researcher transcribed the recording and created a summary of that interview. The summary was emailed to each participant as an attachment, and each participant was given an opportunity to review, revise, and comment on the summary. The researcher asked that each participant read the summary for clarity and accuracy of the participant’s message. All but two interview candidates (i.e., Richard and Ken) responded to the emailed summary, and four (i.e., Hannah, Cathy, Bob, and Lynda) indicated through a return email that the summary accurately represented the message they wished to portray. At the conclusion of the study, each interview participant was emailed a draft of his or her case study and again asked for input on the accuracy of the message as applied to the overall project. Five administrators...
responded through email to this request (i.e., Hannah, Cathy, Bob, Richard, and Lynda), and all indicated their case studies accurately represented their memory of the interview and their perceptions of their AT leadership. Three thanked the researcher for the case study and wished her luck with her research. One administrator (i.e., Bob) suggested that further clarification be made within his case study to better represent the strength and competency of his assistant principal. Additional information was added to this administrator's case study, as requested.

 Qualitative Data Analysis

In phenomenological analysis, the researcher "seeks to grasp and elucidate the meaning, structure, and essence of the lived experience of a phenomenon for a person or group of people" (Patton, 2002, p. 482). The first step in this analysis, described as epoche is "to refrain from judgment, to abstain from or stay away from the everyday, ordinary way of perceiving things" (p. 484). The researcher becomes aware of personal bias and preconceptions in order to eliminate potential personal involvement with the data. This step was attended to through the writing and documentation of the Researcher as Instrument statement (see Appendix G), reflexive journaling and then through member checking throughout the interview processes.

Phenomenological studies are described as, "primarily open-ended, searching for the themes of meaning in participants' lives" (Rossman & Rallis, 2003, p. 276). Given an open-ended approach to inquiry, the researcher seeks through inductive analysis to identify broad themes within and across participant responses. The second step in the analytical process for this study was to identify the key phrases, themes, and patterns specific to the phenomenon being studied, interpret those findings as themes and patterns,
and “brackets out” those themes; treating each with equal value (Patton, 2002, pp. 485-486). After this was completed, the researcher undertook a “delimitation process whereby irrelevant, repetitive, or overlapping data [were] eliminated” (p. 486). The unit of analysis for this study was a sentence, however, during the delimitation process, only themes and patterns were recorded by code in order to inductively analyze the data (see Appendix F).

A cumulative list of codes (see Appendix F) was maintained electronically by the researcher throughout the study and updated after each interview and as codes were refined. Discovered patterns, themes, and categories (i.e., inductive analysis) were reported as a first level of codes. Patterns and themes that emerged across coding categories were noted and recorded on the cumulative list of codes.

After inductively analyzing the data, Patton (2002) suggested that a researcher may then deductively analyze a document according to an existing framework. Through deductive analysis, this study’s data was tested in an attempt to affirm authenticity. Deductive analysis was interpretive in that the researcher deduced the relationships between the initial coding and the framework to which it was being compared. After analyzing and reporting the first level of codes inductively, a level of deductive analysis was employed as these codes were analyzed according to Bowser and Reed’s (Bowser, 2004) self-assessment of leadership responsibilities and activities (i.e., leadership, management, supervision, and program improvement). This second level of codes representing themes of the self-assessment was recorded on the cumulative list of codes (see Appendix F).

The final step in the phenomenological analysis involved the integration and synthesis of the data (as cited in Patton, 2002). Analyzed data, coded by theme and
pattern, and deductively analyzed by Bowser and Reed’s self-assessment categories (Bowser, 2004), were organized by cluster in an analytical framework approach (Patton, 2002) to identify key issues discussed by the interview participants. This data is reported as the cross case analysis. Prior to addressing each research question in the cross case analysis section of this chapter, individual case studies for interview participants are reported below.

Case Study Analysis

The researcher chose a case study process for reporting the qualitative findings of this inquiry. Reporting through case study as a unit of analysis (Patton, 2002) allowed the researcher to provide thick, detailed description from each of six interviews while seeking similar themes among all six participants. Case study reporting provides readers with the potential for finding relevance in the information provided and transferring that relevance to other settings as a result (Rossman & Rallis, 2003). Additionally, utilizing a case study approach provided a method for this researcher to analyze the cases of each individual in comparison with the other interview participants.

Six participants were selected from potential interview candidates for this study: three from the lower quartile of self-assessment responses (i.e., one elementary, one middle, and one high school administrator) and three from the upper quartile of responses (i.e., one elementary, one middle, and one high school administrator). Interview participants represented all school levels and were diverse in their knowledge and experiences related to assistive technology leadership.

Following the case study analysis of each interview participant, a cross-case analysis will follow. In this study, cases were chosen as a discriminate sampling of the
theory (i.e., assistive technology leadership) being studied. The cross-case analysis provides the reader a collective case study to compare similarities and differences in themes and patterns. Table 9 describes selected interview participant demographics. To maintain the confidentiality of individual identities, each participant is represented by a researcher-selected pseudonym.

Table 9

*Interview Participant Demographics*

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Level</th>
<th>Student Population Size</th>
<th>Special Education Size</th>
<th>Years of Admin Experience</th>
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</thead>
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<tr>
<td>Hannah</td>
<td>Assistant Principal</td>
<td>Elementary</td>
<td>600</td>
<td>120</td>
<td>8</td>
</tr>
<tr>
<td>Bob</td>
<td>Principal</td>
<td>Middle</td>
<td>970</td>
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<td>240</td>
<td>5</td>
</tr>
<tr>
<td>Cathy</td>
<td>Principal</td>
<td>Elementary</td>
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<td>38</td>
<td>8</td>
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<tr>
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<td>Principal</td>
<td>Middle</td>
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<tr>
<td>Lynda</td>
<td>Assistant Principal</td>
<td>High</td>
<td>1631</td>
<td>200</td>
<td>11</td>
</tr>
</tbody>
</table>

*Note:* Names recorded are researcher-selected pseudonyms. Student and special education student population sizes were reported by administrators on their self-assessments. It is not known if these numbers were accurate counts.
Hannah (Lower Quartile, Elementary)

Hannah was an assistant principal at an elementary school in a large school district in Region II. She was an administrator in one of the larger schools as compared to other elementary schools in the Region (n = 600) and was the special education administrator for one of the largest special education elementary student populations (n = 120) in the sample. Hannah was in the early to mid-career (n = 8) range of administrative experience, but shared with the researcher that she had been a teacher for many years prior to becoming an administrator. Her responses on the Bowser and Reed (Bowser, 2004) self-assessment survey were in the lower-quartile range of results.

On the day of the interview, Hannah was called out of the office and was not present when the researcher arrived. The researcher was told by office staff that the principal and assistant principal, as well as several other faculty members, were called into the community for an emergency that involved one of their students and the police. When Hannah returned, approximately 30 minutes later, she appeared hurried, tired, and somewhat flustered over the afternoon's events. Despite the unexpected activities of the afternoon, however, Hannah graciously invited the researcher into her office and offered to answer questions. Prior to the interview, she introduced the researcher to the principal in the building. She then shared information about herself, her school district, and her training (and lack thereof). As the formal interview began, Hannah noted that what she shared was of her own opinion and experience and not necessarily reflective of others in her school district.

Procedures and team input. When describing an IEP meeting recently attended, Hannah explained the procedures of the committee. Prior to the meeting, she explained, a
student's proposed accommodations are sent to the parent for review and comment. Included as a part of the student's draft IEP, these accommodations were, "...specifically related to [the] child's need for accessing education on an equal plane with a regular education student." Additionally, all other members of the IEP team have input into the draft of the IEP before the first formal meeting with the parent in order to address AT and other accommodations.

Hannah stressed the importance of involving parent and team input prior to an IEP meeting. "We do a lot of collaborating," she said as she explained the process whereby the need for AT may enter into the accommodations conversation for a student. "The idea is that if we see a child struggling, we start looking for what's causing the struggle." The collaborative approach between general and special education teachers focuses on viewing the problem for different perspectives as well as considering accommodations other than AT. "We try a lot of things before we end up with AT..." she said.

Input from team members also helps to ensure that lower tech options are considered for students in need. Hannah relayed a philosophy of fostering autonomy in students, saying, "...if we can do something on a lower [assistive technology] plane, [something] a child can do on [her] own, we want to keep it as close to what the child can control as possible." While in the accommodations discussion, the IEP team draws in the parents and their views before making AT decisions. "The bottom line is that you don't want to do anything that's going to make the child less capable." Hannah shared the importance of recognizing that determining accommodations for a child is a "balancing
act.” The team’s responsibility is to foster a child to reach for the top. “Otherwise,” she warned, “you are giving them the right to be less than adequate.”

Finally, when the team finds that a child is not benefiting from an accommodation chosen at the school level, they connect with their “assistive technology department downtown.” The central office special education department in this school district had an assistive technology team of resource coordinators. These specialists provide supports to schools, including equipment, tools, devices, and recommendations for services. Additionally, this team of central office coordinators conducts AT evaluations when requested by schools. When describing the coordinator assigned to her school, Hannah explained, “She’s a really good gal, and she’ll come down and do a drive by and see what we think our problems are and what our possibilities are.” If, an AT evaluation is needed, the school obtains permission from the parents, and a central office team provides for the assessments.

*Position of strength.* Hannah gained her knowledge of assistive technology while on the job. The school district, she explained, provided a nine-month course for in-house personnel interested in becoming administrators in the district, but Hannah did not receive that district-level training prior to her first year as an AP. “I had a one hour training [when I went] from a teacher position to here. I had no knowledge [and] I didn’t learn about assistive technology in that one hour. I barely found my way in and out,” she said. As a result, she relied on her special education teachers and her AT coordinator as her best trainers. These resources provided her with up-to-date information on AT as well as accurate and current information on student needs. “Just because someone says something doesn’t mean that it is so,” she explained. Having the resources and current
knowledge at hand ensured that the AP can “talk from a position of strength” when addressing student needs with the parent, teachers, and other members of the IEP team.

Other resources this AP has relied on include her daughter, who is a speech pathologist, her administrative peers in the district, and written guidelines provided her by the AT coordinator. She sends her teachers to trainings and symposiums so that they can bring the information back to her and others in the building. The networking she does ensures she gets the latest information and points her in the directions she may need to head as she seeks what is appropriate for her students. Hannah spoke of the importance of having outside specialists available to provide support to her and her teachers when requested. “They do not live in our building,” she said, but they have provided her informal observations for some students when they have been in the building to see others. Hannah relayed that she and her team are fortunate to be part of a large school district with more available resources than others may have.

*Bringing people together.* When asked what this administrator viewed as her leadership role in AT, this AP said she believed her strength was in bringing people together to collaborate on decisions made for students. “I am not an expert,” she said, “but I have the ability to bring together people who are experts.” She connects with parents and sends teachers to trainings. She calls her AT coordinator for support.

*Parent and student compliance.* Hannah shared a story of a young boy who was given a computer with text-to-speech software (i.e., Kurzweil®) loaded on it. The IEP team had determined, as a result of an AT evaluation, that this boy needed this technology in order to access the general education curricula. The computer was being brought back and forth between home and school. The school would scan the text from
the classroom for the boy to access with the loaded software. "When we got the computer
back," she said, "we couldn't find our programs, but it had every game in the book on it." Hannah shared that this boy did not receive "follow through" at home from his parents. Consequently, much teacher time and energy was put into providing the boy daily support, but the technology was not used by the student at home. "Somebody else could have used that material," said Hannah.

Lack of student and parent compliance are the greatest challenges to implementing AT services, believes this AP. She is careful to ensure that AT evaluations are conducted for students, as appropriate, and that appropriate devices, tools, and services follow. Hannah's stories about lack of compliance were shared with apparent frustration. She works with the students, experts, and family members because she believes it is her job to make sure appropriate AT is in place. She works with the middle school as her students transitioned there to provide support for student success. "The buck stops with you," she shared, "I fight for kids' rights."

*Moving target.* If Hannah were to give advice to other administrators about AT implementation, she would recommend that they gather around them a team of people they can trust. "You do know," she said, "that special education is so huge a job that it is coupled with 17 other huge jobs that an assistant principal is responsible for...it's such a huge, always moving target." She recommended that administrators stay connected with their central office coordinators and to refer consistently to guidelines provided by central office staff. Communication is key as she works to ensure that the message given to teachers is the same as the message received from the district and state. Having a network of support assists with that consistency.
Finally, Hannah remains passionate in her response to ensuring that students get what they need. She explained the need to “politic” when requesting some services for students and spoke of her efforts to network and manage difficult student issues. Dealing with all that is involved with special education can be a challenge for this administrator. For Hannah, being reliant upon the data fosters appropriate decisions for students. When making those decisions, she shared,

You do it from the strength of data. You do it so that they don’t look at you and think you’re just doing it because you are an emotional female. You want it to be something you can prove data-wise—[that you have] kept all of the observations, trials of success...[then] you start bringing in people to prove it.

*Cathy (Upper Quartile, Elementary)*

Cathy is a principal of an elementary school of 540 students on the Virginia Peninsula. Like Hannah, with eight years of administrative experience, Cathy was in the *early to mid-career* range. Cathy shared that she was fortunate to work with two assistant principals who provided primary leadership for special education needs in the building, and in previous years, she had been one of two principals in this and another building. Cathy’s elementary school had approximately the same number of students as Hannah’s overall, but considerably fewer special education students (*n* = 38). Cathy noted on her self-assessment that she did not include students with speech/language impairments (SLI) or her preschool special education classroom students in special education student count. Her responses on the self-assessment placed her in the upper quartile range of results.

*Limited involvement.* Cathy relayed several times throughout the interview that her experiences with AT have been limited. She was able to share stories of some IEP
meetings where AT was discussed, especially at the preschool level, but Cathy said AT was often not discussed at IEP meetings she participated in. In some preschool IEP meetings, for example, AT was considered but determined not appropriate at the time. In many of those same cases, the preschool teacher needed to become more familiar with the students before she could recommend or discuss AT further.

Within the past school year, Cathy was only “peripherally involved” with a difficult IEP-related issue in her building. While not typically involved with IEP meetings (i.e., her assistant principals typically chair those meetings), Cathy believes that she is perceived by central office administrators as knowledgeable about the IEP process and AT. As a result, Cathy “listened in” on the difficult IEP issue from the preceding school year. In that case, Cathy shared, the parent of a child with an identified emotional disturbance was asking for the child to have her own laptop computer. The child was “choosing” not to complete school work and her mom was “desperately searching” for what would help her. This child, however, was known to refuse to work on computers in the building and misused technology at school, so the IEP team rejected the parent’s request. “The child was emotionally disturbed...there wasn’t anything technology could do. She would throw the keyboard [at school]! So, we’re not going to give her a laptop so that she could throw it!”

With difficult or contentious IEP meetings and situations, Cathy believed she, as principal, needs to be aware of potential problems that can surface in order to provide support to her teachers and students. “If somebody were absent—the other administrator were gone at a conference or sick—somebody would have to step in, so I keep my ears open.” Cathy said that it is important for building administrators to get to know those
students who have IEPs, and participating in IEP meetings is one of the best ways to do that. She did this often as an assistant principal. Because her APs are the designated special education administrators, however, she stays involved with IEPs by walking into the room during IEP meetings and listening, observing students in classrooms, and talking with special education and resource personnel.

While Cathy’s involvement with AT and with IEPs in general has been limited, in all AT cases, her focus has always been on discussing low-tech AT options first. Cathy is most familiar with low-tech AT tools and devices and said she has been quick to recommend pencil grips for students with fine motor challenges. “They are pretty much brought up by special education teachers, and sometimes parents, but I’ve brought it up a couple of times,” she said. She gave an example of sitting in an IEP meeting as the team discussed a student’s handwriting. Her response was to suggest the use of a pencil grip and the need to attempt low-tech options, first.

Cathy gained her knowledge of assistive technology as an assistant principal and in her first years as a principal. The Office of Student Services in her school district provided training to APs and special education staff on AT evaluations and procedures. Additionally, Cathy remembered a “box” (i.e., the “IEP Tool Kit”) provided to each building by the VDOE. The box contained information about the IEP process that Cathy referred to for many years. When she moved to another school in the district, however, she had to leave the box behind. “It’s difficult,” she said as she explained the value of the box, “because [assistive technology] isn’t something that comes up all the time. When you hear ‘assistive technology eval’ my ears perk up and I say, ‘OK where’s my stuff on that?’” She experienced frustration when she remembered that her ‘stuff’ was in the box
she had left in the other building. Initial training for assistant principals in this school district was provided by student services. As Cathy is no longer an AP, she did not know if training is still being provided to assistant principals.

Principal responsibilities. When asked how Cathy perceived her AT building leadership role, she said she asks questions. She queries IEP team members on their comfort level with what they are doing, and she continually seeks to stay updated on processes, challenges, and issues in the building. Additionally, Cathy works to ensure that the IEP teams are following guidelines and mandated procedures when considering and making decisions regarding AT. She corresponds with Student Services personnel for technical assistance and requests their presence in meetings that may become difficult.

In one case from last school year, Cathy shared she had heard that the IEP team had rejected a parent’s request for an AT evaluation. While she was not the special education administrator in that IEP meeting, she felt it her responsibility to ask if the team had followed local and state mandated procedures in rejecting the request. "I said, ‘How did you do that? Did you fill out a prior written notice when you refused the eval? What exactly went on when you refused the eval?’" As the principal in the building, it is Cathy’s responsibility to ensure procedural compliance. She discovered the committee had followed district procedures.

Cathy expressed that she has been lucky to have “very experienced APs.” She places great trust in her assistant principals to administer special education, manage student-related issues, and work with her on instructional programming. Standards of Learning scores for this school are within the state’s mandated limits, and Cathy believed that the work of her APs influenced those scores.
Panic. Teachers' understanding of and their ability to conduct AT evaluations is perceived as a challenge by Cathy. She shared,

When we first heard [about the need to conduct AT evaluations], it sounded like someone with knowledge was going to come in here and do it. And then, it turned out the person with knowledge was the special education teacher...and none of them felt they had any knowledge!

She remembered attending meetings, but the information provided left her with only a "vague" understanding of what encompassed an AT evaluation. "I found the teachers were somewhat panicked," she said. Teachers needed an expert to train them in the processes, procedures, and use of devices but were left to learn these things much on their own. Additionally, Cathy shared concern about teacher workload and AT evaluations being "just one more thing" to add to their already full days. "It's a whole lot. The teachers want to teach kids," she said. The time and effort it takes to conduct evaluations can take away hours of teaching time. They pull in any resources they can, but the experience is still a challenge for them.

Cathy talked about the changing role of special educators and the need for additional resources as a result. With NCLB legislation and the need for special education teachers to be highly qualified, special educators are being placed more into roles of collaborating teachers. This new role is not being accepted by some special educators who were in self-contained settings previously. Additionally, with state formulas used to determine district special education teacher staffing, student counts have changed in some schools forcing a change in personnel. Cathy lost a paraprofessional this school year.
because of the formula changes. “It’s overwhelming for teachers at times,” she said. With less personnel, collaborative services are more difficult in general education settings.

*Ignorance is bliss.* Because Cathy has delegated the administrative responsibilities of special education to her assistant principals, she has not been as involved in IEP meetings or AT decisions for students. In talking with her teachers and “checking the pulse” of the organization, she was not aware of AT challenges or barriers currently faced by her staff or students.

Cathy was confident that her special education teachers knew how to obtain the AT they needed. She shared, however, “I think that maybe I don’t know enough to be challenged by it.” As Cathy said this, she said that she needed to spend more time looking at the IEPs for certain students—especially for those students who require AT in order to access the SOLs. For most students, however, Cathy relayed, “Ignorance is bliss. When you’re talking about AT with severe and profound kids, it’s so obvious that they’ll need AT.” For other students, however, determining AT needs is more of a “balancing act.” For the young girl with an emotional disturbance, for example, Cathy asked, “How much of this is the student being really stubborn and how much is her mom desperately searching for an answer?”

Cathy recommended that IEP teams must spend appropriate time considering AT for students with disabilities. When conducting IEP meetings, the team must look at the student’s skills, abilities, and how that student accesses the curriculum. Importantly, the team must look to the low-tech options of AT for all students. She said, “…I think the low level of assistive technology is often done and not officially reported as assistive technology.” Cathy shared a story of a young boy who transferred to her school from
another school district. As the IEP team conducted informal assessments and observations, conversations began on whether or not AT was needed to address handwriting issues. The team determined that a pencil grip was needed and purchased one for the child. When the child saw the grip, he said, “That’s just like the one my other teacher bought me.” Cathy explained that pencil grips were not written in the boy’s transfer IEP, “And yet, he recognized it right away.” This low-tech tool was assistive technology for this student but was not identified as AT on his IEP.

Finally, Cathy suggested that IEP teams need to be cognizant of how IEPs are written—not only at the time of the initial writing, but especially for those students who transfer to other school districts. She described the challenge of understanding a transfer student from an out-of-district IEP, “When you look at it with an eye toward not knowing the child, is it vague?” Because Cathy had worked in another school district, she makes the effort to inform her staff that IEPs need to be specific enough to support those students appropriately should they need to transfer to another school district.

*Bob (Lower Quartile, Middle)*

Bob, a principal of a middle school on the Peninsula of Region II, provided responses on the Bowser and Reed (Bowser, 2004) self-assessment that fell in the lower quartile range. Bob reported his school as being in the mid-range in its total student population (n = 970) but low in range for its special education student population (n = 68). As a principal, Bob was *mid-career* (n = 19) in his level of administrative experience, but shared with the researcher that he is two years from potential retirement. As he sat with the researcher, he expressed that he had sought just prior to the interview, information on district assistive technology options; thinking that he would asked about
the range of AT. Bob did not hide his frequent reference to an assistive technology resource document provided by a special education teacher in his building. This reference contained AT definitions and an explanation of processes and guidelines for the district.

*Practical applications.* When asked to describe an IEP meeting he had recently attended where AT was discussed, Bob relayed a scenario where several AT options were discussed for a student with severe and profound disabilities. He described devices (i.e., "Touchpad" and "universal cuff") and their applications for this particular student. Bob admitted he was not familiar with these devices prior to the IEP meeting and that the meeting was special education teacher-led. He was able, however, to describe each device in some detail, its purpose, and its application to the student’s needs. For this student, he shared, the technology was, “low level, but that’s what enabled him to be involved in the lesson.” The parents were “delighted [with that result]” he said.

As the interview continued, other AT applications described by this administrator included a low-tech footstool for a student with dwarfism and an “abacus-type of apparatus” for students with autism to make food selections at school. “They would move those [beads on the abacus] because they can’t verbalize and couldn’t do it any other way,” he shared. Throughout his administrative career, Bob’s knowledge of AT has grown through what his colleagues, teachers, and students have taught or shown him.

*Resources and experts.* Bob relayed that all of his knowledge of AT and its applications have been learned on the job, through IEP meetings and in observing teachers and students in classrooms. He does not typically rely on central office staff to provide assistance but has called them with specific questions. “All the creativity comes from people in the building,” he said when describing how resources are obtained.
While Bob has never sought formal training in AT, he expressed that he does not need to. “I’m surrounded by talented people,” he said. At this middle school the assistant principal is the designated special education administrator and responsible for handling most IEP-related issues and processes. “She is so knowledgeable and talented in handling these things,” Bob said. “She gives me an email asking if she can call [a local resource] and I tell her, yes. I respect her opinion and don’t challenge her.” This building leader saw his assistant principal as a “cannon” to manage the potential challenges of special education. Because of her strength, skills and competency as a special education administrator, the middle school special education faculty does not see many major issues arise.

Bob also relies on the expertise of related services personnel (i.e., occupational therapists (OT), physical therapists (PT), and speech pathologists). When including them in IEP decisions where AT is being considered, however, they often speak of what is best for a student rather than what is “practical and useful to the kid.” Bob shared an example of an experience he had with a student he called the “Ketchup Kid.” This student with autism needed to have ketchup on everything he ate but had to use a “squirt bottle” to apply the ketchup. Ketchup packets could not be used by this student. Bob found himself ripping open ketchup packets to put into cafeteria containers and finally decided to purchase a container specifically for the student, “much to the consternation of the cafeteria staff.” While the cafeteria staff did not see this as appropriate, the teachers “loved it,” and it worked for the student and was used on a daily basis from then on. “And, I think that somehow, that was assistive technology. I don’t know,” he laughed.
Bob recommended that building administrators should always involve “experts” in IEP meetings. He indicated that when experts (e.g., related services personnel), are involved, “their expertise can be provided to parents and the teachers and administrators so that everyone can learn more about this sometimes amorphous type of information.” By involving the experts, the administrator does not need to know everything about the AT discussed at the meeting. The administrator does need to know where to get the information, however. He needs to know whom to call and what resource to tap into. “I don’t need to know how to do everything. I don’t need to know how to do every job,” Bob said. “There are other people who can do these jobs, and that’s the way it should be.” Bob believes building managers do not have time to be hands-on in every job. He does more coordinating and is confident that he is surrounded by experts to assist in those areas.

*The facilitator.* This middle school principal saw his AT leadership role as that of a facilitator. His responsibilities included managing the expenses of items and devices requested and connecting resources to personnel. Bob connects “people that have experience with different machinery,” for example. He talks with principals of other schools in the district in order to learn of their successful AT implementation and speaks with related services personnel (i.e., OTs, PTs, and speech pathologists) when they come to his building. Finally, Bob fosters an “environment that allows investigation to occur” at his school. “People are committed to call [to ask people for help and resources]. People are committed to seek out things,” he said. He encourages his personnel to take charge in investigating what AT might be needed for students with disabilities as well as the resources available to obtain the devices, tools, and services.
Scarcity of resources. Bob identified quickly those things seen as AT implementation barriers or challenges in his building. Bob spoke frequently about the need to seek resources for his faculty and students. “Dissemination of specific certified professionals is a difficult task in the schools,” he shared. Scheduling speech therapists who work across schools, for example, becomes a logistical challenge when therapist case loads are large and personnel must factor travel between schools into their daily therapy schedules. The resources of related services professionals are limited and getting them into all of the schools can be a problem.

Bob spoke of The College of William and Mary’s and Old Dominion University’s Training and Technical Assistance Centers (T/TAC). These federal grant funded, university-based programs provide assistance to school districts in multiple areas; one of which being assistive technology training and implementation. Scheduling this local resource is “tough sometimes,” he said. “It’s a limited resource, although very helpful, and always when we get them, it’s supportive. But, it’s a limited resource. There’s some scarcity there that causes a problem.” Bob expressed that he would use this resource more frequently if T/TAC availability were greater. Given their work with so many school districts in the Region, however, sometimes the school does not have time to wait. Despite the difficulty in obtaining this resource, Bob recommended that other administrators “seek the advice of local experts, like T/TAC” when needing resource assistance. While not always a timely response, “it’s a good response,” he said.

Teachers need to know what AT devices and tools are available in the district, Bob shared. “I don’t have any AT inventory I can draw on,” he said. While he does have some equipment in his building, those devices are used by students and not available for
others. That same problem extends to the district level, however. “If there’s [AT equipment] in the County,” Bob shared, “they need it. If it’s in the County, it’s probably filling in some black dot somewhere, but it’s not doing my kids any good.”

To manage the scarcity of resources faced by this middle school, Bob makes phone calls to coordinate services, “enables discussions” and relies on his assistant principal to problem-solve the issues. He sees his faculty and staff as “social anchors” to his effective school. “We know how to run effective schools, and the barriers [appear] when trying to find the right people to do the right things.” People are Bob’s most important resource, and he works to ensure that he has the right people in the right job.

*Ken (Upper Quartile, Middle)*

Ken, a middle school principal in the Tidewater region of Virginia, was the only interview participant who completed the Bowser and Reed (Bowser, 2004) self-assessment online. His responses on the self-assessment were in the upper quartile range. Ken’s middle school had a lower number of general education students (n = 740), but a higher percentage of special education students (n = 116; 15.7%) when compared to Bob’s middle school (n = 68; 7%) on the Peninsula. Ken was in the mid career range of administrative experience (n = 13).

Ken began the interview expressing his realization that he does not know as much about AT as he thought he did. While his self-assessment responses placed him in the upper quartile range of responses, the interview questions sent to him the day before were very difficult for him to answer. “I know what I’ve been exposed to,” he smiled, “but I have a feeling there’s a whole range of things I’m not even aware of...and it’s going to come out in this interview.” Additionally, several times throughout the interview, Ken

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queried the researcher on her findings from other respondents, seeking validation that his knowledge of AT was similar to his colleagues. Each time he asked about the study results, the researcher directed him back to the interview question.

*Delegated responsibility.* Ken delegates the responsibility of supervising special education to one of his two assistant principals. When asked to share an experience at an IEP meeting where AT was discussed or an AT device was selected, Ken spoke of his “cross cat” class. This self-contained classroom included nine students with severe disabilities from all of the area middle schools. “We’re a center for that,” he clarified. Ken spoke of an augmentative communication device with four or eight panels that students used to make choices about what to eat or to indicate the need to use the restroom. While Ken was not able to label the device, he was able to adequately describe its use and function for the students in this classroom.

Ken remembered a situation the previous year where a student had abandoned an auditory trainer (i.e., a voice/sound amplification device typically used by students with hearing impairments) provided through an IEP. “We’ve had some bad luck with auditory trainers,” he said. When the kids get older, Ken explained, they no longer want to use the devices regardless of their effectiveness in helping the students to hear. One girl with a hearing impairment was “lip reading” instead of using the device. The IEP team response to this dilemma was to talk with the student and parent about the necessity of the device. The central office special education coordinators were called in to assist in talking with the parents and conducting assessments. This was, however, not always successful. After that, “they usually go back to it for about a week,” but eventually abandon the device completely. Ken described the challenge of getting students to cooperate in using AT:
It’s a difficult process. I’ll be honest with you. You can talk with the parents—they know. Then you have kids who have a mind of their own. It’s tough because there’s a social stigma. They’d rather not hear than look different.

Ken was able to share an AT success story. Another student with a hearing impairment experienced the same frustration an auditory trainer. He became “socially isolated and had no interaction with anyone” because he wouldn’t use the auditory trainer and therefore could not hear. Ken smiled as he shared that the student was now using hearing aids and was accepting them. “He wouldn’t use the auditory trainer, but now with hearing aids, they seem a little less obtrusive.” Ken is very aware of the potential for social stigma associated with AT.

_Learning by accident._ Ken shared that he did not receive technology training in his administration program for his master’s degree. “I realize there’s a huge gap,” he said, “Colleagues in programs today are picking up and getting exposed to things we were never exposed to in our training.” He shared that any AT knowledge he had was attained “by accident or just curiosity of what’s out there.” Ken has observed classrooms where AT is used and asks students and teachers about the devices when he sees them. His Child Study Chair (CSC) has been a great resource in making it a point to show him new devices and technologies the students are using.

Other experiences “quite by accident” included job responsibilities he had as an assistant principal. Several years ago, Ken was the “property manager” for the high school in which he worked. His responsibilities included handling purchase orders and logging in AT as it arrived from vendors. He learned of “Touch Screens” (now in all of his special education classrooms) in this way. Ken explained, “...part of learning about
them was handling the purchase orders and tagging those things—I learned that we had them in the first place.” After seeing the items as he logged them in, he recognized them when he saw them in classrooms and then gradually learned their function for students.

Ken has learned about AT through his special education teachers inviting him to their classrooms and explaining about devices and how they are used. He was more concerned about their asking him for equipment when he did not understand its use and function. “They were the experts in their field and we were the equipment suppliers,” he said. He saw this as inappropriate and suggested that building administrators should have greater knowledge of AT. “It was kind of a backwards design…we should probably be a lot more aware of what was going on,” he laughed.

Far to go. Ken laughed again when asked about his leadership role for AT in his building. “You asked about my leadership role—that’s where it should be, but I realize how far I have to go…and I dare say I’m not alone in this.” Ken thought about his “comrades around the city” and talked about the many responsibilities principals have. “It’s one of those things,” he reflected, “Oh, yea, we’re supposed to be responsible for [assistive technology], too!” He realized that the more he learned about AT, the more he would need to find out and learn for himself.

Ken believes that principals must have knowledge about all areas of their responsibility. He did not accept that learning about AT should be delegated to someone else. Ken said that his own training needed to be greatly enhanced. “I can’t lead myself unless I know how—not just basic knowledge—but being comfortable with this stuff.” He said he would still delegate the supervision of special education to an AP, but he
realized he had to have greater knowledge about AT in order to be an effective building leader.

*Advocating for AT.* When asked about the AT challenges and barriers he perceived, he said, "If administrators don’t know what’s out there, we sure can’t spread the word to others or be advocates [for AT].” Lack of administrative knowledge is a barrier to AT implementation and prevents an administrator from addressing parent concerns or questions. As an administrator, Ken always looks for ways to increase student achievement. On the student level, he wants what is best for them. On a “selfish” level, he wants every advantage possible to raise SOL scores and ensure NCLB Adequate Yearly Progress (AYP) for his building.

Ken’s assistant principal, designated as the building supervisor for special education, has greater knowledge about AT than he does because she has been responsible for special education for so many years. He explained that those who have the responsibility for tasks become “experts” in those tasks. “We kind of siphon ourselves off into little worlds,” with each administrator taking a piece of the supervision and management of the building. Ken knows the processes and procedures for making AT decisions. He knows to contact his special education coordinators for assistance and for purchasing needed devices and equipment, but he wants to increase his overall knowledge of AT in order to better lead decisions about AT.

*Mandatory training.* Ken believes that unless an initiative or responsibility is a “mandate,” it tends to not be looked at by building administrators.
What doesn’t get monitored doesn’t get done. I guarantee you. If we put out a little [AT quiz] and said your job counts on [passing it], we’d have a lot of people out of work! I hope my division is not alone in this!

Ken spoke of the multiple mandates placed on principals (e.g., SOLs, the Virginia Grade Level Assessment (VGLA), data analysis) and said, “It makes more sense to make sure [students] have the right tools to get what they need.” Training would have to be more than the presentation of information. Mandatory training would need to include information for the principals relevant to the need. Ken believes that principals need to know “what it is,” as well as how AT can benefit the student, the school, and the staff. If training can relate AT to accountability and show a potential for raising student achievement, principals will be more likely to want to learn more.

As Ken came to the realization that he needed more training in AT, he laughed. “I’m actually on the city staff development advisory committee where we mention topics for training we want to have.” He believed AT would be the next topic he would recommend to the committee. Unless administrators are held accountable for knowing AT, they will not make the effort to learn about it. “I’ll guarantee I will recommend training for administrators,” he promised. “It’s going to get done.”

Richard (Lower Quartile, High)

Richard, a high school assistant principal, was an administrator in a large school district in the Tidewater area of Virginia. Richard’s self-assessment scores placed him in the lower quartile range of responses. He reported on the Bowser and Reed (Bowser, 2004) self-assessment that he had five years of administrative experience, placing him in the early career range. In Richard’s school of 2100 students, one of the largest in the
study, the special education population (n = 240; 11.4%) was just slightly higher than mid-range as compared to other high schools. Richard's interview was conducted via speaker phone. The conversation was digitally recorded and transcribed, however, in the same manner as the other interviews.

Richard was difficult to schedule for an interview. Several emails were shared between the researcher and Richard, and he appeared hesitant to agree to be interviewed. In one email, after pre-reading the interview questions, he wrote, “...I have a very limited knowledge base in regards to assistive technology from the assistant principal standpoint...based on your questions, it does not seem that I am the best interviewee.” He continued to write that his special education department chair knew more about AT than he did, and he suggested I might want to interview her instead. After assuring Richard that it was his knowledge I was hoping to learn and agreeing to conduct the interview with him via phone call rather than in person, he agreed to the interview.

Technology for all students. When asked about his AT experiences in IEP meetings, Richard spoke of a student with Cerebral Palsy needing a keyboard to respond to questions in classes. He explained that this keyboard, an Alphasmart®, was a device frequently mentioned and recommended in IEP meetings for those with and without physical disabilities. Richard also spoke of a software program that provides text-to-speech capabilities (i.e., Kurzweil®) and indicated that the software was installed on several computers in the building in order to provide benefit for groups of students. Discussions about Kurzweil®, explained Richard, began with IEP meetings. Once the IEP team and school became more familiar with the benefits of the software, however, teachers began asking that it be installed for general education student use, also. “The
more we delved into it,” he said, “the more we thought it was a better resource...maybe the newest and greatest thing to help our kids.” Richard was told by his teachers that the software could potentially benefit all students.

Richard learned what he knows about AT in IEP meetings. “That’s where you have all your professionals and from there you get to know what all the resources are,” he said. He mentioned his connection with a central office liaison, an AT coordinator, who also provided support when questions about AT arose. At times, Richard would call the coordinator directly. Other times, he referred his teachers (i.e., primarily his special education department chair) directly to the coordinator with questions. When the coordinator is contacted, he directs the caller to people and places where the IEP team can get AT assistance.

_The stamping authority_. When asked about his AT leadership role, Richard shared that he saw himself not as an expert in the individual needs of students, but as a “stamping authority.” His responsibilities included finding resources, attending meetings, coordinating and arranging professional development, and signing eligibility summaries and IEPs. He was the designated building administrator for special education meetings and approved funds, as needed. Richard was careful to say that he was not the sole decision-maker for students and their needs and that those decisions were made by a team of experts.

_Levelling the playing field_. Richard described limited resources as being a challenge or barrier to effective implementation of AT. He spoke of a vision to provide technology for all students, “…if we had Kurzweil on every computer or if we had Alphasmarts® for every kid…if we could assess every kid, I’m sure they could benefit
somehow.” He wanted to see the availability of technology, including those tools considered AT, for all students. Richard addresses this challenge by asking for more resources. When a teacher makes a request for technology or AT, Richard requests the resource through central office. “Usually,” he said, “we get it because it doesn’t hurt to ask.”

Another barrier perceived by this assistant principal was what he described as “teacher perceptions.” Richard said that general education teachers sometimes believe that providing AT for a student with a disability gives that student an advantage over his general education peers. “There’s no advantage there,” he said, “We’re trying to level the playing field.” Richard said he has responded to these situations with individual teachers when issues were reported to him by IEP team members. He coordinated professional development for those teachers and promoted the philosophy of inclusion.

*Professional development.* Whether teaching about accommodations, AT, or inclusive services, Richard was an advocate for providing teachers professional development for special education-related needs. He explained that inservice was provided to his teachers at the beginning of the school year, but AT was not specifically addressed in the training and planning sessions. “We assume that if a student has accommodations, [assistive technology] is just one of his accommodations.” He said that he believed that AT should be addressed more readily in professional development. Typically, he explained, teachers provide training to each other in his building. Richard believed that teachers are more accepting of what their peers tell them than they would be should Richard give them the information.
**Useful tools.** Richard recommended that building administrators should see AT as “a useful tool.” He said that IEP teams and schools should think about AT more often as an avenue for leveling the playing field for students. Richard also recommended that administrators should have a “good knowledge base of assistive technology,” and suggested that he needed more inservice on AT himself. “You have to know about it, really, before you can spread the word.” When asked about opportunities Richard had to obtain personal training on AT, he said that there may be training available to him, but finding it would be self-initiated. He admitted, however, that his school district may provide such training, but getting it would be “low on my priority list.” Just prior to the interview, Richard had been involved in breaking up a student fight in the school cafeteria. Scheduling an interview for this study was difficult because he said, “No time is ever great.” Richard expressed that gaining knowledge and experience about AT was important, but when compared to his other responsibilities as an assistant principal, not a top priority.

**Lynda (Upper Quartile, High)**

Lynda was an assistant principal whose Bowser and Reed self-assessment (Bowser, 2004) placed her in the upper quartile range of responses. Her high school, on the Peninsula of Virginia, housed 1631 students; 200 (12.3%) of which were identified as receiving special education and related services. She documented on her self-assessment 11 years of administrative experience, placing her in the *mid career* range. Lynda, like Richard, was designated by the principal as the building administrator responsible for supervising special education.
Lynda began our conversation by talking about how little she had dealt with AT in her building. Most parent requests for AT, she explained, were for computers. “Our school is too overcrowded to give a kid a computer,” she said. The student desks were not “built for laptops,” and Lynda was concerned they would “fall off” if provided. Most of Lynda’s comments centered on the overcrowding of her building and parent requests for higher tech items.

*On solid ground.* Lynda shared a story about a recent IEP meeting where a parent had asked for books on tape. The 16 year-old student, she explained, had an emotional disturbance and had been given an accommodation not written on his IEP. He had told one of his special education teachers that he was “tired” and requested the teacher read aloud one of his required novels. After she did so, he decided that he needed all of his texts and novels read aloud. After sharing this with his mother, she demanded that books on tape be added to the IEP for this student.

Lynda called several IEP meetings to address this parent request. In the first meeting, the IEP team “was in total agreement” that an AT evaluation was needed to support the added accommodation for this student. Upon completion of the evaluation, the AT team recommended that the accommodation was not appropriate. At the next meeting, the parent brought her son’s private psychologist and her own attorney in an attempt to get the books on tape written into the IEP. “But, we were on solid ground,” Lynda said, “It wasn’t something he needed.”

Lynda described the conversation that took place on the day of this IEP meeting. The psychologist talked about the medications the student had been prescribed and that the medications caused the student a lack of sleep. He said that books on tape would be
"just another tool" the student needed in order to be successful. The attorney "was adamant" about books on tape for this student, but, as Lynda stated, "The data we had was sufficient to convince the people at the table...to finally let it go." The data described by Lynda included information from the IEP as well as data obtained through the AT evaluation. Additionally, the team had documented comments the student had made outside the meeting where he giggled and said, "Yea, I know I don't need books on tape."

The parent signed the IEP and agreed with the decision of the committee. Collecting the evidence and data provided the school personnel the documentation needed to convince the parent AT wasn't needed. "He was an ED kid, and we needed him to respond," Lynda explained. "And we needed him to do things autonomously. He would take any crutch and that's what we were weaning him off of." Additionally, Lynda knew the family would soon be moving and were looking to "load" the IEP with accommodations for the next school district to deliver. "The easy thing would have been to just sign the IEP and say, 'Just fine,'" she said, "but we showed evidence and convinced the parent because it was the right thing to do."

Knowing by doing. When asked about her background experiences and knowledge of AT, Lynda shared that she was an Occupational Therapist and special education teacher prior to becoming a building administrator. "AT used to be common sense, [but] has gotten more technical...adapting things was always my gig," she said when describing what she did as a practitioner. She learned about AT through teaching and reading special education articles. Her seven years as a special education teacher fostered her focus on lower tech adaptations and included "simple things like cups and
spoons" and were both educationally and physical adaptations-related. Her goal was to gradually withdraw the adaptations to foster student independence and autonomy.

Lynda commented on the importance of recognizing what is socially acceptable to students. As a practitioner, for example, she created “keyguards,” an overlay to protect the keys of a typewriter from bodily fluids (e.g., drooling) and damage. “Not very pretty things,” she laughed, “We wouldn’t want the kids to use the gawky things in the [general education] classroom, but in mine, they could use it. You can’t forget how it looks to other kids.” Even in elementary school, she said, personnel have to be cognizant of social acceptance or the lack thereof related to how a student “looks” to his or her peers.

The building expert. When a teacher in Lynda’s building has an AT request or question, that teacher goes directly to Lynda. They tell her what they want, and she requires that they present a justification for the request. “I’m the go-to person,” she said. After the request, she talks with the student’s case manager (i.e., that special education teacher responsible for implementing the student’s IEP) and reviews with him or her the process for considering AT at the IEP meeting. Procedures and processes are reviewed, and Lynda checks to see if the parent has questions. “I find out what they need,” she said, “and I refer them out to other resources [as necessary].”

In considering her leadership role for AT, Lynda pondered, “Am I the expert in the building for AT? I guess so. I guess I would be,” but she was quick to include that her special education teachers were also very knowledgeable about AT processes and devices. She was also complementary of a group of teachers and related services providers she calls her AT Team. This team of professionals (i.e., the teacher for the hearing impaired, the teacher for the visually impaired, and special education teachers)
adds to the knowledge base of the IEP committee by using their areas of expertise to assist in making AT decisions for students. With the AT team in place, Lynda can rely on them to have knowledge about AT devices and services Lynda may not be familiar with.

*Matching device to student.* Abandonment of AT has been a challenge in Lynda’s building. Most of the AT requests at this high school have been for laptops and software, and several years ago, she shared, a student’s parent demanded that Kurzweil® software (i.e., a program that reads aloud scanned materials) be installed in the building. The school, she remembered, had to “find” the hardware (i.e., the scanner and computer needed to run and utilize the software). The school did not purchase it. The special education office purchased an “inexpensive” software package to run the program. “The student used it maybe twice,” she said, “It was inexpensive, but Kurzweil® was not an easy thing to use. It was cumbersome.” They had to walk the student and his textbook or worksheets to a lab where he scanned the material. The student then needed to remain in the lab for the software to convert the scanned material to an electronic format and read the text aloud to him. “It wasn’t functional,” Lynda explained, “[perhaps] because it was the least expensive [version], but [it] was the latest thing everyone was talking about and that’s what mother wanted.” Lynda believed that current versions of the program are probably more useful for students.

The student for whom the software was purchased graduated the same year as the implementation of the Kurzweil® program. The hardware and software remained in a computer lab in the building for several years. Lynda had considered moving the program to another special education lab but decided to leave it in a larger lab to keep it in the “mainstream.” While Kurzweil® did not meet the needs of one student; several other

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students used the program after its installation, but only for a short time. “It was a waste of money,” she said. When the researcher asked if students were still using the program, Lynda said she did not know. She wondered if it was still in the building and wrote herself a note to check with her information technology technician the next day.

Challenges in this high school included the barrier of the physical plant being too small to accommodate the number of students currently enrolled. “The overcrowding in our building really affects where our students are taught and what we can teach them,” she explained. All of the available spaces and classes are used every block of the day. The computer labs, where Dragon Naturally Speaking® software (i.e., speech-to-text software) is installed, is accessible to all students, but only if they are registered for a computer course in the lab. Lynda manages this by scheduling as many students into the lab as possible.

Lynda perceived the cost and availability of AT as a barrier. She was concerned about the availability of resources and especially about incoming students from the middle school that may arrive without the AT devices that are already written into their IEPs. When talking about this, however, she said, “It’s kind of hard to work on it unless there’s actually a problem.” She was not confident she knew the district procedure about sending AT with the student to the next level or school. “I don’t know how that works,” she said, but shared that she has not yet been faced with that dilemma. Additionally, she shared that there have not been many requests for AT in her building. “I know someday something’s going to happen,” she said.

A knowledgeable AT team. Lynda recommended that building administrators have a good AT team in place in order to effectively determine the needs of students. “The AT
evaluation team has to know what they are doing and how they are doing it,” she said. “Philosophically, they have to come with good, solid knowledge.” Lynda believed her team was very good. She assigned a teacher as a chairperson and included professionals who have knowledge about AT devices and services.

The AT team provides valuable assistance to the IEP teams at this school. After an AT evaluation is requested and recommendations are made to the IEP committee, the special education case managers and Lynda will try to implement the suggestions. Students, however, will not always accept the advice and recommendations from the committee. “We suggest AT sometimes and the kids say, ‘No thank you.’ We try to persuade them, and they say, ‘No thank you.’” Having a knowledgeable AT team involved in the evaluation ensures that recommendations for students are appropriate.

Finally, Lynda expressed the need to work with state agencies to ensure the provision of appropriate resources for students with disabilities. “The state agency for the blind and visually impaired are extremely on top of things” and provide free materials for students with visual impairments and blindness, she shared. The Department of Rehabilitative Services (DRS) works with students transitioning to the work place and assists them with obtaining AT devices needed during and after that transition. Despite the availability of resources from these agencies, however, Lynda’s teachers must still be involved in providing AT accommodations. Students with visual impairments, for example, need their textbook pages enlarged on a copy machine because getting texts with enlarged print from the state is not always possible, and DRS does not always have the funding to provide all needed AT for student transition to the work place.
Case Study Summary

Six building administrators (i.e., three principals and three assistant principals) were selected using stratified, strategic sampling based on their self-assessment responses (Bowser, 2004) (see Appendix A), and interviewed using established protocol questions (see Appendix B) in order to address research questions two through five. Three participants (i.e., Cathy, Bob, and Lynda) were interviewed in schools on the Peninsula of Virginia. Three participants (Hannah, Ken, and Richard) worked in schools in the Tidewater area of Region II. All but Richard were interviewed face-to-face within their school buildings. As requested, Richard’s interview was conducted via speaker phone.

Each interview participant was given a pseudonym to protect confidentiality. Hannah (i.e., an elementary assistant principal from the lower quartile range of responses) and Cathy (i.e., an elementary principal from the upper quartile range of responses) had the same number of years of administrative experience and worked in schools of similar size. Hannah’s school served a higher number and percentage of students in special education programs. Bob (i.e., a middle school principal selected for responses in the lower quartile range) and Ken (i.e., a middle school principal selected for responses in the upper quartile range) reported experience in the mid-career range. Bob’s school served more students than Ken’s but a lower percentage of students in special education programs. Ken reported that his school was a “center” for a “cross-categorical class” of students with severe disabilities. Richard (i.e., a high school AP with self-assessment responses in the lower quartile range) and Lynda (i.e., a high school AP with self-assessment responses in the upper quartile range) were different in their years of experience. Richard reported five years as an administrator and Lynda reported
experience in the mid-career range (i.e., 11 years). Richard’s school with 2100 students was larger than Lynda’s (n = 1651). Each school served approximately the same percentage of students in special education.

Cross-Case Analysis

In naturalistic inquiry, researcher insights that occur during data generation both guide and further data generation and inform the process of analysis (Patton, 2002). This emergent method assists in developing an understanding of the multiple perspectives of the participants. In phenomenological studies, data analysis is sought to identify broad themes within participant responses (Rossman & Rallis, 2003). In this study, inductive analysis was used to identify categories within the interview data within the previous section. Deductive analysis was then used to apply identified themes with the framework of the Bowser and Reed (Bowser, 2004) self-assessment survey (see Appendix F). This cross-case analysis will present a synthesis of the qualitative data. Data was analyzed, synthesized, and reported for research questions two through five.

Research Question Two: What knowledge do building administrators have of assistive technology and the range of assistive technology options available for students?

Building administrators were asked, “Would you describe for me an IEP meeting during this past school year where an AT device or service was discussed and selected for a student?” All administrators interviewed shared at least one experience when they attended an IEP meeting and participated in a discussion about obtaining or using an AT device for a student with a disability. Assistant principals interviewed were more often the designated special education administrators in the building and shared more experiences with IEP participation. All building principals identified that their assistant
principals were the administrator designees for IEP and eligibility meetings. All three principals interviewed said they are not as involved in IEP and AT decisions because they had delegated APs to that responsibility.

*Policies and procedures.* Building administrators knew and understood their district’s policies and procedures for making AT decisions for students. They relayed their awareness of the need to complete AT evaluations when needed and the process of including AT as part of the IEP. Three of the six administrators (i.e., Hannah, Ken, and Richard) called upon central office AT Coordinators to assist with AT evaluations, decisions, and the acquiring of devices and tools. One administrator (i.e., Lynda) used a building-based AT team for evaluations and the assistance with decisions. The two remaining administrators (i.e., Cathy and Bob) were dependent upon their central offices to purchase needed AT equipment and devices, but they did not receive district-based assistance with evaluations and decisions. None of the administrators interviewed discussed providing AT as a service or adding an AT service to an IEP.

As documented through these interviews, AT evaluations may be formal or informal. Cathy expressed the importance of considering AT for a student’s future. “It’s a balancing act,” she said, “to know if AT is something they need now or may need later in life.” Hannah shared that AT is considered at every IEP meeting for every student. Her school district AT coordinator will “do an informal drive by” observation of one student while in the building for another in order to give the IEP team AT advice. Bob said that he has called William and Mary’s T/TAC for technical assistance and informal suggestions. Lynda ensures there is evidence to support the need for AT. Evidence is documented on both the IEP and in the AT evaluation.
Range and purpose of AT. Administrators expressed their support and encouragement of AT use with students who have disabilities. Richard emphasized considering AT as a “tool” for “leveling the playing field.” Ken indicated that principals should know more about AT in order to be effective leaders. Most administrators spoke of a range of AT options for students. Bob, for example, stated that there is a “wide range” of AT for students with disabilities. He was not, however, aware of the specifics of services provided by speech language pathologists. Hannah mentioned she encourages her staff to “try a lot of options” before trying AT. Both Hannah and Cathy facilitate conversations with IEP teams about looking at lower tech items (e.g., pencil grips) before attempting higher tech items like computers.

All administrators stated or implied knowledge about the purpose of AT being to “level the playing field,” “access education on an equal plane,” augment communication, or provide accommodations for SOL achievement. Lynda, a former OT and special education teacher, gave specific examples of using AT to access other technology (i.e., keyguards on typewriters). Hannah spoke of AT as being tools for “fostering autonomy” in students. Richard, a high school AP, spoke most often of AT being a need rather than an “advantage” and shared challenges he has had in convincing general education teachers of this.

Devices and applications. Administrators also shared their knowledge of specific AT devices and tools and their application for students with disabilities. Some examples applied to students with more severe disabilities or devices considered mid- or high-tech AT (i.e., Alphasmart®, Kurzweil®, touchpad, universal cuff, laptops, etc.). Lynda and Richard, both high school administrators, spoke of utilizing available software and...
hardware universally for the access of all students. The Kurzweil® program and Dragon Naturally Speaking® software, for example, are installed in central locations in the buildings and could be used by students with and without disabilities. Other AT examples shared by administrators included lower tech items (e.g., abacus, pencil grips, books on tape). All of the examples given were shared as items administrators had personally seen, used, or had seen being used by or with students in his or her building.

Device abandonment and rejection. Ken, Lynda, and Hannah shared stories of students abandoning their AT devices or unwillingness to use devices recommended or provided by the IEP committee. These devices included auditory trainers, laptops, books on tape, and text-to-speech software (i.e., Kurzweil®) and were expensive for school districts to provide. As Lynda shared, “It was such a waste of money,” when referring to the abandonment of Kurzweil®. Hannah’s concerns included the realization that another student could have used the laptop and software abandoned by the student in her building. Ken’s frustrations were for the students not being able to hear without the recommended auditory trainer. All three administrators shared, however, that students have a “mind of their own” and will sometimes make choices against the recommendation of school IEP teams.

Research Question Three: To what, if anything, do building administrators attribute their knowledge of assistive technology and its application or usefulness for students with disabilities?

During the interviews, administrators were specifically asked, “Where have you gained your knowledge of assistive technology and its application or usefulness for students with disabilities?” All six administrators admitted learning more about special
education through the process of supervising special education, and all but Ken had at some point in their careers been the direct building administrators who supervised that department. Being the administrative designee for IEP meetings and supervising special education programs has provided each of these administrators with experience and knowledge of AT. Ken explained that the administrator designated as being responsible for special education becomes the “expert” for the building but indicated it is essential for the building principal to also have that knowledge.

The six interviewed administrators have learned about AT through IEP meetings, district and state training, networking with other district administrators, special education teachers, related services personnel, and prior knowledge and experiences. All administrators have participated in IEP meetings where AT was discussed. Of the principals interviewed, Bob had first learned about AT in an IEP meeting when he first became a principal in 1992. Cathy was trained in AT processes and procedures by her district central office when she was an AP. Ken never received formal training in AT or technology in general, but learned about AT “by accident and chance” while responsible for purchasing and tagging equipment as a high school AP. Hannah gained all of her knowledge and experiences through IEP meetings and interactions with special education staff. Richard has relied heavily on his special education “experts” and AT coordinator to keep him aware of necessary information. Lynda, the only administrator who was formerly a special education teacher, gained her knowledge of AT through direct teaching experiences and reading special education literature.
Research Question Four: What are the perceptions of building administrators regarding their leadership role for the facilitation of assistive technology decisions made for students with disabilities?

Interviewed administrators were asked, “How do you perceive your leadership role for the facilitation of assistive technology decisions made for students with disabilities?” Responses to this question were different for all six administrators. The principals in the group were Cathy at the elementary level, and Bob and Ken at the middle school level. Bob saw himself as a facilitator—ultimately responsible for costs, expenses, seeking central office advice, and “connecting people who have experience with different machinery.” Cathy’s involvement with AT and special education is situational because she, like Bob and Ken, delegates special education responsibilities to her APs. Cathy, however, becomes involved in AT decisions only when problems arise in her building. Ken’s involvement in special education and AT has also been situational; however, he expressed great interest in continuing personal professional development in learning more about AT so that he may effectively lead all decisions made in his building. Ken also expressed concern that administrators tend to provide AT equipment and devices for teachers without knowing specifically what they do or what they are for.

The assistant principals in the group were Hannah at the elementary level, and Richard and Lynda at the high school level. Hannah perceived her role in a manner that was similar to Bob’s—as a coordinator of resources. Her area of expertise is in “bringing people together,” sending teachers to trainings, and asking central office for help. Richard regarded himself as a “stamping authority”—focused on providing what was needed when asked without question. Richard also spoke of the importance of providing staff
development for his teachers. Finally, while Richard relied heavily on his special
education experts in his building to make the right decisions for students, Lynda saw
herself as the building AT authority. As the designated building administrator responsible
for special education and a former special education teacher and occupational therapist,
Lynda has attained a level of knowledge and experience about AT that makes her the “go
to person” in her building for information and support.

Coordinator of resources. All building administrators saw themselves as a
cooridinator of resources at some level. Human resources are obtained by calling central
office, AT coordinators, college and university T/TACs, state agencies, and district- and
building-level AT teams. Richard explained, “You have to make the right call to the right
places.” Bob added that you have to know what resource to call for each decision and
issue. Lynda said she was fortunate that she had readily accessible AT team members in
her building.

All principals praised the expertise and competence of their APs, and all
administrators applauded the capabilities and proficiency of their special education staff.
Only Bob talked about recruiting general education teachers with knowledge of
technology as this is a district initiative. General education teachers are not, however,
required to know AT in Bob’s district. He shared that special education teachers typically
have the AT knowledge they need prior to being hired. He also expressed the importance
of finding the “right people” for the “right job.”

To ensure an appropriate level of personnel understanding, administrators provide
training and obtain technical assistance for teachers, special education teachers, and
related services staff. Often, as shared by Hannah, Bob, Ken, and Richard, special
education teachers become the trainers for the staff in the building. Ken expressed several times that AT training for administrators should be mandated because “what isn’t mandated doesn’t get done.” Cathy frequently “check[s] the temperature” of the staff in the building to see if and where training might be needed. Hannah spoke of the collaborative atmosphere in her building and the successes of general and special education teachers teaching and training each other. Conversely, Richard shared the difficulties some of his teachers were having with accepting AT for students with disabilities and shared an increased need for his staff to learn about AT.

**Tools and devices.** All six administrators relayed that their central office special education departments purchased all AT devices and tools required as part of students’ IEPs. Hannah, Bob, and Cathy spoke of the importance of being “creative” at times in finding or making resources. Hannah, for example, used personal money to purchase Velcro for one classroom, explaining, “We all chip in to make sure we have what we need.” Bob shared that obtaining resources from his central office was sometimes difficult, requiring special education teachers to be creative in using what may already be in the building or borrowing from outside resources, like T/TAC. Lynda made her own low tech devices (i.e., keyguards) and so is aware of how to make things you need instead of buying them. Lynda also shared that there are not many requests for AT in her building—and those requests she does get are for high-tech laptops and software. In those cases, she ensures great care is given to an AT evaluation in order to justify the request to central office. Additionally, even after requests are made for the purchase of devices or tools, central office may not purchase exactly what is requested, but instead will provide
Lower-end version of software or a different brand of the device. In some cases, as shared by Lynda, the version provided does not meet the student's need.

Financial responsibility. Building administrators shared that financial resources must always be considered. While some tools and devices are purchased by central office, those items are provided typically for students with AT written into their IEPs. Richard believes that technology and some AT should be provided to all students in general and special education. Kurzweil® and Alphasmart® portable keyboards, for example, would be available to all students if Richard could afford to purchase them.

Hannah shared a similar story, saying, "We don't have budgets for AT." She indicated her good fortune in having many Alphasmart® keyboards in the building already for use with any student. Cathy did not want to provide a laptop to a student with an emotional disturbance. She was sure the laptop would be destroyed by this aggressive child—and did not want to chance the computer being broken. Bob worried about expenses and recognized the need to be financially responsible in making purchase requests to central office. Finally, Ken shared the instruction his central office gave him, "[If] it's needed for educational benefit...money can't be the issue."

Building administrators recognized the need to make data-based decisions regarding the selection of AT for students with disabilities. Conducting AT evaluations before implementing a device, shared Hannah, provides information for the administrator to "speak from a position of strength" in talking with parents, the IEP team, and central office. Bob fosters a culture of "investigation" in his building where teachers are encouraged to seek out resources outside of the central office. Ken believes that students...
need every advantage to pass the SOLs, and he seeks access to all resources that will help his building make AYP.

*Research Question Five: What challenges or barriers, if any, are perceived by building administrators in supporting assistive technology integration? How have you responded to those challenges?*

The final interview question asked of building administrators was, “What challenges or barriers, if any, do you perceive exist in supporting assistive technology integration at the school level?” All administrators were able to identify at least one challenge or barrier and all were able to respond with actions for meeting the challenges they have faced. Perceived challenges and barriers included limited resources (including time and money), lack of student and parent compliance and support, overcoming the social stigma of AT, abandonment of devices, ambiguous directions and guidance from central office staff, and misunderstanding and misconceptions of AT evaluations, processes, and procedures.

*Resources.* Bob, Cathy, Lynda, and Richard talked about the scarcity of resources. In Bob’s district, there are not enough personnel to provide the therapy services and technical assistance needed to run special education programming efficiently. When seeking outside assistance (i.e., T/TAC), he is often frustrated to find they, too, do not have enough personnel and time to provide their valuable services. For both of these administrators, there is not enough availability of materials and devices in their own buildings, and, as Bob added, “We cannot draw upon resources from other buildings [in the district] because they are using what they have.” Bob and Lynda did not know if there was a district-wide inventory of available AT devices. Richard wanted AT to be available...
to all students, and Lynda was challenged by not having enough space in the building due to overcrowding.

Having too little time was a dilemma mentioned by principals Bob, Cathy, Ken, and assistant principal Hannah. Bob, Hannah, and Ken spoke of administrators “wearing many hats” and having so many responsibilities it is difficult to divide their days to add more. Hannah said, “The AP job is coupled with 17 other things,” when sharing her concern about having too many responsibilities. Ken’s message was similar when he said, “There are so many mandates…” Ken thinks adding AT leadership as a responsibility for principals is necessary but will be difficult to manage with all of the other responsibilities he has. Cathy was concerned about special education teachers not having enough time to complete AT evaluations. She said special education teachers “already have enough on their plate…[they] look at [AT evaluations] as one more thing.”

Bob believes that principals “do not have to know everything…a good manager doesn’t have time to do everything but surrounds himself with experts.” Bob, Cathy, and Ken handle some of their time challenges by delegating special education supervision to their APs. Hannah, being an assistant principal and the principal’s designee for special education leadership, delegates as much as she can to others, but relies heavily on the trust she has in the central office staff and building-based teams to assist with programs and services. Cathy seeks central office assistance as much as possible and encourages her teachers to conduct informal AT assessment and focus on low-tech AT devices. These strategies can postpone or prevent the need for a time-consuming formal evaluation.
The administrators addressed some of their challenges by seeking resources outside their school districts. Bob indicated he has spent time identifying what is available at the district level by talking with his administrator colleagues. Richard continues to ask his central office for what he needs. “It doesn’t hurt to ask,” he said. Hannah also shared the need to “politic” until the student gets what he or she needs. Lynda schedules technology classes strategically to give the greatest number of students access to the lab where the AT hardware and software are installed, and Cathy pulls in her central office instructional specialists on all difficult decisions and to address needed resources. “We’ve gotten away with pencil grips and low-tech stuff,” Cathy said.

Student and parent support. Three administrators interviewed shared stories of students not having success with implemented AT devices. Hannah’s story involved an elementary student who was given a laptop and installed text-to-speech software (i.e., Kurzweil®). The student took the laptop home and returned it with his own games and software installed. The school-related software was gone. Lynda’s story of a senior in high school involved a situation where a parent demanded the purchase of the same software. The boy used the program twice, graduated, and the software and hardware was used very little after that. Ken shared two stories about students with hearing impairments not wanting to use auditory trainers recommended by IEP teams and purchased by the district. In each of these cases, the student abandoned the AT provided by the school. Ken and Hannah talked with the students and parents, but did not receive support from the home to continue implementing the devices. Ken’s students did not want the social stigma of wearing the auditory trainers. Hannah’s student moved to the middle school. “It
was a waste of time and energy,” she said. Lynda’s student graduated before the IEP team could make changes or work more with the student.

*Training.* Two administrators, Principal Ken and assistant principal Richard, specifically described a need for administrator AT leadership training. Other administrators implied the lack of training for administrators and teachers as a challenge. Principal Cathy said she had not been involved with AT enough to know many challenges, but spoke of training she had received as an AP and said she hoped her APs were getting similar training from central office. Assistant principal Richard expressed several times in his interview that he needed and would like more AT training, but that type of training, if available, would “not be high on his priority list.” He and assistant principal Hannah shared the philosophy that it is better for teachers to teach each other and better to send them to training (as opposed to the AP going to training) and bring the information back to the AP and other staff. At the end of his interview, principal Ken had set a goal for himself to insure AT leadership training was provided to all principals in his school district within a year.

**Interview Participants’ Advice and Recommendations**

As an emerging question during the interview process, all building administrators were queried on advice or recommendations they may have for other administrators related to the implementation of assistive technology decisions or programs in buildings. All of the participants gave suggestions for their colleagues. Hannah said that because special education is “always such a moving target...make sure you have a good group of people that you trust.” She recommended that administrators cultivate a “good
relationship" with their central office coordinators and to always follow any guidelines and manuals provided by the district offices.

Cathy suggested administrators should always consider AT in the IEP process, look at low tech options first, and be very careful in writing IEPs for students potentially leaving their school district and school. She believes that not many administrators understand the range of AT and, as a result, do not document on a student's IEP that he is using something lower tech. She has experienced this with out-of-district IEPs in the past and is now always cognizant of what should be written there.

Bob suggested building administrators should "surround themselves with experts" and utilize all available within district and out-of-district resources. His "Gestalt approach" to the principalship "applies to everything," he said. Bob does not need to know all there is to know about AT because he has available resources who do. He recommends that principals coordinate those resources and services to meet student needs. Additionally, Bob highly praised the AP delegated to the responsibility of supervising special education in his building. "I have a cannon here," he said, "I've got [the AP] managing this stuff. That prevents major issues."

Ken, like Bob, is a middle school principal. His recommendations for building administrators, however, were considerably different. Ken suggested that AT leadership training for principals should be mandatory. His mandatory training would include information on "what" AT is and "how it can benefit you." Accountability, Ken explained, requires that principals utilize every available resource to insure success on the SOLs and AYP. He believes the principal needs to have the knowledge in order to lead
decisions. "It’s scary," he said, "because I’m not able to present [information on AT] to a parent because I don’t know enough about it. If I don’t know... I need to get the training."

When Richard was asked if he had recommendations for other administrators leading AT in their buildings, he responded, "Not really." He then shared that administrators should know the importance of AT. He said, "We need to think about it more and apply it to more situations to level the playing field for kids." His message was similar to Ken’s when he said, "I could definitely use more inservice myself. You have to know about it before you can spread the word." Richard expressed his need for additional AT training but indicated getting that training was not one of his current priorities.

Lynda’s recommendations for other building administrators were similar to Hannah’s. Lynda suggested schools should have good teams. "The evaluation team has to know what they are doing and how they are doing it," she said. "Philosophically, they have to come with good, solid knowledge." Lynda praised the competence of the AT team in her building. Lynda was the only interviewed administrator who recommended utilizing state agencies as resources. The DRS and state agency for blind and visually impaired have provided her students valuable resources and AT for transition to post-high school success as well as accessibility to high school programs and activities.

Summary

This chapter presented the results of a mixed-methods research study where the researcher explored administrator perceptions of their AT background knowledge and experiences and their knowledge of the range of AT options for students with disabilities.

The Bowser and Reed (Bowser, 2004) Administrator Self-Assessment for Assistive Technology Services (see Appendix A), used for the data collection in the quantitative
portion of this study, identified four areas of expected building level leadership responsibilities and activities: *leadership, management, supervision, and program improvement*. Quantitative results were reported through descriptive statistics to answer the first research question. Appendix H contains the mean responses of the self-assessment data. An ANOVA test revealed no significant differences between mean responses for leadership responsibilities and activities and administrator role (i.e., principal, assistant principal, other) nor were there significant differences between leadership responsibilities and activities and administrator level of experience (i.e., *novice, early career, mid-career, late career*).

The qualitative results were collected through interviews using an established protocol (see Appendix B) to answer the remaining four research questions. Inductive analysis was reported through case study and deductive analysis applied identified themes and patterns to the Bowser and Reed (Bowser, 2004) self-assessment as an AT leadership framework. Cumulative theme tables addressing each of the Bowser and Reed self-assessment responsibilities and activities can be found in Appendix F. A summary of implications, conclusions, and recommendations follows in Chapter V.
CHAPTER V

Findings, Recommendations, and Conclusion

The purpose of this study was to investigate and seek to understand the varied perceptions, beliefs, and relevant AT leadership experiences from the perspectives of building administrators. In this chapter, a discussion of the study findings and implications will be presented. The findings will offer a review of the data results and analysis documented in Chapter IV and provide implications of those findings as applied to the Bowser and Reed (Bowser, 2004) AT leadership framework. Additionally, implications for leadership practices, higher education leadership preparation programs, and local and state policies and procedures are provided. Recommendations for further research are discussed and final conclusions are recorded.

Summary of Analysis of the Findings and Their Implications

Using a mixed-methods research design, this researcher explored administrators’ perceptions of their AT background knowledge and experiences and their knowledge of the range of AT options for students with disabilities. Building administrators in Region II of Virginia were queried during a pilot study in the fall of 2004 and a continuation of that study in June of 2005 using a self-assessment survey created by Bowser and Reed (Bowser, 2004) (see Appendix A). The sample for this study consisted of 114 building administrators from 15 school districts in the Region. A stratified, purposive, intensity sampling of the survey respondents were then interviewed in the fall of 2005 using an interview protocol (see Appendix B). Six building administrators representing four of the 15 school districts participated in the interviews.
Given the limitations and delimitations described in Chapter One, the results of this study are not intended to be generalizable to all building administrators, to administrators in the Commonwealth of Virginia, or to administrators in Region II of Virginia. Nonetheless, information and findings from the data triangulation of the mixed-methods design of this study provide the reader with implications for consideration. Thick description, case study, inductive and deductive analysis provide the reader with potentially useful and applicable information, thus allowing for the possibility of transferability of the findings for that reader as applied to his or her individual leadership context.

Reflection on current research and the need for the facilitation of AT decisions made in IEP meetings by building administrators yielded five research questions. Research question one querying administrators on their leadership, management, supervision, and program improvement as they relate to AT was answered through quantitative measures gathered using the Bowser and Reed (Bowser, 2004) self-assessment survey (see Appendix A) and reported with descriptive statistics. Mean responses of self-assessment items may be viewed in Appendix H. Research questions two through five were addressed using qualitative design and an interview protocol (see Appendix B). Inductive and deductive analysis of case studies was used and applied to the self-assessment as an administrator AT leadership framework. A cumulative table recording codes and themes identified during this process may be viewed in Appendix F.

Building administrators reported their perceptions of the degree of their AT leadership responsibilities and activities as being always evident, usually evident, seldom evident, or not evident on the self-assessment (see Appendix A). An analysis of the
overall results showed little variability in scores. Quantitative data results revealed that building administrators perceived their degree of leadership responsibilities (i.e., having adequate knowledge of AT, legal requirements, advocacy of AT, etc), management activities (i.e., attending to AT policies and procedures implementation, responding to parents, funding and resources, etc.), and supervision activities related to AT (i.e., ensuring AT professional development is in place, fostering collaboration and conflict resolution, etc.) as being usually evident. Participating administrators perceived their degree of program improvement activities related to AT (i.e., maintaining long range AT plans, integrating AT into IT plans and budgets, evaluating AT programs, etc.) as being seldom evident. The standard deviations were typically less than one point on the survey scale. The results of the quantitative analysis of the self-assessment (Bowser, 2004) combined with data generated from the qualitative portion of this study lead to implications for AT leadership addressed in the following sections of this chapter.

Building Administrators and AT Leadership

The administrators in this sample assessed themselves on the Bowser and Reed (Bowser, 2004) self-assessment as having knowledge of assistive technology devices, services, policies, and procedures. Overall, administrators in this study reported their degree of leadership responsibilities as related to AT as being usually evident. Differences between mean results of the surveyed leadership responsibilities and administrator roles (i.e., principal, assistant principal, other) were not significant, nor were there significant differences across levels of experience (i.e., novice, early career, mid-career, late career). Administrators assessed themselves at approximately the same level of knowledge regardless of their administrative roles or years of experience.
Individual item mean results revealed responses in the *seldom evident to always evident* ranges. Administrators in this sample reported it is *always evident* that they support faculty and staff in using AT to improve student education. This sample also reported it is *seldom evident* that they advocate on regional and state levels for AT policies, programs, and funding. Mean results for all other items on the *leadership* section of the survey were in the *usually evident* range.

What do administrators in this sample know about AT and the range of AT options for students with disabilities? Self-assessment survey results (see Appendixes A and H) and data generated from the interviews of six building administrators (i.e., Hannah and Cathy at the elementary level, Bob and Ken at the middle school level, and Richard and Lynda at the high school level) (see Appendix F) revealed that these administrators report that they always support their faculties and staff in using AT to improve educational practices for students with disabilities. They reported usually having knowledge of AT and how it benefits students is usually evident. They are aware of the legal requirements of including AT devices and tools on the IEP. The administrators in this study asserted that they promote the use of AT in collaborative classroom environments and just over half of the survey sample reported they always ensure the equity of student access to AT.

At the building level, it would appear that the administrators from this study have an adequate and practical knowledge of AT and its legal requirements for students with disabilities. Federal mandates (i.e., NCLB, IDEA) require increased integration of technology into schools. IDEA (2004) mandates the consideration of AT during the IEP process for all students with identified disabilities. According to the survey sample and
interview participants, these mandates are being met by at least some degree in individual buildings. Implications for practice and administrator training are that professional development for administrators would not necessary need to focus heavily on the definitions, importance, or legal requirements of AT for this sample.

The only self-assessment survey leadership responsibility not claimed by building administrators in this sample pertained to advocating for AT and AT programs and district plans at regional and state levels. Of the survey sample, 47.4% indicated they never advocate for AT at regional and state levels. Only 9% of the survey respondents reported they always advocate for AT outside their buildings. During interviews, none of the six participants indicated they advocate for AT beyond their buildings or for individual students (although a question about advocating outside the building was not included in the interview protocol). It may not be realistic to assume that building administrators have the time, knowledge, interest, or central office authorization to participate in AT planning and program decisions outside their own buildings. Further study is needed to investigate this aspect of potential AT leadership responsibilities for building administrators.

Another aspect of AT knowledge not fully investigated in this study was administrator knowledge of the range of AT options available for students with disabilities. Before an IEP team can recommend AT for a student with a disability, at least one member of the team must have knowledge of the full range of AT options. As evidenced during the interviews of this study, there does appear to be confusion in the field on what AT “looks like.” In the definition, legislation defines AT as being “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 individuals with disabilities" (Tech Act, 1988, § 3(2)). As Edyburn (2003a) queried, “Put another way, what isn’t assistive technology?” (p. 17). Building administrators in this study know that one purpose of AT is to level the playing field for students with disabilities but may be understandably confused over what constitutes AT and how to implement it.

Administrators in the interview sample did not give examples of the range of AT options they were familiar with and tended to focus on higher tech items (e.g., auditory trainers, computers, software) or very low-tech items (i.e., pencil grips and Velcro) in their discussions. As indicated by principals Ken and Bob and assistant principal Richard, administrators may understand the function of a specific tool or device, but only after being introduced to it through an IEP meeting or observing it in the classroom. Further investigation of administrator knowledge of the range of AT options available for students is needed.

Administrators’ lack of discussion about the range of AT options may be a reflection of the interview protocol used in this study. The interview protocol did not include a specific question querying administrator knowledge of the range of AT options for students with disabilities. Interview participant Bob shared after his interview, for example, that he was prepared with a handout given to him by one of his special education teachers. This handout listed the range of AT options to be discussed at IEP meetings in his building. Bob added, however, that he had asked the special education teacher for the handout because he knew he was not familiar with the range of AT options for students and wanted to be better prepared for the interview.
There may be additional confusion in the field on determining for which students AT should be or is being provided. Building administrators interviewed in this study spoke more frequently about students with low incidence disabilities and the AT in use by them. While there were no interview protocol questions querying administrators on the rate of AT use by students or the disabilities of students using AT, interview participants in this study, when asked about their knowledge and experiences with AT, tended to discuss students with more severe disabilities (i.e., low incidence) and their needs as examples. Lynda relayed that it is “easy” to think about using AT with students who have more severe disabilities because one can “see” the physical need for the accommodation. Only principal Cathy (who shared she did not have students with low incidence disabilities in her school) spoke specifically about students with high incidence disabilities (i.e., students with emotional disturbances, “middle of the road kids”) and their use of AT. Throughout her interview, Cathy emphasized the need for IEP teams to recognize low-tech AT as options for students, and to consider low-tech options (e.g., pencil grips) first. She added that she has observed transfer students using or needing AT not documented on a transfer IEP from another school district. Knowledge of the range of AT options as well as for whom AT is or should be used with are valuable topics for IEP team professional development.

Building Administrators and AT Management

Results of the self-assessment survey (Bowser, 2004) revealed that management of AT was perceived as being usually evident by administrators in this study. Managing AT includes being responsive to the necessary funding and resources, and policies and procedures associated with acquiring and maintaining AT for students with disabilities.
Leaders who manage AT programs ensure data is used in making decisions and that those decisions are cost-effective. Overall, administrators in this study reported their degree of management activities as related to AT as being usually evident.

Individual self-assessment item mean results revealed responses in the seldom evident to usually evident ranges. Administrators in this sample reported they usually ensure appropriate responses to parent requests for AT and usually require the use of data in decision making. Additionally, sample administrators indicated that they usually ensure the provision of written AT guidelines as well as time for AT implementation. Conversely, the administrators in this sample reported they seldom develop, implement, and monitor written AT guidelines, allocate funds and human resources for AT, or recruit professionals with AT knowledge and skills.

Fiscal implications. Assistive technology can be difficult to obtain and highly expensive. While school districts ultimately fund the expense, decisions made about which devices to obtain are made at the building-level by IEP teams. Building administrators, typically assistant principals, lead these teams and facilitate these meetings. Administrators must ensure that cost effective approaches and data-based decisions are used in determining the need for instructional services for students. Given IDEA (2004), NCLB (2001), and the mandate to use evidence-based practices in decision-making, it may be interpreted that making AT decisions should also be evidence-based. Inge and colleagues (2004) reported that most Virginia school district administrators relied on their central offices to approve, fund, and supply AT for students. Interview participants for this study relayed the same information and expectations indicating they do not have their own “AT Budgets.” There is a disconnect between
requiring AT decisions to be made by IEP teams at that building level and the subsequent need for central office approval of those decisions.

Interview participants in this study knew they needed to lobby their central offices for additional resources. "It doesn’t hurt to ask," said assistant principal Richard when speaking of requesting AT for the students in his building. As fiscal managers, building administrators must be responsible in requesting AT devices and tools and must insure that the requests are supported by documented observation, trials, and evidence. As indicated by Hannah and Lynda, there is "power" behind evidence-based decisions and justification for or against an AT device is necessary for central office and parents. As leaders and financial managers, building-level administrators must be cognizant of the potential cost for all technology used within their schools, and AT decisions and requests cannot be made without the data and evidence to support the need.

Device abandonment. Further evidence to support the need to use data in making AT decisions is the reality of device abandonment and rejection. Students abandon AT devices and tools at a rate of 8-75% (Judge, 2002). Hannah, Ken, and Lynda in this study shared stories of students abandoning IEP team-recommended devices and the impact of that cost on their schools and districts. Implications for practice include the need for districts to have written policies and procedures and for administrators and IEP team members to be trained in the procedures. Having a better understanding of AT and following district guidelines and procedures for evaluations may help to limit the abandonment of devices and tools provided as accommodations on an IEP.

The literature supports that students are more likely to reject or abandon an AT device or tool when appropriate AT evaluations are not conducted (Reimer-Reiss, 1997;
Reimer-Reiss & Wacker, 2000). While legislation does not mandate state or local AT policies and procedures (Bowser, 2003; Edyburn, 2005a), fiscally responsible building administrators must be aware of and enforce the need to include the student, the student’s family, and a consideration of the student’s culture in AT decisions prior to purchases and implementation (Parette & McMahan, 2002). If a student does not want to use a device, the student will not typically use it. Given the hundreds and sometimes thousands of dollars AT devices can cost, school districts cannot afford to have a student abandon or reject AT.

Scherer (2004) wrote that creating successful learners starts with ensuring supportive conditions and environments are in place. Before matching an AT device to a learner, an AT assessment should take place (Bowser & Reed, 2004; Castellani, 2005; Edyburn, 2005; Scherer, 2004, 2005). While there are many free assessment tools available (e.g., see www.wati.org), basic assessment components should include:

- Determining the student’s current skills and functional capabilities, as well as deficit skills (i.e., What is it that the student cannot do without the assistance or addition of technology?);
- Describing how the deficit skill interferes with the student’s ability to access and progress in educational settings;
- Noting what is currently being used, what has been used in the past, and the results of those trials;
- Conducting trials utilizing a continuum of technology (e.g., low-to-high-tech options) in all of the student’s educational environments where technology might be needed.
Building Administrators and Supervision

Building administrators are required to supervise building-based programs for students with disabilities. The *supervision* of AT programs includes ensuring staff have the necessary level of AT understanding to provide for their students’ needs, ensuring legal and ethical AT implementation, facilitating and supporting collaborative environments, managing conflict, and addressing and including AT in faculty evaluations (Bowser & Reed, 2004). Although there was greater variability in the responses to this section of the Bowser and Reed self-assessment survey (Bowser, 2004) than within other sections, overall, administrators in this study reported their degree of *supervision* activities as related to AT as being *usually evident*.

Individual item mean results revealed responses in the *seldom evident* to *always evident* ranges. Administrators in this sample indicated that they always ensure the ethical and legal implementation of IEPs when AT is included. Conversely, it was reportedly *seldom evident* that administrators in this sample include AT as part of staff evaluations and supervision or that they specifically assess their staff members’ AT knowledge and skills. All other mean results for individual items in this section were reported in the *usually evident* range. Sample administrators reported that they usually ensure staff and faculty have an understanding of AT, facilitate and support collaboration in AT-rich environments, foster a school environment low in conflict, and use assessment results to make informed decisions about personnel assignments, responsibilities and needs for training.

Interview participants Richard and Bob indicated in their interviews that they were not experts in AT. In fact, both of these administrators produced self-assessment

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results in the lower quartile of the study sample. As an assistant principal, Richard stated he did not service students directly and therefore was not an expert in the provision of those services. Bob emphasized his philosophy of being surrounded by experts so that he would not have to be in expert in all areas. If we are to expect building administrators to be leaders for programs in which they do not have expertise, we must include within administrator training how they need to ensure others in their buildings have the level of knowledge needed to ensure the success of the program.

In a unified system (Burrello, Lashley, & Beatty, 2001), the school and community carry the responsibility of ensuring student success. Administrators in this study provided evidence that they recognize the importance of AT. They must also become committed to hiring AT competent general and special educators (Bowser & Reed, 2004). Not everyone on the IEP team, administrator included, need be an expert in AT for appropriate decisions to be made for students. As building administrators are those ultimately responsible for decisions made by IEP teams, they must ensure that there is at least one person at the IEP table who can speak to the AT device or service being considered.

Principals should ensure resources, training, and information are available to AT service providers. Few Virginia school district central offices, however, have provided training to all service providers and IEP team members (Inge, 2003; Inge, et al., 2004). Nationally, assistive technology direct service providers have reported they do not receive enough training to do their jobs effectively (Bausch & Hasselbring, 2005). It is not known the extent to which participants interviewed and surveyed for this study have received recent AT-specific training from their central offices for themselves or their
faculties, however, interview participant Hannah expressed that she has not received AT leadership training from her central office. Principal Bob and assistant principal Richard stated they have not sought formal AT training. Principal Ken relayed he has not received technology or AT training but plans to actively seek it. As members of the IEP team, administrators must ensure access to resources and the expertise of outside sources, lead by example, model technology use, and support a culture where the use of AT is encouraged and supported for students (Bowser & Reed, 2004). To provide this leadership to AT service providers, administrators need AT leadership training.

When there is lack of direction and support from a district office, principals must take the initiative to be educated about special education programs. Especially for smaller school districts where central office AT support may be minimal, building administrators must know where to find the resources and expertise needed to make decisions for students with disabilities. Not all Virginia school districts in this study had AT Coordinators in place at the central office level (e.g., interview participants Cathy and Bob) or written AT policies and procedures. For administrators in those districts, and as stated by three administrators interviewed for this study (i.e., assistant principal Hannah, principal Ken, and assistant principal Richard), there is a need for leadership training to foster appropriate, cost-effective decisions for students with disabilities.

In this study, Ken spoke in depth about the importance of the administrator having enough knowledge and background to lead decisions and influence policy. He would not need to be an expert in AT, but “…to lead the implementation of any new educational practice, the principal must not only keep abreast of trends and changes in the field, but must take an active leadership role” (Peterson, et al., 2000, p. 16). That leadership role
would require training for the principal, assistant principal, and faculty IEP team members.

**Building Administrators and AT Program Improvement**

Using the Bowser and Reed self-assessment survey (Bowser, 2004), building administrators were queried on activities related to program improvement and its relationship to AT. Administrators responsible for program improvement activities maintain processes for AT plans, identify and remove barriers, ensure evidence-based service delivery, and continually assess and evaluate programs, services, and for training needs. Overall, administrators in this study reported their degree of program improvement activities related to AT as being seldom evident.

Individual self-assessment item mean results ranged from seldom evident to usually evident in this section. Administrators reported that they usually identify and remove barriers that prevent the effective delivery of AT and ensure the use of evidence-based practices. All remaining items were recorded in the seldom evident range. This sample reported it is seldom evident that they maintain comprehensive, long-range, system-wide AT processes and plans. It is seldom evident that administrators use multiple methods to assess AT resources or evaluate AT services, assess AT training needs of their staff, ensure the provision of AT professional development, or implement procedures to drive continuous improvement of AT systems and replacement cycles. Finally, it is seldom evident that administrators integrate AT into strategic, technology, or other improvement plans.

The fewest number of surveyed building administrators responded to the items on this section of the self-assessment. Eleven respondents skipped all or part of this section
of the survey. One administrator wrote on her survey that the activities in the program improvement section were taken care of by her central office. Another wrote “N/A” for all items in that section. An elementary principal wrote on her survey that she had “no control” over the activities listed in that section as her central office maintained responsibility for those expectations. Yet another principal wrote, “...these questions don’t address knowledge; they address the ability to be able to do these tasks, which in [school district] is determined by [my central office].” Clearly, for many administrators in this sample, program improvement for AT programs is not seen as a building-level activity. This administrator expectation of district office responsibility could account for the seldom evident responses on the survey. It would not be likely, nor would it be reasonable to assume that building administrators would accept the responsibility of maintaining long-range, system-wide plans or integrating AT into strategic, technology, and improvement plans if such integration is a central office staff activity.

Inge (2003) reported that suggestions have been made to the Virginia Department of Education (VDOE) to develop AT technical assistance guidelines and documents for Virginia school districts. Additionally, as indicated in her study, Inge found that not all school districts have AT written policies and guidelines in place. In this study, 72.5% of the survey sample reported they seldom or do not maintain comprehensive processes to develop, implement, or monitor long-range, system-wide AT plans. Survey participants (i.e., 70.9%) seldom or do not implement procedures to drive continuous improvement of AT systems and replacement cycles. Finally, 64.4% seldom or do not integrate AT into strategic, technology, and improvement plans. Whether provided by VDOE or through
individual district offices, clearly, the administrators in this study do not represent a sample pursuing the program improvement of AT.

The lack of direction on AT implementation and program evaluation from the VDOE and from district central offices creates a barrier to the provision of consistent, efficient, and effective program services at the building level. Interview participants (i.e., principals Cathy and Bob) spoke of a lack of consistency and direction in their districts. Assistant principal Hannah shared that the guidelines provided her by her district office are an essential tool for AT implementation; however, she still heavily relies on her AT coordinator for support and advice. Hannah's reliance on central office staff and Cathy and Bob's lack of district direction and consistency may prevent these administrators from autonomous AT leadership and result in further dependence upon central office staff or other outside resources. In school districts where there is dependence on the central office for advice, recommendations, and approval, however, there may be more consistency between buildings for AT decisions made.

Recommendations & Conclusions

What should administrators know about assistive technology? Several questions surfaced following the analysis of the findings for this mixed-methods study:

- How much must a building administrator know in order to successfully lead AT decisions for students with disabilities?

- How much training would be required to provide that knowledge and by whom should that training be provided?
• Should districts require that administrators receive AT leadership training? If so, how can required training be integrated into the already satiated schedules of busy building administrators?

• What resources do individual building personnel in Region II have access to, and what resources are still needed?

• How can districts be encouraged to include AT into their instructional technology plans and programs?

• How should regional, state- and federally-funded organizations (e.g., VDOE Training and Technical Assistance Centers), colleges, universities, and the Virginia Department of Education become involved in providing guidance, guidelines, training, and the facilitation of policy change in order to support the integration of AT into existing district procedures, policies, and standards?

These questions influenced the following discussion of recommendations on what building administrators, central office staff, and state officials can do to increase AT knowledge and integration into schools.

Bowser and Reed (2004) recommended administrators must have a basic understanding of legislation, services, funding, and an understanding of district policies, practices, and guidelines. The results of the Inge (2003) study documented the need for district-wide training, additional staffing, funding, and time to be considered for the successful integration of AT. Interview participants in this study suggested a lack of time, administrator knowledge, funding, and consistent procedures presented barriers to providing and ensuring the implementation of AT. To improve overall knowledge of AT and services and work towards integrating AT into the general education curriculum,
administrators must build capacity and foster autonomy among their staff and lobby to integrate AT into IT budgets and district implementation plans. Higher education programs need to include AT training in their administrator technology training as a strand of professional development, and technology standards for administrative and instructional personnel must clearly specify AT knowledge requirements.

Reasonable expectations for building administrator involvement in AT decisions made for students with disabilities must be considered. While individual responsibilities would be dependent upon the size of the IEP team, the school, and the support or lack of support from central office staff and resources, the following are general recommendations for building-level leaders for AT leadership. To insure consistency within and between buildings and foster effective and appropriate AT decisions, building administrators should:

- Assess building needs and conduct an inventory of what is in the building;
- Determine what resources (i.e., human, funding, materials, devices, and services) are available at the building level;
- Determine what resources (i.e., human, funding, materials, devices, and services) are available through central office or at the district level and to whom one should address questions;
- Determine if district AT policies, operating procedures, or guidelines are available. If so, insure there is a written copy in the building. Know the suggested or division-mandated process for making AT decisions for students with disabilities. Know the procedure for managing AT replacement cycles and contracts;
• Insure IEP teams make AT decisions for hardware and software that are compatible with existing instructional technology district and/or building networks;

• If written guidelines or procedures are not available at the district level, ask for them. Suggest the creation of an AT Task Force for establishing written procedures for the division. If written guidelines or procedures are incomplete or ambiguous, encourage that an AT Task Force create operating guidelines that are understandable and manageable for building-level leaders and staff;

• Foster the establishment of an AT Task Force or team within the building. Insure that the necessary training, time, and materials are provided for its success. Utilize the expertise of team members to build capacity within the building; and

• Insure there is always an AT-knowledgeable team member at all IEP meetings to specifically address the AT device or service being considered for a student.

As building administrators consider the above suggestions, further clarification and additional information on individual suggestions follows.

Build Capacity and Foster Autonomy

For IEP teams to make appropriate decisions at the building level without having to rely on outside sources for assessments and decisions, districts need to foster autonomy and build capacity among their building administrators through professional development. Building administrators should have access to resources in order to provide assistance to their teachers. Determining the need for AT begins with considering the individual needs of the student. The IEP team must talk about a student’s strengths,
needs, skill deficits, and the environments in which the student works where those skill deficits adversely impact educational or functional performance.

Models available for assessment (e.g., Wisconsin Assistive Technology Initiative (WATI), Student, Environment, Tasks, Tools (SETT) framework, or the Human Activity Assistive Technology (HATT) model), focus primarily on the process of determining a student's need for AT. Those same models, however, may provide little support to IEP teams on interventions (Edyburn, 2005b) and on evaluating AT programs and resources. Potentially beneficial for building administrators and IEP teams would be the creation and use of a tool or process to assist IEP teams and leaders in making the connection between determining the need for and obtaining an AT device and assessing the device's continued relevance for the student as well as its application for use within the classroom and curriculum. For example, an IEP team may determine through an evaluation process that a student with a disability requires the use of a piece of software (e.g., Boardmaker®) and hardware (e.g., an Intellikeys® keyboard) to augment the student's communication abilities. While acquiring the AT requires an IEP decision and the potential processing of a purchase order, the challenge for the AT users often begins when the AT devices reach the classroom.

A tool or process is needed for IEP teams to continue evaluating the AT products(s) chosen for a student as a product determined useful one year may become outdated or no longer appropriate the next. Additionally, while a student's teacher or related services provider one year may be well versed in the use and application of a student's AT device, a teacher the following year may not be. AT program evaluation should include a plan of action for AT device selection, acquisition, and services to
include training on the use and application of AT devices for individual students and their teachers each year.

If we are to assume that administrators are responsible for building capacity within their buildings and surrounding themselves with experts in those areas where they have little background and experience, training for IEP team members is essential. Important to remember, however, is that not every member of the IEP team requires the same level of AT knowledge. Administrators need to observe and ask questions. They need to ask to be shown new devices that come into the building and about their relevance, application to the curriculum, and integration. As interview participant Ken suggested, administrators need training on more than the "what" of AT—they need to know the "why" and how the tool or service can benefit the student, the teachers, the family, and the school. Training for all IEP team members must focus on not only the learning of particular low-, mid-, and high-tech devices but also on the application and integration of those devices into the general education curriculum.

Integrate AT Plans and Budget with Instructional Technology

There is confusion over knowing the difference between low-, mid-, and high-tech AT and between AT and instructional technology. Computers, software, devices, and technological tools may be available for all students in the classroom, but these same devices may be required as AT for students with disabilities and therefore need to be documented as such on an IEP. To foster cost-effective decisions, administrators need to be able to recognize and insure recognition of the difference between AT and IT and to integrate assistive technology decisions into those decisions made for instructional technology.
Few Virginia school districts integrated their AT plans into the district’s overall technology plan, and 20% of special education directors reported their district had no AT plan at all (Inge, 2003; Inge, et al., 2004). Additional considerations should be given to the likelihood that eventually, an AT device or tool will need to be replaced or updated. Conducting a needs assessment and completing an AT inventory for the building would be an appropriate place for administrators to begin. They should determine which students have AT written into their IEPs and which students are using instructional technology. The administrator should determine if the professionals in the building have an adequate knowledge of AT to provide their services. The principal or assistant principal should then reflect on the training that can be provided at the building level to meet identified needs and contact outside sources and resources if building-based training is not available.

Obtaining an inventory of the district-wide available resources would be an appropriate subsequent step. The administrator should discover if there are local AT procedures in place, and if not, become involved in developing them. Universal design should be considered and the district technology supervisor, coordinator, and/or director should be involved. The procedures should identity that IEP teams consider low-tech items and what is available in the building before requesting the purchase of other AT and that evidence for student need be produced when making AT requests for purchases. Administrators willing to be part of an AT advisory committee for a school district can become part of a collaborative effort that ultimately provides for individual identified needs at the building level.
Finally, administrators must always consider universal design and UDL when making decisions about technology as all classrooms contain students with and without identified disabilities. Universal design and UDL ensure the delivery of products and services (i.e., curricula and technology) that are accessible by all students. The IDEA (2004) emphasizes the need to integrate UDL into curricula design. District IT departments should train faculty and administrators on the available accessibility options for software and hardware, thus potentially eliminating the need for the purchase of other special education specific software. Software purchased for network loads should be reviewed for accessibility and appropriateness for all grades and levels. Hardware and equipment purchases typically considered as special education or assistive in nature (e.g., Dragon Naturally Speaking®, Alphasmart® portable keyboards, Intellikeys®) can be beneficial for all students and meet the AT needs of students with disabilities.

To ensure that AT software purchases are compatible with existing district technologies, administrators and Central Office personnel must work alongside their information technology (IT) colleagues when considering the installation and implementation of all technology programs. Procedures mandating the selection and acquisition of software, for example, should become part of both IT and AT programs. When the special education and IT departments work cooperatively, decisions can be coordinated to benefit all students. While universal design will not eliminate the need for AT for all students, it can potentially decrease the need for AT for many and will benefit all students who are given access to it.
Policy and Legislation

Legislation (i.e., IDEA, 2004; ADA; Section 504) and state regulations require that assistive technology be provided for students with disabilities; however, schools may not be prepared to do so. “Special education program development often hinges on the role, support, interest, and expertise of the principal, which varies from school to school” (Patterson, et al., 2000, p. 15). Yet, there are no federal mandates to monitor the implementation or integration of AT at the building or individual student level (Bowser, 2003; Edyburn, 2005b; McMahon, 2004; Peters, 1999).

Consistent service delivery within and across buildings in school districts will enable appropriate decisions for students with disabilities. At the district-level, however, central and special education offices are not consistently providing training, written procedures or policies to building administrators (Inge, 2003; Inge, et al., 2004). Policies to address the implementation and provision of AT must be developed through the collaborative efforts of building and district administrators and building teams. Administrators must know how and when to ask for help and where to go to get it. They need to assume greater responsibility for special education programs in their schools and understand the differences between what is “fair” and what is needed for a student with a disability (Byrnes, 2000).

AT effectiveness. No Child Left Behind (2001) called for a national study of the effects of educational technology on instruction. Fifteen million dollars has been set aside to study technology through rigorous, scientifically-based methodologies (as cited in Bailey, 2004). Legislation does not, however, require that data be collected to determine the effectiveness of AT for students. While assistive technology is not specifically
addressed in NCLB’s educational technology study, it would be appropriate for the
effectiveness of AT and universally designed products to be included. The Quality
Indicators for Assistive Technology Services (QIAT) Consortium (2004) recommended
that AT be included in district-wide technology budgeting and planning but only 37.4%
of school districts in Virginia are doing this. (Inge, 2003; Inge, et al., 2004). In order to
provide for NCLB’s goals for continued and increased use of technology and to study the
benefit of using technology to facilitate access to the general education curriculum, AT
must be used appropriately and documentation of the effectiveness of that use is essential.

Study participant Ken suggested, “If it isn’t mandated, it doesn’t get done.”

Without systemic commitment to achieve outcomes, there is little likelihood of change or
success in implementing AT as a building-based program. Collaborative efforts in
delegating responsibility and determining policy will ensure that school-based personnel
know where to obtain resources, whom to speak with when AT questions arise, the
criteria used for making AT decisions, and those responsible for monitoring devices and
services when in place. Building administrators, as the leaders in the field must be part of
the collaborative efforts to establish policies and procedures for school districts.

Technology standards. Professional leadership standards suggest administrators
promote student achievement, foster collaborative environments, and communicate
vision. Virginia and national technology standards suggest technology be integrated
throughout the curriculum as well as within the professional realm of education. National
assistive technology standards propose AT be developed and implemented by
administrators responsible for its provision (i.e., CEC, QIAT) and promote the need for
administrators to have knowledge in AT services and devices (i.e., NASDE, 1998). The
Commonwealth of Virginia has mandated technology standards for teachers and administrators ("Technology Standards for Instructional Personnel," 1998), but AT standards have not been established in the state. While the Virginia Assistive Technology System (VATS) (Commonwealth of Virginia, n.d.) provides suggestions for district AT policy, it does not provide guidelines or instructions for implementation and continued evaluation of AT programs specific to a district.

National and state organizations have established standards for leadership and technology, and some have implied the inclusion of assistive technology in their standards. With the federal push for universal design for learning and mandated IEP team consideration of AT for students with disabilities, national and state technology standards must be revised to include AT and technology for differentiated instruction. In the interim, it is imperative that general education administrators apply AT mandates and standards to their leadership practices, supervision, and evaluation of personnel and programs.

**Higher Education Leadership Preparation Programs**

Pre-service education programs are the ideal time and place to offer initial training in AT (Inge, et al., 2004). Additionally, given the emerging and changing nature of AT and continual advancements and improvements in the technology field, there is a need for higher education coursework and continuing education offerings for technology leadership. Edyburn (2003a) suggested that the IDEA mandate to add the consideration of AT to the IEP process effectively added 3.8 million students with high incidence disabilities (e.g., learning disabilities, speech language impairments, other health impairments) to teacher AT caseloads. Despite the increase in AT numbers, evidence
does not suggest that additional AT trained personnel are available to provide leadership to these teachers and schools. Higher education coursework and licensure trainings should include the strategies, experiences, and requirements needed for administrators to provide effective instructional leadership for all building-based programs.

Instructional technology training offered to general education leaders has been documented as having a positive influence on technology integration in schools (Dawson & Rakes, 2003). Including AT and universal design in technology coursework and training would make an effective use of time for administrators and provide necessary application for building leaders to understand how AT can be integrated into IT. In keeping with UDL, LRE, and an inclusive philosophy, it would be wise to include AT in technology coursework and training.

Assessing Administrator AT Knowledge & Skills

Using the Bowser and Reed (Bowser, 2004) self-assessment as a research tool for this study was beneficial for gathering initial data on building administrator perceived AT knowledge. Additionally, the data obtained from the surveys provided a starting point for choosing interview candidates. The self-assessment alone, however, may not capture the breadth and depth of what building administrators must know about AT or provide enough practical information for individuals, districts, or states to determine professional development or resource needs for administrators. Ken, whose self-assessment results placed him in the upper quartile of respondents, indicated he became aware of how much he did not know about AT after reading the interview questions and realizing those questions would be difficult for him to answer. He explained in his interview that he
thought he was well versed in AT. Following the interview, however, he vowed to seek additional training related to AT device identification, processes, and services.

It is this researcher's recommendation that interviews, reflective narrative responses, and additional categorical items be combined with or follow the future collection of data from the Bowser and Reed survey in order to specifically define respondents' level of knowledge, skills, and most importantly, needs. Additionally, questions on the level of training an administrator has received and where or by whom that training was provided would provide evidence for a school district or state agencies to plan professional development for building leaders. Finally, the authors of the self-assessment may wish to consider revision of the program improvement section to include descriptors of building-based AT advocacy rather than district- or state-wide AT advocacy. Items querying administrators on whether or not they ensure the inclusion of AT-knowledgeable staff for AT decisions as well as who those people are would be beneficial. Finally, building administrators in Virginia are not given the responsibility to work with regional or state groups to develop or implement programs beyond the building level. The program improvement items, as currently written, are better suited for response and reflection by central office coordinators, specialists, and directors.

**Future Research**

Future research should focus on determining the effectiveness of AT, how AT devices and services are applied to the curriculum, and to what degree students with disabilities have access to AT. “As useful as technologies are, we still do not know enough about how they affect the individuals who use them” (Scherer, 2005, p. 196). Studies conducted on determining the number of students with disabilities using AT in
schools and the effectiveness of those devices can provide valuable information for IEP teams. Determining if those students in need of AT devices and services have access to those devices and services will provide data for districts and states to seek funding and methods to assist schools and students in obtaining IEP-mandated AT.

Lack of parental support and student cooperation emerged as a perceived challenge among administrators in this study. Additionally, interviewed administrators spoke of a social stigma evident among some student AT-device users. Continued research on device abandonment with a focus on what IEP teams have done to prevent or manage rejection and abandonment will be essential as emerging technologies become more expensive and higher-tech. The range of AT available options and student, family, teacher, and administrator knowledge of those options must be further investigated. Continued investigation of middle and high school student perceptions of the devices they use is warranted.

Additionally, future research should focus on furthering AT leadership competencies as well as AT program development. Extensive research on AT leadership, especially with those leaders at the forefront leading special education and AT decisions in schools is needed to determine the types of training principals and assistant principals need to continue as effective leaders of special education programs. Interviewing those administrators responsible for success AT building-based programs would provide valuable resource information and advice for other administrators and districts. Studies focused on how school districts fund AT may provide colleagues suggestions on how to acquire and access needed low- to high-tech devices. Studies querying how building administrators initiate, evaluate, and improve new and existing AT student-specific and
district- or building-wide AT programs may provide AT leaders suggestions on how to integrate AT into strategic, instructional technology, and improvement plans and policies.

Closing Comments

As school districts work to meet federally mandated standards and provide access to the general education curriculum, they must also consider adaptations and modifications to that curriculum for students with disabilities. Assistive technology can provide the necessary accommodations, tools, devices, and services needed by a student with a disability to engage and ensure that student’s success and achievement, but are administrators prepared to lead and facilitate building-based AT decisions? School principals and other building administrators are under increasing pressure to ensure that the provisions, mandates, and accountability requirements of IDEA (2004) and NCLB are observed. With emerging research on effective teaching and leadership in schools and changing special education legislation, administrators face increasingly complex challenges to remain well informed. The need for teacher collaboration, ambiguous definitions of LRE, and accountability requirements confound administrator responsibilities.

Managing special education and leading AT decisions for students with disabilities become the responsibility of the principal or the principal’s designee; often the assistant principal. In this era of standards-based reform, federal mandates for accountability and making data-based decisions require building administrators to be aware of available technology and how technology can be used to provide access for student learning and raise student achievement. Time constraints, parent and community expectations and pressures, and district, state, and federal mandates pull an administrator
in more directions than can be manageable. How does an administrator fit all of these mandates and responsibilities into an already replete schedule?

Administrators must be effective and proficient in leading AT decisions for students with disabilities. The majority of administrators in this study did not receive AT leadership training, nor have they had experience in the provision and evaluation of AT programs and services. If today’s building administrators are expected to continue as the leaders of special education programs, they must embrace AT as part of the school and division’s instructional technology, continually seek training for themselves and their staff, foster collaboration in technology-rich and universally designed environments, and encourage practical, data-based, cost-efficient and appropriate uses of AT. Building administrators should not, however, be expected to manage AT as an initiative or program in isolation of district, regional, and state resources and supports.

Burrello, Lashley, and Beatty (2001) wrote of the importance of a unified school system where resources are provided from within a building and throughout a community for the benefit of all children. In a unified school system, building and central office administrators and staff engage in discussion, problem-solving, and policy-making with regional and state professionals and organizations, experts in the AT field and content areas, and instructional technology support teams to ensure a collaborative effort is put forth to create practical, reasonable, and understandable operating guidelines and procedures for AT integration. We are looking for and expecting effective, legal, ethical, and cost-efficient AT decisions to be made at the building level. These decisions must be made by teams with building administrators participating at a level and to a degree appropriate to the individual leader and the needs of that leader’s building.
**APPENDIX A**

**Administrator Self-Assessment for Assistive Technology Services**

Please complete the following self-assessment regarding your knowledge of assistive technology services. The information provided here will help the researcher in assisting school divisions to forecast the types of assistive technology training administrators require in order to meet the needs of students with disabilities. Your participation in this study is voluntary, is appreciated, and you may choose to skip any question you do not wish to answer. All responses are strictly confidential and will be reported only as characteristics of the sample as a whole.

<table>
<thead>
<tr>
<th>Leadership And its relationship to AT services</th>
<th>Always Evident</th>
<th>Usually Evident</th>
<th>Seldom Evident</th>
<th>Not Evident</th>
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<tbody>
<tr>
<td>1. I know what AT is and how it can benefit students with disabilities.</td>
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<td>2. I know the legal requirements to provide AT for people with disabilities and the implications for my program.</td>
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<tr>
<td>3. I facilitate the shared development by all stakeholders, including students and families in development of a vision for AT use and widely communicate that vision.</td>
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<td>4. I identify, communicate, model, and enforce social, legal, and ethical practices to promote responsible use of AT.</td>
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<td>5. I support and encourage the functional use of AT in customary environments.</td>
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<td>6. I support faculty and staff in using AT to improve the education of students with disabilities.</td>
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<td>7. I publicly acknowledge the importance of AT and highlight student achievements that result from its use.</td>
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<td>8. I ensure equity of access to assistive technology devices and services.</td>
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<td>9. I advocate on regional and state levels for policies, programs, and funding opportunities that support implementation of the district AT plan.</td>
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<tr>
<th>Management And its relationship to AT services</th>
<th>Always Evident</th>
<th>Usually Evident</th>
<th>Seldom Evident</th>
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<tr>
<td>10. I develop, implement, and monitor policies and written operating guidelines to ensure legal, ethical and cost-effective AT services.</td>
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11. I ensure that written guidelines include processes for AT consideration during the IEP meeting, AT assessment, sources of AT for trial use.

12. I ensure that all appropriate employees know how to respond to a parent’s request for AT.

13. I require that staff use data to make AT decisions.

14. I allocate funds and human resources for the implementation of AT services.

15. I make time available for staff to plan for the implementation of AT services.

16. I ensure that AT services are provided in a cost-effective and efficient manner.

17. I recruit professionals with AT skills when hiring new staff.

**Supervision**

**And its relationship to AT services**

18. I ensure that all staff, including general education teachers, have the necessary level of understanding of AT to fulfill their role in the provision of AT services.

19. I ensure that all staff members who serve a child with a disability implement IEPs that include AT in a legal and ethical manner.

20. I facilitate and support collaboration in AT-enriched environments to improve learning for students with disabilities.

21. I foster a school environment that has a low level of conflict and aid in conflict resolution when AT issues arise.

22. I address AT as part of staff evaluation and supervision.

23. I assess staff members’ knowledge, skills, and performance in using AT.

24. I use assessment results to make informed decisions about personnel assignments, responsibilities and needs for training.

**Program Improvement**

**And its relationship to AT services**

25. I maintain a comprehensive process to develop, implement, and monitor a dynamic, long-range, and system-wide AT plan.

26. I ensure the use of evidence-based practices of AT services.
27. I identify barriers to the effective delivery of AT services and develop plans to remove them.

28. I use multiple methods to assess and evaluate appropriate uses of AT resources.

29. I assess AT training needs for all staff.

30. I ensure that AT is part of school-wide professional development and encourage staff members to pursue AT training when appropriate.

31. I conduct ongoing evaluation of AT services.

32. I implement procedures to drive continuous improvement of AT systems and to support AT replacement cycles.

33. I integrate AT into strategic plans, technology plans, and other improvement plans and policies to align efforts and leverage resources.

Your role: Principal  Assistant Principal  Other:____________________

School Level: Elementary  Middle School  High School

Building Student Population Size:__________ Sped Population Size:_____

Yrs of Admin Experience:_____

The following information will only be used for the random drawing for the free training session and for selecting interview participants.

Name:________________________________________

Name of School:________________________________

School Division: _______________________________

APPENDIX B

INTERVIEW PROTOCOL

Thank the participant and reiterate the voluntary nature of the study and the confidentiality of the participant’s responses. Indicate that this is a naturalistic study and as such the researcher is interested in understanding participant perceptions and experiences.

Ask general background questions to allow participant to develop a comfort level (career goals, professional experiences, etc.). Introduce the study with the following statement:

The purpose of this study is to understand the varied perceptions, beliefs, and AT leadership experiences building administrators have. I’m wondering what knowledge and experiences you have as the leader responsible for leading IEP meetings, and what you may know of assistive technology and the range of assistive technology options available for students with disabilities in your building.

Opening question: “Would you describe for me an IEP meeting during this past school year where an AT device or service was discussed or selected for a student?”

Ask for clarification and/or elaboration on the opening question to allow for emerging responses related to the range of AT options available for students, allocation of resources, etc.

Ask all follow-up questions:

“Where have you gained your knowledge of assistive technology and its application or usefulness for students with disabilities?”

“How do you perceive your leadership role for the facilitation of assistive technology decisions made for students with disabilities?”

“What challenges or barriers, if any, do you perceive exist in supporting assistive technology integration at the school level? How have you responded to those challenges?”
### Comparison of Administrator AT Competencies with State and National Professional Standards and Indicators

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<td>Develops and plans for long range AT vision</td>
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<td>Fosters responsible, data-based, decision-making for AT implementation and practices</td>
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<td>Develops written procedural guidelines for AT and broadly disseminates information</td>
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<td>Advocates for AT on local, regional, national levels</td>
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<td>Knows legal requirements for AT implementation</td>
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<td>Develops and implements plan to provide instructional and assistive technologies</td>
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<td>Recruits general and special educational</td>
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<td>professionals with AT knowledge and</td>
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<td>Promotes AT to enhance and support higher</td>
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<td>Facilitates and supports AT-rich,</td>
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<td>collaborative environments</td>
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<td>Provides for learner-centered environments</td>
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<td>to meet individual student needs</td>
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<td>Ensures faculty receive training for use of</td>
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<td>Models effective, ethical use of AT</td>
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<td>Maintains awareness of emerging AT and their</td>
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<td>uses for students with disabilities</td>
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<td>Develops, implements, monitors policies to</td>
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<td>Allocates resources for AT implementation</td>
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<table>
<thead>
<tr>
<th>Task</th>
<th>Rating</th>
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<tbody>
<tr>
<td>Integrates all technology plans into district strategic plans and budgeting processes</td>
<td>+</td>
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<tr>
<td>Implements procedures to drive continuous improvement to AT plans and provide for replacement of AT devices and tools</td>
<td>+</td>
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<tr>
<td>Uses multiple methods to assess and determine appropriate AT for students with disabilities</td>
<td>+</td>
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<tr>
<td>Assesses faculty knowledge of AT and uses data to drive professional development for AT use</td>
<td>+</td>
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<tr>
<td>Ensures equity of access to AT</td>
<td>+</td>
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<tr>
<td>Includes AT knowledge and practices in evaluations of faculty and staff</td>
<td>+</td>
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<tr>
<td>Addresses and provides for scarcity of resources (i.e., human, financial, time, availability of devices)</td>
<td>+</td>
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<tr>
<td>Ensures principal or AP actively supervises AT</td>
<td>+</td>
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<tr>
<td>Eliminates barriers through coordinated efforts with available resources and collaborative decision making</td>
<td>•</td>
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<tr>
<td>Provides for individual student follow-up for AT once devices and services are in place</td>
<td>+</td>
</tr>
<tr>
<td>Uses technology to manage programs and resources</td>
<td>•</td>
</tr>
<tr>
<td>Identifies, models, enforces legal, social, ethical practices for AT identification, acquisition, and use</td>
<td>•</td>
</tr>
</tbody>
</table>

*Note.* • = Competency/indicator is directly stated in professional standards. + = Competency/indicator is implied in professional standards. Many professional standards addressed technology standards without specific notation for AT or addressed standards for educational professionals and not leaders, specifically. In those cases, the competency was interpreted as being *implied* for AT leadership.
Participant Introductory Cover Letter

June 3, 2005
Greetings Fellow Educator,

I am a doctoral student at The College of William and Mary conducting a dissertation study entitled *Special Education Assistive Technology: A Phenomenological Study of Administrator Knowledge and Practices* as part of my degree requirements. The purpose of this study is to gain information about the AT knowledge and practices of general education building-level administrators. I anticipate that the results of this study will assist school divisions in forecasting their needs for the training of administrators in leading decisions about AT for students with disabilities.

I am seeking general education administrators to complete the attached survey, and *I humbly request your participation.* If you choose to participate, please:

1. **If you are NOT the administrator in your building responsible for supervising special education,** please pass this packet along to that person.
2. **Complete the survey online at** [www.surveymonkey.com](http://www.surveymonkey.com) **OR complete and return the attached paper copy.**
3. **Please complete the survey within one week of receipt.** It should not take more than 10 minutes of your time.

*Completion of the survey automatically enters you in a drawing for a free AT workshop.* Completion of this survey constitutes informed consent. Participation is voluntary, and you may skip any items you feel uncomfortable answering. Your responses will be confidential and your name will not be associated with any results of this study. I ask your name only in order to randomly select participants for the free training as well as to identify a select few participants for follow-up interviews. If you would like to review the final report, please email me with your request. You must be at least 18 years of age to participate. You may withdraw your participation or consent at any time without penalty by emailing me or by simply not completing the survey. Your decision whether or not to participate will not affect your relationship with me, the College of William and Mary, or your school division.

You may report any dissatisfactions with any aspect of this study to the Chair of the Protection of Human Subjects Committee, Dr. Michael Deschenes 757-221-2778 or mrdesc@wm.edu. If you have other questions or concerns, please call me at _____ or email me at __________. Thank you, in advance, for your time and effort. I look forward to receiving your response.

Sincerely,
Patricia J. McMahon

**THIS PROJECT WAS FOUND TO COMPLY WITH APPROPRIATE ETHICAL STANDARDS AND WAS EXEMPTED FROM THE NEED FOR FORMAL REVIEW BY THE COLLEGE OF WILLIAM AND MARY PROTECTION OF HUMAN SUBJECTS COMMITTEE (PHONE: 757-221-3901) ON 2005-06-03 AND EXPIRES ON 2006-05-31.**
APPENDIX E

Successful Special Assistive Technology: A Phenomenological Study of Building Administrator Knowledge and Practices
Participant Interview Consent Form

The general nature of this study conducted by Patricia J. McMahon has been explained to me. I understand that I have been randomly selected from among Region II building administrators to participate in one individual interview lasting approximately 45 minutes to one hour. I understand that I do not have to answer any question I choose not to answer and may discontinue participation at any time. I will be provided a summary of my responses and will be asked to clarify or revise that summary, as needed, to ensure that my intended responses are accurately understood and represented by the researcher.

I have been informed that information obtained from me in this interview will be confidential and will be recorded with a pseudonym of my choosing that will allow only the researcher to determine my identity. At the conclusion of this study, the key linking me to the pseudonym will be destroyed and my name will not be associated with the results of this study. I understand there is one researcher involved in this project and that three dissertation committee members will also have access to the information that I provide. I will be provided a summary or complete copy of the study’s results at my discretion.

To withdraw my consent and participation, I understand that I need only call or email the researcher with this direction. If I choose to withdraw, I may ask that any data generated be returned to me. Finally, I understand that any incentive or payment for participation will not be affected by my responses or by my exercising any of my rights.

I am aware that I may report dissatisfactions with any aspect of this study to the Chair of the Protection of Human Subjects Committee, Dr. Michael Deschenes 757-221-2778 or mrdese@wm.edu. My signature below signifies I am at least 18 years of age, I have received a copy of this consent form, and I consent to participating in this study.

Date Signature of Participant

Print Name:

## CUMULATIVE THEME TABLE - LEADERSHIP

<table>
<thead>
<tr>
<th>Theme: Leadership</th>
<th>Category</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator</td>
<td>Range of AT</td>
<td>“very wide” “I don’t have a handle on the range of assistive technology services provided by the speech pathologist, for instance...I don’t know on the fringe what they can do and what they can’t do” (Bob)</td>
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<tr>
<td></td>
<td></td>
<td>Try “a lot of accommodations/options before AT is tried” Looks at options “on a lower plain” first; Focus on AT for accessing curriculum on an “equal plain” (Hannah)</td>
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<td>Believes AT needed to level playing field for SWD (Richard)</td>
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<td>Pencil grips are low level “but still assistive technology” Not as involved in IEP meetings anymore; focuses on low tech devices (Cathy)</td>
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<td>Most parents ask for higher tech items (i.e., computers) (Lynda)</td>
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<td>Interview questions “made me think that I don’t know as much as I thought I did” “I know what I’ve been exposed to but I have a feeling there’s a whole range of things I’m not even aware of” (Ken)</td>
</tr>
<tr>
<td>Purpose of AT</td>
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<td>“[They wanted the student] to respond” “That’s what enabled him to be involved in the lesson” (Bob)</td>
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<tr>
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<td>Levels the playing field (Richard)</td>
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<td>“Accessing education on an equal plain” “opens doors”; AT fosters autonomy:“Keep it as close to what the kid can control...start small...don’t want to do anything to make a child less capable” (Hannah)</td>
</tr>
<tr>
<td>Practical</td>
<td></td>
<td>“there are some practical applications of AT in our special needs class of severely and profoundly handicapped kids” (Bob)</td>
</tr>
<tr>
<td>Applications</td>
<td></td>
<td>“Touchpad was used to prompt the computer to make different animal sounds that helped out when reading text...and it worked...instead of striking keys which was too specific a skill for his motor coordination level, he ha the touchpad which prompted him...” (Bob)</td>
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<tr>
<td></td>
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<td>“another thing he had was a Universal Cuff...a way to help a hand that doesn’t have the...” (Bob)</td>
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</table>
specific ability...enabled him to do a specific task...for instance, you could put a drumstick in his hand and he could touch the pad with the drumstick...it was very low level” (Bob)

Footstools for student with dwarfism...we laughed at [the teacher] because we thought, ‘it’s not technology, it’s a footstool!’” (Bob)

Abacus-type “of apparatus that kids [with autism] would use to select what they would have for lunch...because they couldn’t verbalize and use it any other way” (Bob)

Keyboard use for student with CP; Alphasmarts to write down answers; Kurzweil; books on tape; (Richard)

Will use the computer more in middle school than elementary; Kurzweil with “help him learn new pathways” for a student with Leukemia (Hannah)

Using a pencil grip for fine motor/handwriting problems; accommodations for SOL; “it’s a little more obvious” that severe/profound kids need AT (Cathy)

“He would take any crutch and that’s what we were weaning him off of” “Books on tape would have been the antithesis of everything we were working for” “[AT] used to be common sense and it’s gotten more technical” (Lynda)

<p>| Disability Awareness | Severely and profoundly handicapped kids; Range of behaviors and abilities and handicaps; Dwarfism; Autistic programs; “ketchup kid” (Bob) Cerebral Palsy (Richard) Leukemia (Hannah) Emotional disturbances; preschool; ECSE; Cerebral Palsy; “middle of the road” kids; not many severe profound in building (Cathy) ED; Severe disabilities; visually impaired (Lynda) Hearing impairments; severe disabilities; ‘cross cat’ class (Ken) |
| AT Devices          | Touchpad; footstool; Universal cuff; abacus type of apparatus; ketchup containers – Bob “There are things that now I know would qualify for assistive technology” (Bob) “If Kurzweil is AT...” installed on many computers and “is becoming more of an option for kids who need it”(Richard) Auditory trainers; communication devices; Kurzweil; books on tape; Alphasmarts; communication boards; velcro (Hannah) Pencil grips; computers; laptops; books on tape; software; focus on low tech; buttons (Cathy) Auditory trainers; Augmentative communication devices (Ken) |</p>
<table>
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<tr>
<th>Administrator Experience</th>
<th>AT knowledge learned through IEP</th>
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<tbody>
<tr>
<td>IEP process</td>
<td>Send draft IEP home prior to meeting; includes AT; gets parents to give permission for evaluation (Hannah) Ensures AT evaluation is conducted, as appropriate; has agreed to books on tape without an AT evaluation; asks if team appropriately gave prior written notice when AT rejected (Cathy) Works with case manager to determine if AT eval is needed; includes parent (Lynda)</td>
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<tr>
<td>Lynda</td>
<td>“I didn’t know that term [Universal Cuff] until the [IEP] meeting” (Bob) Learned at IEP meetings (Richard) Never responsible for sped or AT as an AP (Ken)</td>
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<tr>
<td>Hands-on</td>
<td>“Most of my experience is hands on [experience] I’ve gained since being in [this principalship]...my first experience [with AT] was [when I was a principal] in 1992-1993...that was the first time I’d heard the term” (Bob) Limited experiences; training through Student Services; all of training provided when she was an AP in two school divisions (Cathy) “Learned by accident and chance” (Ken); observations</td>
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<tr>
<td>Special Education Teachers</td>
<td>Learned about AT through “working, observing, learning from knowledgeable special education teachers” (Bob) “Special education teachers have been my best trainers’ (Hannah) Invited to rooms to observe and learn about technology; “they are the experts in the field” (Ken)</td>
</tr>
<tr>
<td>Other administrators (Networking)</td>
<td>“with other principals...to see what [other] ideas and examples are out there” (Bob) Asks her peers for input to see what they are doing (Hannah) If AP gets into a “stalemate” she can talk with principal or CO (Ken)</td>
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<tr>
<td>Related services professionals</td>
<td>(Richard &amp; Hannah) Asks her daughter, a speech therapist, for input (Hannah) Lynda uses her AT on things she isn’t aware of herself</td>
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<tr>
<td>Prior Knowledge and experience</td>
<td>Formerly an OT and special education teacher (Lynda) As property manager, responsible for logging in AT and purchase orders; shown AT devices by sped teachers and CSC chair (Ken)</td>
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<tr>
<td>Administrator Training</td>
<td>Level of training</td>
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<tr>
<td>Administrator Role</td>
<td>Facilitator (Bob)</td>
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<tr>
<td>Stamping Authority (Richard)</td>
<td>“Stamping Authority” Not an expert; relies on professionals; doesn’t make decisions by himself</td>
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<tr>
<td>Coordinator of Resources (Hannah)</td>
<td>Brings people together; includes parent; sends teachers to symposiums; asks CO AT Coordinator for help; “The buck stops with you”</td>
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<tr>
<td>Situational Involvement (Cathy)</td>
<td>Not primarily responsible for sped as she delegates this to her APs; gets involved only when a bigger issue arises; is seen as knowledgeable about AT by CO, so “keeps her ears open” to potential problems; checks temperature of those involved so that she knows the “comfort level” If someone were sick, “somebody has to step in”</td>
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<td>The Expert (Lynda)</td>
<td>The “go to” person in her building; designated LEA; much prior experience as sped teacher and former OT</td>
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<td>Far to Go (Ken)</td>
<td>Knew after reading the interview questions that there is much more to learn; will be seeking extensive AT training at the administrator level in the building; “can’t lead myself if I do not understand it myself” delegates sped to AP</td>
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<tr>
<td>Supports &amp; Encourages Use</td>
<td>AT as a tool Advocacy</td>
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<td>“AT is a tool that we need to think about…” need to apply to situations; level the playing field for all kids (Richard) Needs to have extensive knowledge of AT in order to advocate for its use (Ken)</td>
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<td>Social, legal, ethical practices</td>
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<td>Formal assessment</td>
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<td>Accommodations vs AT</td>
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<td>Seeks resources</td>
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<td>Following guidelines</td>
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<tr>
<td>Equity of Access</td>
<td>Fights for kids' rights</td>
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## CUMULATIVE THEME TABLE - MANAGEMENT

<table>
<thead>
<tr>
<th><strong>Theme:</strong> Management</th>
<th><strong>Category</strong></th>
<th><strong>Examples</strong></th>
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<tbody>
<tr>
<td><strong>Coordinates resources</strong></td>
<td>Human</td>
<td>“I have called [Central Office personnel] to ask about AT...for a very specific question” “connect people with experience”; TTAC; have to know “what resource to call”; Coordinates resources (Bob) Has department chair contact AT coordinator at division level (Richard) “Have to make the right calls to the right places” Coordinator “shoots” him in the right direction (Richard) Central office AT coordinator (Richard &amp; Hannah); they only come if we feel there is a need (Hannah) Writes into IEP draft based upon team recommendations (Hannah) before parent sees it; AT Coordinator does a “drive by” to assist with decisions Pulls in CO for the difficult decisions (Cathy) Uses her AT team for evaluations; relies on State department of the blind and DRS (Lynda) Uses CO AT coordinator to conduct AT evaluations (Ken)</td>
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<tr>
<td><strong>Devices/Tools</strong></td>
<td>Speech therapists make their own communication boards; buy their own Velcro; “scrounge around sometimes” “We all chip in to make sure we have what we need” (Hannah) Use the VDOE IEP Tool Kit as a resource (Cathy) Made her own keyguards as an OT; middle school need to “hand up” all AT written into student IEPs to high school (Lynda) “Backwards” design of admin getting equipment teachers ask for without knowing what the equipment will do (Ken)</td>
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<tr>
<td><strong>Financial</strong></td>
<td>“there are expenses to worry about” (Bob) Central Office pays for AT devices and services when they conduct evals; but some use Alphasmarts because they are already in building; “We don’t have budgets for AT” (Hannah) Didn’t want to include a computer in an IEP because kid would destroy it (Cathy) Cost is a barrier; had to purchase hardware for Kurzweil—CO purchased software only; “It was not an easy thing to use” bought the least expensive software; and was “really a waste of money” (Lynda)</td>
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<td>Physical plant</td>
<td>Installed Kurzweil in a lab in the “mainstream” to be readily accessible to all students; labs are used all day every day; kids have to be scheduled for the class to get the computers; (Lynda)</td>
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<td>Data based Decisions</td>
<td>Seeks resources and evaluations Needs to see an evaluation and conduct observations before making AT decisions so that she can speak from a position of strength; information “opens doors” to search for answers “on your own” (Hannah) [We have an] environment that allows investigation to occur...to seek things out [to discover information and determine availability of resources] (Bob) Conducts AT eval through IEP process when it needs to be considered; has to have the evidence to be “on solid ground” (Lynda) So many decisions require data—need to make AYP—“makes sense” to pull in as many resources as possible to benefit the student, school, etc., “I’d better have every resource I can” to help kids pass the SOLs “on a selfish level” (Ken)</td>
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<tr>
<td>Appropriate vs. best</td>
<td>Kurzweil used for all to benefit from: “The more we delved into it, the more we thought it a better resource...maybe the latest ‘best’ thing” (Richard) “conversations go there (what’s best) instead of what is most practical and useful for the kid”; don’t know all that speech therapists know about AT (Bob)</td>
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<td>Recruitment</td>
<td>General Education Teachers “In hiring general education teachers, we talk about technology, but a much different flavor to technology...administrative matters or investigative matters to find out more things for the curriculum...” (Bob) Special Education Teachers “we do talk about assistive technology and ask for examples off what they’ve done...but most come in now [and are] up to date [on AT knowledge]” (Bob)</td>
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Finding the Right People

Finding the right people for the right job... "things have an economic anchor and people are the social anchor... that's the challenge: Getting the right things and the right people... people are the most important" (Bob)

<table>
<thead>
<tr>
<th>Parent Requests</th>
<th>Satisfaction</th>
<th>&quot;The parents were just delighted that he had the opportunity [to use the universal cuff with a drumstick]&quot; (Bob)</th>
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<tr>
<td></td>
<td>Dissatisfaction</td>
<td>Rejected computer/laptop despite parent demands to include it in IEP; Difficulty with parent demanding a laptop for a student with ED; rejected by school (Cathy) Parent demanded books on tape, but IEP/AT team was able to justify rejection; parent brought psychologist and attorney, but did sign consent on the IEP after AT eval (Lynda)</td>
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<tr>
<td>Theme: Supervision</td>
<td>Category</td>
<td>Examples</td>
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<tr>
<td>Ensure level of Personnel Understanding</td>
<td>Special Education Teachers</td>
<td>A “couple of really good people” in last principalship position; Sped teacher-led IEP meetings; “surrounded by talented people”; the IEP “manager should know the scale of services available so that they can get what’s best for the kid” (Bob) “very knowledgeable special education teachers and ECSE teachers” (Cathy) Very knowledgeable special education teachers (Lynda)</td>
</tr>
<tr>
<td></td>
<td>Central Office Staff</td>
<td>Call the school board office to get clearance on devices, but do not ask for help, (Bob) Calls central office AT Coordinator for advice and resources (Richard &amp; Hannah) Uses AT team for evaluations (Lynda)</td>
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<td></td>
<td>Assistant Principal (LEA)</td>
<td>“Really up there, so I haven’t had to check on things”; AP makes most phone calls; special ed administrator in building; knowledgeable and talented; “respect her opinion and don’t challenge her” (Bob) Very knowledgeable APs with experience (Cathy) AP is expert because she has been the one assigned to it (Ken)</td>
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<td></td>
<td>Administrator involvement</td>
<td>Recommends that principal/AP attend IEP meetings and observe students in class in order to get to know them (Cathy) Principal must have AT knowledge in order to effectively lead; “The person who gets the LEA role becomes the expert”; needs extensive training (Ken)</td>
</tr>
<tr>
<td>Collaboration</td>
<td>Coordinates efforts between teachers and experts</td>
<td>“Enable discussions” (Bob); coordinates resources (Bob, Richard, Hannah) Reg ed/sped teachers are first to see problem and start investigation; pulls in reading resource teacher (Hannah) TTAC (William and Mary/ODU), but limited; scarce; expert opinion and advice (Bob) Uses building-based AT team for evaluations (Lynda)</td>
</tr>
<tr>
<td></td>
<td>Time Responsibilities</td>
<td>“No time is ever great [to do an interview]” – had just dealt with a fight in the cafeteria that morning (Richard) AP job is ‘coupled with 17 other responsibilities” (Hannah) So many hats and responsibilities (Ken)</td>
</tr>
<tr>
<td>Personnel Evaluation</td>
<td>People as Social Anchors</td>
<td>“Getting the right things and the right people...people are the most important thing” (Bob)</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Teacher cooperation/conflict</td>
<td>Gets involved when teachers won’t collaborate or allow AT use (Richard)</td>
</tr>
<tr>
<td></td>
<td>Related Services (OT, PT, Speech)</td>
<td>Talks with resources as they come into building to discover their area of expertise and knowledge; “what they do in other schools”; “conscious about IEPs and the needs” of students (Bob)</td>
</tr>
<tr>
<td>Conflict Resolution</td>
<td>Prevents Conflict</td>
<td>Having a knowledgeable AP “prevents major issues...we have a cannon and shoot it [the AP] (Bob)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Uses IEP process and collection of evidence to convince parent that AT not needed (Lynda)</td>
</tr>
<tr>
<td>Theme: Program Improvement</td>
<td>Category</td>
<td>Examples</td>
</tr>
<tr>
<td>----------------------------</td>
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<td>----------</td>
</tr>
</tbody>
</table>
| Administrator Identifies Barriers | Limited Resources | Scarcity of resources (Bob)  
Not enough time; not enough personnel; travel time of therapists; case load sizes; managing therapist and teacher schedules (Bob)  
TTAC availability (Bob)  
Availability of materials and devices (Bob)  
Scarcity: Cannot “draw upon” the resources of other buildings; no building-based AT inventory; not aware of what division inventory is (what is available) (Bob)  
Fulfilling IEP needs; doing what is “appropriate” (Bob)  
Wants Kurzweil on every computer (Richard) to benefit all; wants more availability for Alphasmarts and evaluations  
Not enough staff—losing staff to new sped staffing formulas; “I’m not sure there really are experts [to conduct AT evals or act as resources], maybe school psychologists or speech therapists” (Cathy)  
Cost; overcrowding in building limits what and where students are taught (Lynda)  
Very old building with technology not completely updated (Ken) |
| Teacher perceptions of what is fair |  | Teachers believe that AT gives an advantage rather than leveling the playing field (Richard) |
| Administrative Time and Experience |  | Principal doesn’t know and doesn’t “have to know” everything about everything… “a good manager doesn’t have time” to do everything, but surrounds himself with “experts”  
....Sergiovanni said that “the role of the manager as the guy who knows how to use the resources and not the kind who” has to do it all himself…”there’s a presence here that we have to be too hands on” (Bob)  
The AP job is “coupled with 17 other things” not enough time in the day (Hannah)  
“I’m telling you, there are so many mandates…but with sped kids, it makes more sense to make sure they have the right tools to get what they need”...thinks admin training for AT  |
| Lack of admin involvement | Hasn’t been involved enough to know if there are challenges or barriers, thinks she should be more involved (Cathy)  
Delegates responsibility of LEA to AP (Ken)  
Delegates responsibility of LEA To AP (Bob) |
| Teacher Time | Teachers “already have too much on their plate” and don’t have time for AT evals. “Special education teachers look at it as one more thing” (Cathy) |
| Student & Parent Compliance | Software installed on computer for boy; computer sent home; boy installed his own games on computer; “waste of time and energy” (Hannah)  
Students abandon devices (Ken)  
They try to ‘convince’ the kids to use the AT, but they refuse (Lynda) |
| Social Stigma | Students will do anything but look bad or different to their peers (Ken, Lynda) |
| Abandonment of Devices | Computer; “someone else could have used that material” (Hannah)  
Has had really “bad luck” with auditory trainers...students don’t want to use them; would prefer not to hear than look different to their peers (Ken) |
| Lack of home support | Parent did not support AT use at home despite being brought in to the evaluation (Hannah)  
When kids don’t want AT, parents talk to them, but “kids have a mind of their own” and decide themselves they don’t want the AT (Ken) |
| Forgetting what you know | AT doesn’t happen all the time—when it does, you need to be able to pull from resources (e.g., the IEP Tool Kit) to remember procedures for evaluation and decisions (Cathy)  
The person responsible for sped becomes the expert...we don’t know what we don’t know (Ken) |
<p>| AT Evals | The process of the AT eval is difficult, time consuming and cumbersome |
| Teacher panic | “When we first heard about it, we thought someone with knowledge was going to come in and do it (the evaluation)” teachers later discovered it was they who were doing the AT evals and panicked. They have too little knowledge in the process and for specific devices to do AT evals; “it’s overwhelming for teachers at times” (Cathy) |
| Ambiguous directions | Directions and guidance from CO and state too vague for conducting AT evals; she hasn’t been in a school where there have been big issues, “We’ve gotten away with pencil grips and low tech stuff”(Cathy) |</p>
<table>
<thead>
<tr>
<th>Administrator</th>
<th>Identify Resources</th>
<th>Coordinate Efforts/Network</th>
<th>Seek Advice</th>
<th>Ask for additional resources</th>
<th>Politic</th>
<th>Training</th>
<th>Long Range Plan</th>
</tr>
</thead>
</table>
| Eliminates Barriers | Inside and outside experts; AT inventory at division level; find the range of options available for students; find out what's already in county (Bob) | Coordinate schedules and resources; enable discussions; make phone calls and ask questions (Bob) 
Talk with other principals to find out what they are doing (Bob) 
"I need a large network, a principal that's behind me, a coordinator that will listen" (Hannah) 
Ensure that trained AP "shares everything she knows" about AT with teachers; teachers need to pull in a team of resources to help with evaluations (Cathy) | Ask the experts; find out whom to call; be "surrounded by experts" (Bob) 
"have to make the right calls to the right office" (Richard) 
Asks daughter for input (Hannah) 
Include CO instructional specialists in difficult decisions (Cathy) | "It doesn’t hurt to ask" (Richard) | Keep asking until you get it; break down walls preventing your getting what you need; "I have to fight a lot for students, but you do it from the strength of data" (Hannah) | Coordinates efforts to train teachers in sped procedures at beginning of year—does not include AT (Richard) 
Sends teachers to symposiums; makes sure that information that is disseminated is consistent; asks teachers to bring back information because “it’s better coming from them than from me” (Hannah) 
Received training from Student Services and many resources from VDOE many years ago; monthly AP meetings; "We need to get [teachers] training” to conduct AT evals; have to consider AT—including low tech—for every IEP (Cathy) 
Admin training for AT must be mandated “or it won’t get done” (Ken) | Follows students even after they go to middle school to ensure success (Hannah) 
Has to know procedures for middle school kids coming to high with AT devices in IEP (Lynda) |
APPENDIX G

RESEARCHER AS INSTRUMENT STATEMENT

As far back as I can remember I have wanted to teach. My mom likes to tell the story of me as a child teaching “invisible” classrooms, writing on invisible chalkboards and scolding unruly, invisible children. Later, I took my invisible classroom to the bubblegum pink walls of my bedroom where I used my mother’s ruby, red lipstick to draw some very important facts for my invisible class. I remember being sent to my Aunt’s house in Poughkeepsie for a week after that. When I returned, my bedroom walls had been paneled. No words were spoken, but I realized, perhaps, that I needed real students and real classrooms and a real chalkboard. My passion to teach grew.

I spent my teenage years babysitting and spending my summers as a Girl Scout camp counselor. Always seeking opportunities to be with kids, I knew that one day I would be a teacher. As a high school senior in 1980, my father told me that I would never get a job as a teacher. I needed to become more specialized in the field, he said, if I wanted to be able to support myself as an adult. I believed him, and decided to major in communication disorders when I graduated. That original passion I had, however, and the need to always have an audience pushed me back toward my dream of teaching. Just before I registered for classes in my Junior year at The College of Saint Rose in Albany, NY, I changed my major to special education (much to the dismay of the speech therapy department and my drama professor). My journey as a teacher was realigned with the path I had realized as a child.

I tell the story this way because I believe it is most important to speak of the passion I have for teaching. I am perhaps one of a small number to believe that I was put here on this planet to teach, and I have known this forever. It is something I look forward
to every day; something that keeps me going; something that gives me meaning and
focus. It is always important to share the story this way because I have always *needed*
that audience, a large group, a classroom, lots of supplies, technology, a chalkboard. In
1984, when I graduated with a B.S. in Special Education, it was still a very new field, but
one where special education teachers had their own classrooms, their “own” groups of
students. In the next 20+ years that followed my graduation, the paradigm shift in the
special education field required the inclusion of students with disabilities with their
general education peers. Special education teachers went from being the “Lone Rangers”
and the experts in their field for their own classrooms, to glorified teacher assistants in
general education settings. The result, in part, has been a tremendous turnover rate in the
field with special education teachers leaving in droves.

And, in the 1980s, I was introduced to and fell in love with technology. I was one
of those early Apple users and took advantage of an early opportunity for teachers where
the company offered low interest loans for teachers to own their own computers. We’ve
come such a long way since the Apple Ile. On a personal level, I began using computers
and higher levels of technology increasingly over time. For my bachelor’s degree, I was
still using an electric typewriter. For my Master’s degree at the University of Hawaii, I
typed all my papers on a computer at home. For this doctoral degree, I have conducted
all, yes, all, of my research electronically and enjoy wireless LAN at home and at work.
My electric typewriter sits in a dusty, brown case in my garage.

At the University of Hawaii, somewhere around 1996, a college professor named
Jim Skouge first introduced me to assistive technology. Even ten years ago, special
educators were still making their own switches and tools. Dr. Skouge taught us to make
these simple devices. We learned how to convert something electronic to a battery-
operated switch, used HyperStudio software to create interactive programs for students, and talked about metacognition. I fell in love with technology all over again. This course with Dr. Skouge opened my eyes to a new world in education—to a world where all of the existing technology could not only be somehow adapted to meet the needs of those with disabilities, but that there actually existed technology specifically created for those with disabilities. On a professional level, in 1984, I was one of those teachers who benefited from working in building where one (yes, one) Apple computer rolled on a cart from classroom to classroom for students to use. We taught students how to write a program to create a computerized, digital “smile” and used very simple math programs on big, 5½ inch floppy disks. From Dr. Skouge’s course on, I became an advocate for assistive technology, used it daily in the classroom, and continuously sought to find it, acquire it, adapt it, and use it with my students.

During my teaching career, I taught self-contained classrooms for students (primarily boys) with emotional disturbances in both public and private settings. I taught at the elementary, middle, and high school levels in four different states. I’ve taught kids who are adjudicated, sent to a residential setting, and stripped of their families and lives. I’ve taught my “own” full classrooms (with 18-27 students) of students with high incidence disabilities in resource rooms and in closets. I was an inclusion facilitator in two elementary schools and proudly share that I had almost effectively worked myself out of a job. In my last school, I had done such an effective job of training and working collaboratively with a general education team of teachers, that I was pulled into their fold, made a part of their team, and became a teacher among them—being responsible for writing instruction for all students in the grade level and teaching with technology every day. It was a glorious, exhausting time, but one I cherish as an example of how inclusive
education truly works. As I followed this group of inclusive students through the middle and now, their high school years, I’ve seen this diverse group of students excel in ways other kids with disabilities have not: socially, academically, behaviorally. Sadly, I’ve also observed that in their high school years, they have become segregated, filed to a separate classroom and not included with peers, in activities, in testing, in the working environments.

Because of my experiences in working in inclusive environments, my focus on using technology was put into play for all students. Students used PowerPoint to create not only presentations but an alternate format of written reports and tests. HyperStudio was used to include text-to-speech options for those students not able to present their reports orally in front of classrooms. When I adapted lessons and created alternative formats specifically for students with disabilities, I found that teachers were using those ‘specially designed’ activities as options for all students. What I didn’t realize at the time was that I was creating a universally designed curriculum. When I left each of these inclusive schools, I was asked by teachers to leave behind binders and disks of my adapted lessons, formats, lessons, and programs, so that they could continue those adaptations without me.

We’re told that special education teachers leave the field due to frustration, lack of administrative support, exhaustion, or stress level by either switching to general education or “going up.” After sixteen years of special education teaching, I became an Instructional Specialist for Student Services—still in the field, but no longer in a classroom (which I didn’t “have” anymore, anyway). My colleagues joked that I was going to the Dark Side because I was leaving teaching to be a central office administrator. I saw the move as an opportunity to foster change on a wider scale. I wanted to see
inclusion in other schools in the division as I had in my elementary school. For three and a half years I provided professional development for teachers, chaired eligibility meetings, played politics with the community, and worked harder than I ever had as a teacher. One of my proudest accomplishments was that while in Student Services, I coordinated and managed a budget for assistive technology for the school division. I worked closely with speech therapists, occupational therapists, and physical therapists in planning, training, and providing for AT. I looked to them as the experts in the division and relied heavily on them to provide AT assistance in schools.

I developed a strong, collaborative relationship with a central office colleague responsible for instructional technology. We became a team, trained together, planned together, made technology purchases together—and, as a result, created an unheard of partnership where assistive technology became part of the overall technology vision and planning for the division. Conversations about software installation and purchases always included how those pieces could be universally designed or considered for students with disabilities. Intellikeys keyboards were purchased for all kindergarten classrooms. Technology considered traditionally AT for students with disabilities was being used for all students to benefit from. It was an exciting time. AT was still being purchased separately for those students with specific needs, but the need for individual purchases decreased as the overall technology for all students increased.

Then, I accepted my first high school assistant principalship—my first general education position, and I had no special education responsibilities. I was not bitter about leaving the special education teaching field. Losing my classroom, my audience, my “stuff,” was a very hard transition for me as the field changed from self-contained classrooms to inclusion. Because I have such a deep, passionate belief in inclusion,
however, it was a transition I knew I had to make. After all, I was put here to teach. I moved from being a classroom teacher for kids to a teacher for general education teachers and administrators, to support staff for schools, to educational consulting at the college, local, regional, and state levels. Even as an AP, while I was not talking about special education anymore, the inclusion promoter in me spent great amounts of time providing professional development for my teachers on differentiated instruction, classroom management, functional behavior assessments, assistive technology, universal design. I spent time with the technology labs and contacted resources for training teachers in using what was already available to benefit all. In providing those resources to teachers, I was providing resources for students with disabilities, even if covertly.

In 2005, I accepted a position as Supervisor of Secondary Special Education in the same school division where I was an AP. Perhaps it was meant to be that I would need to return to the special education field that I so loved. I still have an audience. My audience includes secondary schools, students, parents, faculty, related services providers, staff, and the community. I am still teaching. I was put here to teach. And, I am responsible for directing and coordinating assistive technology for a division where there are currently no procedures in place for budgeting, planning, and the provision of services. AT decisions are made for students, but we have a long way to go in putting AT procedures in place. In the short time I’ve been in this new position, conversations to provide procedures and adopt an assessment are already in place.

As stated previously, I am a vocal advocate of inclusive education. My work over the years has focused on the general education “push,” including the necessary general education accountability, ownership, and leadership required for kids with disabilities to be successful among their general education counterparts. My beliefs and values are
centered among these prerequisites. I strongly believe that inclusive education works and is appropriate. I strongly value inclusive opportunities. I believe that inclusive education should always be the default for all kids and that segregation of all kinds should be considered only when educating inclusively has been found to be inappropriate to meet the needs of the student. I also believe that inclusion is not a place, but a belief, a philosophy, a way of being, and a way of life. Inclusion is the feeling one has when she enters a room and knows she belongs. It requires accountability, responsibility, spirit, and community.

And, I believe that inclusive education is for all students. When I view and reflect on my beliefs and core values regarding education, I see all students as needing an individualized education. I value teachers, programs, and opportunities that foster student achievement, success, the building of relationships, and the bolstering of individual self-esteem. I value and appreciate those administrators and leaders who make it a priority to learn about programs, services, opportunities and possibilities for kids with disabilities. I value those professionals who advocate for students with disabilities and foster autonomy among students, families, and staff.

I believe that while there has been a slow move toward more differentiated instruction in classrooms, there continues to be a need for a paradigm shift in how all kids are taught. Truly, I do see that more teachers are being accountable for a wide range of students. In the end, however, when SOL scores and NCLB looms menacingly over the accreditation of a school, it’s the kids in the subgroups who suddenly who are told they need segregated programs. It’s the kids with special needs or cultural differences or those speaking another language at home whose needs cannot be met in the “typical” general
education setting. It's the teachers of those kids who are crying, "Not fair!" when the scores for their classes reflect that one or more of the subgroups' needs haven't been met.

And, I believe it is not about blame—on the part of the teacher, the student, the family, or the educational organization.

With this study, through interview, observation, and case study, I expected to discover what building level administrators experience and know about assistive technology. I predicted that effective leaders foster student achievement through exploration, advocating, and implementation of programs that are individualized, inclusive, and supportive. I predicted special education teachers in these schools are providers of essential support services and were considered the special education and assistive technology experts in the schools.

I believe the topic of this study to be important to the field of education. The outcomes of this study will provide an in-depth look into the making of an effective leader and how that leader fosters successful programs for students with disabilities. Given that all effective leaders have similar characteristics, I think this study will provide other leaders an opportunity to see the ways administrators manage and design AT programs and lead faculty and staff toward making education work for all students. AYP is mandatory for all schools. Special education is a subgroup of AYP. If building level administrators are to meet NCLB and IDEA 2004 mandates, they would be wise to look to those who are successful and to attempt to replicate the programs that work. Using the results of this study could potentially help them to do that.
APPENDIX H

MEAN RESPONSE OF SELF-ASSESSMENT ITEMS

<table>
<thead>
<tr>
<th>Survey Section</th>
<th>Item</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Administrator Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership Responsibilities</td>
<td>1. Knowledge &amp; benefit</td>
<td>114</td>
<td>3.45</td>
<td>.534</td>
<td>Usually Evident</td>
</tr>
<tr>
<td></td>
<td>2. Legal requirements</td>
<td>114</td>
<td>3.45</td>
<td>.653</td>
<td>Usually Evident</td>
</tr>
<tr>
<td></td>
<td>3. Vision</td>
<td>114</td>
<td>2.76</td>
<td>.875</td>
<td>Usually Evident</td>
</tr>
<tr>
<td></td>
<td>4. Social, legal, ethical practices &amp; responsible use</td>
<td>114</td>
<td>3.18</td>
<td>.736</td>
<td>Usually Evident</td>
</tr>
<tr>
<td></td>
<td>5. Functional AT use</td>
<td>112</td>
<td>3.44</td>
<td>.695</td>
<td>Usually Evident</td>
</tr>
<tr>
<td></td>
<td>6. Using AT to support student education</td>
<td>114</td>
<td>3.71</td>
<td>.544</td>
<td>Always Evident</td>
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<tr>
<td></td>
<td>7. Acknowledge importance of AT</td>
<td>113</td>
<td>2.91</td>
<td>.851</td>
<td>Usually Evident</td>
</tr>
<tr>
<td></td>
<td>8. Equity of access</td>
<td>114</td>
<td>3.47</td>
<td>.655</td>
<td>Usually Evident</td>
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<tr>
<td></td>
<td>9. Advocate regionally and at state levels</td>
<td>114</td>
<td>1.80</td>
<td>.942</td>
<td>Seldom Evident</td>
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<tr>
<td>Management Activities</td>
<td>10. Policies and written operating guidelines</td>
<td>110</td>
<td>1.98</td>
<td>1.040</td>
<td>Seldom Evident</td>
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<tr>
<td></td>
<td>11. Processes for AT consideration &amp; assessment</td>
<td>111</td>
<td>2.86</td>
<td>1.094</td>
<td>Usually Evident</td>
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<td></td>
<td>12. Responding to parents’ requests</td>
<td>114</td>
<td>3.35</td>
<td>.691</td>
<td>Usually Evident</td>
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<tr>
<td></td>
<td>14. Allocate funds and human resources</td>
<td>103</td>
<td>2.20</td>
<td>1.115</td>
<td>Seldom Evident</td>
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<tr>
<td></td>
<td>15. Time for implementation</td>
<td>108</td>
<td>2.81</td>
<td>.971</td>
<td>Usually Evident</td>
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<tr>
<td></td>
<td>16. Cost-effective &amp; efficient</td>
<td>106</td>
<td>2.65</td>
<td>1.087</td>
<td>Usually Evident</td>
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<tr>
<td></td>
<td>17. Recruit AT knowledgeable professionals</td>
<td>107</td>
<td>2.29</td>
<td>.971</td>
<td>Seldom Evident</td>
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<tr>
<td>Survey Section</td>
<td>Item</td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>Administrator Response</td>
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<td>Supervision Activities</td>
<td>18. Staff level of understanding</td>
<td>113</td>
<td>3.06</td>
<td>.782</td>
<td>Usually Evident</td>
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<td></td>
<td>19. IEP is legal &amp; ethical</td>
<td>111</td>
<td>3.56</td>
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<td></td>
<td>20. Collaboration</td>
<td>110</td>
<td>3.33</td>
<td>.731</td>
<td>Usually Evident</td>
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<td></td>
<td>21. Low level of conflict</td>
<td>110</td>
<td>3.32</td>
<td>.777</td>
<td>Usually Evident</td>
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<tr>
<td></td>
<td>22. Staff evaluation &amp; supervision</td>
<td>106</td>
<td>2.41</td>
<td>1.012</td>
<td>Seldom Evident</td>
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<tr>
<td></td>
<td>23. Assess staff knowledge of AT</td>
<td>108</td>
<td>2.42</td>
<td>.908</td>
<td>Seldom Evident</td>
</tr>
<tr>
<td></td>
<td>24. Personnel decisions</td>
<td>110</td>
<td>2.87</td>
<td>.987</td>
<td>Usually Evident</td>
</tr>
<tr>
<td>Program Improvement Activities</td>
<td>25. Comprehensive processes, long-range plans</td>
<td>102</td>
<td>1.95</td>
<td>.916</td>
<td>Seldom Evident</td>
</tr>
<tr>
<td></td>
<td>26. Evidence-based practices</td>
<td>105</td>
<td>2.53</td>
<td>.889</td>
<td>Usually Evident</td>
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<tr>
<td></td>
<td>27. Identify &amp; remove barriers</td>
<td>106</td>
<td>2.55</td>
<td>.896</td>
<td>Usually Evident</td>
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<tr>
<td></td>
<td>28. Multiple methods to assess</td>
<td>106</td>
<td>2.29</td>
<td>.936</td>
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</tr>
<tr>
<td></td>
<td>29. Assess training needs</td>
<td>105</td>
<td>2.26</td>
<td>.961</td>
<td>Seldom Evident</td>
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<tr>
<td></td>
<td>30. School-wide professional development</td>
<td>105</td>
<td>2.24</td>
<td>.956</td>
<td>Seldom Evident</td>
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<tr>
<td></td>
<td>31. Ongoing evaluation</td>
<td>105</td>
<td>2.17</td>
<td>.893</td>
<td>Seldom Evident</td>
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<td></td>
<td>32. Continuous improvement</td>
<td>103</td>
<td>2.04</td>
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<td>Seldom Evident</td>
</tr>
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<td></td>
<td>33. Strategic, technology, and improvement plans</td>
<td>104</td>
<td>2.19</td>
<td>.996</td>
<td>Seldom Evident</td>
</tr>
</tbody>
</table>

*Note.* Respondents were informed they could skip any item they chose not to respond to. Mean scores were rounded to the nearest tenth to determine administrator response.
REFERENCES


Castellani, J. (2005). Considering the need for assistive technology within the individualized education program. Columbia, MD: Center for Technology in Education (CTE) & Technology and Media Division (TAM).


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