Assistive Technology Competencies for Teachers of Students with Visual Impairments

Derrick W. Smith, Pat Kelley, Nancy J. Maushak, Nora Griffin-Shirley, and William Y. Lan

Abstract: Using the expert opinion of more than 30 professionals, this Delphi study set out to develop a set of assistive technology competencies for teachers of students with visual impairments. The result of the study was the development of a highly reliable and valid set of 111 assistive technology competencies.

Historically, individuals with visual impairments have faced three primary issues: access to information, independent travel, and the lack of meaningful experiences (Lowenfeld, 1973). To compensate for their vision loss and the subsequent challenges, individuals with visual impairments have relied on assistive technologies for centuries. To be successful in today's technologically advanced society, they must have the tools for and necessary training in assistive technology. Therefore, it is imperative that teachers of students with visual impairments are prepared to provide effective and efficient instruction in assistive technology.

Several studies have assessed educators' needs for assistive technology training (Derer, Polsgrove, & Rieth, 1996; Jennings, Long, & Jackie, 2002; Lee & Vega, 2005), and all have found that the vast majority of teachers of students with disabilities consider themselves to have inadequate knowledge of assistive technology. A 1990 study by Parker et al. was the first in a series of studies on barriers to the use of assistive technology with students with visual impairments. It found that almost two-thirds of the participants rated themselves as having "poor" or "nonexistent" knowledge of specific assistive technology devices for individuals with visual impairments. A similar study by Edwards and Lewis (1998) reported that the participants did not use many of the listed assistive technology devices because of their lack of knowledge of them. Abner and Lahm (2002) found that 51% of the teachers of students with visual impairments who participated in their study did not feel competent to teach their students to use assistive technologies; 62% of the teachers considered themselves to be at the novice or apprentice level in using assistive technologies. Kapperman, Sticken, and Heinze (2002)

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reported that 72% of the teachers they interviewed were unable to respond to the survey because of their lack of knowledge about the assistive technologies that were discussed.

Thus, the pertinent question is which barriers are creating these deficiencies in teachers' knowledge, since teachers' attitudes reflect a desire to understand, teach, and use assistive technology? The problem begins during the preservice years in teacher preparation programs. Few preservice training programs for special education include courses or even class sections on assistive applications and issues related to these devices (Lahm, 2003; Lee & Vega, 2005; Wahl, 2004). Smith and Kelley (2007) found that most training programs for teachers of students with visual impairments offer instruction in assistive technology with a course, a unit, or embedded throughout the program. However, they also found little continuity in the levels of knowledge and abilities to use assistive technology among the universities. The lack of preservice training in assistive technology has a detrimental affect on teachers when they enter the classroom.

Researchers have determined that there are multiple reasons for the lack of instruction in assistive technology for preservice educators. The reasons include a lack of resources for the programs to purchase equipment, the inability of instructors to stay current with the ever-changing technologies, and limitations related to time or programming. However, one of the major reasons that assistive technology is not taught at the preservice level is that a separate set of assistive technology competencies or standards does not exist. University programs that prepare teachers of students with visual impairments have little or no guidance on what assistive technology content should be taught to their preservice teachers. Therefore, teachers of students with visual impairments are receiving assistive technology training at different levels and on different types of technologies. Thus, this study was directed by two research questions:

1. What assistive technology competencies should teachers of students with visual impairments have on completion of a training program?
2. For each competence that is identified, what level of expertise (novice, beginner, proficient, or advanced) should be demonstrated by a teacher of students with visual impairments on completion of a training program?

Method and research design

For the purposes of this study, we determined that the Delphi method would be the best method to answer the two research questions. This method is used to develop standards and competencies on the basis of the professional consensus model and relies on professional knowledge and expertise (Imig & Imig, 2007).

The purpose of a Delphi study is to produce a reliable consensus of opinion through the use of a panel of knowledgeable experts (Linstone & Turoff, 2002). In their seminal work on the Delphi technique, Linstone and Turoff characterized the Delphi as "a method for structuring a group communication process so that it is effective in allowing a group of individuals, as a whole, to deal with a complex problem" (p. 3).

Selection of participants

The selection of the expert panelists of a Delphi study is the most critical aspect of the technique (Skulmoski, Hartman, & Krahn, 2007). The participants need to have knowledge and expertise in the subject, be willing to participate, have sufficient time, and have effective communication skills. Following the suggestions of Clayton (1997) and Powell (2003), we determined that the expert panelists should represent a broad cross section of experts from the fields of assistive technology, educational technology, higher education, and special education. Although there is no consensus on the number of participants in a Delphi expert panel, Clayton suggested that 15–30 participants are needed to develop a strong level of validity and reliability. Linstone and Turoff (2002) explained that the level of reliability is the strongest with more than 13 participants; however, the reliability is not significantly affected with more than 30 participants. This study, therefore, set out to recruit a total of 25–30 participants from 6 professional groups (see Table 1 for information on the groups).

To be selected as a panelist in a Delphi study, the individual must have first been nominated by a professional leader in the field (Clayton, 1997). We contacted 49 professional leaders from various fields to find potential panelists. The potential panelists had to have demonstrated expertise within their profession through education, professional activity, and practical experience. Although the panelists did not need to exhibit all these qualifications to a high degree, the totality of their knowledge and experience had to have been such that they were deemed an expert among their peers. The professional leaders nominated 73 potential panelists.

Table 1
Participants by professional group.

Domain	Number of participants
University faculty	14
Itinerant teachers of students with visual impairments	14
Residential teachers of students with visual impairments	8
Assistive technology specialists	16
Consumers (individuals with visual impairments)	14
Educational technology specialists	7

Note: The participants were allowed to check multiple domains; thus, the number of participants equals more than 40.

From the nominated panelists, 40 of the 73 (55%) experts agreed to participate in the study. On agreeing to participate, the participants were asked to complete a short demographic survey on their place of employment, professional title, the professional groups they represent, a username, and a password. The panelists were allowed to select more than one professional group because many of them had multiple roles (for example, as a university faculty member and an individual with visual impairments) (see Table 1). The panel represented all major geographic regions in the United States. All questionnaires and procedures were approved by the Texas Tech University Institutional Review Board, and all the participants provided informed consent before participating in the study.

Findings

In Round 1, the panelists were asked to provide potential assistive technology

competencies on the basis of 10 domain clusters that we developed from the Council for Exceptional Children's knowledge and skills domains and American Foundation for the Blind's assistive technology clusters. For the first round, 35 of the original 40 panelists participated (88%). In all, the 35 panelists provided a total of 1,192 potential competencies. The raw data were coded and analyzed using NVivo 7.0, statistical analysis software. We condensed the data into 152 competencies by eliminating redundancies and statements not related to assistive technology.

In Round 2, the remaining 35 panelists were given the initial 152 potential competencies and were asked to rank each of the competencies, using a 4-point Likert scale (strongly agree, agree, disagree, and strongly disagree), with their level of agreement that the competencies should be included in the list. Thirty-five panelists responded for 100% carryover participation from Round 1. All the quantitative data from Rounds 2–5 were analyzed using SPSS 16.0. Overall, there was a high level of agreement regarding the competencies among the expert panelists. On the basis of the level of agreement, 73% of the competencies were rated with a level of agreement higher than 90%; 24 competencies fell between 80.0% and 89.9% and 4 fell between 75.5% and 79.9%. From the original 152 competencies, 13 competencies had a level of agreement below the established level of 75%.

Before we eliminated these 13 competencies solely on the basis of the data, we analyzed the panelists' comments to see if specific changes would make the competencies stronger. We determined from the comments that 2 of the 13 might have a higher level of agreement with slight changes to the wording. The remaining 11 were eliminated from the list of competencies.

After the panelists' comments were reviewed, we determined that the initial list of competencies needed considerable refinement. On the basis of the statistical data and the panelists' comments, the initial 152 competencies were condensed to 114 statements. For Round 3, the panelists were given the remaining 114 potential competencies and were again asked to rank their level of agreement with each competence. For this round, 34 of the 35 (97%) panelists continued to participate in the study. The questionnaire for Round 3 included the statistical data from Round 2 to help the panelists make a more informed decision.

On analysis of the Round 3 data, the level of agreement of the panelists converged at a higher level. Of the 114 competencies, 88 had a level of agreement between 100% and 90%, 22 had a level of agreement between 80% and 89.9%, and 1 had a level of agreement of 79.4%. Three competencies had a level of agreement lower than 75%, all at 73.5%, and were eliminated from the final list of competencies.

Again, the panelists' comments were analyzed to refine the competencies better. Upon analysis, the only change that was made to the final list was the elimination of references to specific technologies. Multiple panelists suggested that the list of name brands might "date" the list, since technology changes so rapidly. On completion of Round 3, the opinion of the expert panel converged at a high level of agreement. Therefore, the resulting list of competencies after refinement from

Round 3 is considered the final list of assistive technology competencies that teachers of students with visual impairments should possess after they complete a training program.

Beginning in Round 4, the panelists were given the list of competencies and asked to select the level of expertise (novice, basic, proficient, or advanced). The 34 panelists from Round 3 (100%) continued to participate through Round 4. An analysis of the Round 4 data determined that there was a wide dispersion of opinion. For this round, the panelists were not given the opportunity to provide comments.

To reach a higher level of consensus regarding the level of expertise, the panelists were again given the list of competencies and asked to select the level of expertise. Consistent with the Delphi method, the panelists were provided with the frequency percentages from Round 4 to make an informed decision. The quantitative data from 34 panelists (100%) were analyzed, and frequency percentages for each level of expertise were determined.

An analysis of the Round 5 data revealed that the panel of experts' opinions converged to a much higher degree than in Round 4. Seventy-five of the 111 competencies had one level of expertise with more than 70% agreement. Of that number, 12 were at the basic level and 63 were at the proficient level. The remaining 36 competencies had two levels of expertise with combined high levels of agreement. Twelve competencies were ranked highest at the proficient and advanced levels, and 24 competencies were ranked highest at the basic and proficient levels. Other than the first competence (C1), the panelists rarely selected novice for any of the competencies. See Table 2 for the set of assistive technology competencies for teachers of students with visual impairments paired with the determined level of expertise.

Conclusions and implications

It was clearly indicated that assistive technology needs to be a critical component of higher education teacher-training programs. Although the panelists believed that the developed set of competencies was important, they were fearful that incorporating them into the programs would be difficult. The barriers they identified included the lack of time, the number of other competencies required at a high level of competence (such as braille), and the instructors' lack of knowledge of assistive technology.

The panelists commented that the final list of competencies may be too exhaustive and actually attempt to transform the teacher of students with visual impairments into an assistive technology specialist. It is apparent from these statements that the role and responsibilities of the teacher of students with visual impairments may be evolving.

Last, the panelists noted that technology and its impact on education is constantly changing. With this point in mind, we note that this study and its resulting list of competencies is the beginning of a professional dialogue regarding assistive technology and the education of students with visual impairments.

Limitations

As with any study, limitations were apparent and need to be addressed. The

Table 2
Assistive technology competencies for teachers of students with visual impairments, with level of expertise.

Competency	Description	Level of expertise
Foundations of assistive technology		
Upon completion of a teacher training program, the teacher of students with visual impairments should possess knowledge of		
C1.	The history of the development of assistive technology (AT) devices and software for individuals with visual impairments.	Basic
C2.	Individuals with Disabilities Education Act (IDEA) rules and regulations related to AT devices and services, assessment, and inclusion in the Individualized Education Program (IEP).	Proficient
C3.	Assistive technology components of state and federal legislation (such as Section 504 and Section 508 of the Rehabilitation Act, Americans with Disabilities Act, the Assistive Technology Act).	Basic
C4.	The federal definition of AT devices and services.	Proficient
C5.	The requirements for documentation of AT.	Proficient
C6.	The difference between AT devices categorized as "no tech," "low tech," and "high tech."	Proficient
C7.	Laws regarding copyright and licensing of software, including shareware and freeware.	Basic
C8.	Local, state, and federal laws that govern the purchasing of AT.	Basic/proficient
C9.	Both federal and state transition requirements and the vocational rehabilitation process as it relates to AT.	Basic/proficient
C10.	The concept of universal design as it relates to AT for individuals with visual impairments.	Basic
Disability-related assistive technology		
Upon completion of a teacher training program, the teacher of students with visual impairments should possess knowledge of		
C11.	The visual, auditory, tactile, motor, and cognitive skills necessary to access various types of AT.	Basic
C12.	The effects of low vision on the use of AT (such as lighting, contrast, size, and glare).	Proficient
C13.	Braille literacy and its application in providing effective AT services.	Advanced/proficient
C14.	The effects of deaf-blindness on the use of AT.	Proficient/advanced
C15.	General AT for individuals with disabilities other than visual impairments (such as switches, software that provides scaffolding supports, augmented communication devices, and picture-based symbols).	Basic
C16.	The use of AT as part of the expanded core curriculum, including independent living devices.	Proficient
Upon completion of a teacher training program, the teacher of students with visual impairments should possess the ability to		
C17.	Use effective evaluative practices in collaboration with a multidisciplinary team to determine what technology would best assist the student in accessing the educational curriculum.	Proficient
C18.	State the advantages and disadvantages of AT for potential users with various degrees of vision.	Proficient
C19.	Identify a variety of AT devices (such as software, hardware, and peripheral devices) for students with various visual abilities, ages, and cognitive abilities.	Proficient

(cont.)

Table 2
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Competency	Description	Level of expertise
Use of assistive technology		
Upon completion of a teacher training program, the teacher of students with visual impairments should possess knowledge of and ability to		
C20.	Use screen-reading software and make adjustments to its basic features.	Proficient/basic
C21.	Use screen-magnification software and make adjustments to its basic features.	Proficient/basic
C22.	Use braille-translation software and make adjustments to its basic features.	Proficient/basic
C23.	Use braille-translation software for Nemeth code translation.	Basic/proficient
C24.	Use various closed-circuit television systems.	Proficient/basic
C25.	Use various personal digital assistants or braille notetakers.	Proficient/basic
C26.	Use digital recorders and make adjustments to their basic features.	Proficient/basic
C27.	Use digital Talking Book players and digital e-book recorders (including downloading e-books) and make adjustments to their basic features.	Proficient
C28.	Use braille embossers and make adjustments to their basic features.	Proficient
C29.	Use scanners and optical character recognition software systems and make adjustments to their basic features.	Proficient/basic
C30.	Use a refreshable braille display and its accompanying software (screen-reader software).	Proficient/basic
C31.	Use common technology skills (those practiced by the general population) as they support learning of students with visual impairments.	Proficient
C32.	Use a standard braillewriter, a unimanual braillewriter, and extension keys.	Proficient
C33.	Use electronic braille devices.	Proficient
C34.	Use tactile graphic devices.	Proficient/basic
C35.	Use a talking four-function calculator, a talking scientific calculator, and a software-based talking calculator.	Basic/proficient
C36.	Operate a talking dictionary and a software-based talking dictionary.	Proficient/basic
C37.	Make modifications to general education technology (such as a microscope or telescope) for students with visual impairments.	Proficient/basic
C38.	Use handheld and stand magnifiers, monoculars, and telescopes.	Proficient
C39.	Identify various nonoptical devices that are available for students with low vision.	Proficient
C40.	Describe the advantages and disadvantages of various types of lighting devices.	Proficient
C41.	Produce simple tactile graphics using the following methods of production: collage, tooled, Thermoform, microcapsule paper and heat fuser, and computer-generated graphic.	Proficient
Assistive technology instructional strategies		
Upon completion of a teacher training program, the teacher of students with visual impairments should possess appropriate educational strategies to		
C42.	Teach concepts related to the basic installation of AT devices, including managing cords and plugs.	Basic/proficient
C43.	Teach concepts related to the basic maintenance of AT devices.	Basic/proficient

(cont.)

Table 2
(Cont.)

Competency	Description	Level of expertise
C44.	Provide instruction in AT devices in purposeful ways and in authentic environments.	Proficient
C45.	Teach the student to use troubleshooting techniques.	Proficient
C46.	Provide sequenced instruction regarding technology as it relates to transition and employment.	Proficient
C47.	Teach students with visual impairments about resources for obtaining AT devices and services.	Proficient/basic
C48.	Use appropriate educational strategies for the development of age-appropriate concepts and motor development appropriate for use of AT.	Proficient
C49.	Develop lesson plans that incorporate the use of AT.	Proficient
C50.	Know differences in AT instruction for students with visual impairments along with other disabilities.	Proficient
C51.	Teach students with visual impairments in one-on-one situations, small groups, and large groups.	Proficient
C52.	Collect formative data and adjust lessons accordingly on the basis of the student's needs.	Proficient
Learning environments		
Upon completion of a teacher training program, the teacher of students with visual impairments should possess the ability to		
C53.	Articulate the visual features of learning environments as they affect instruction and the use of AT.	Proficient
C54.	Assess and recommend AT devices for specific learning environments (such as in the classroom and gymnasium).	Proficient
C55.	Analyze the visual (such as lighting and glare), auditory (such as sound distractions and noise pollution), and physical environment to determine appropriate modifications of AT devices.	Proficient
C56.	Teach the student to adapt the learning environment to his or her needs.	Proficient
C57.	Teach the appropriate social skills when using technology in various environments.	Proficient
Upon completion of a teacher training program, the teacher of students with visual impairments should possess knowledge of		
C58.	The least restrictive environment and the use of AT in different placements.	Proficient
C59.	Strategies to involve the student with visual impairments in the class while still using AT.	Proficient
C60.	The dynamics of the physical arrangement of the classroom (including ergonomic issues) and their impact on the use of AT.	Proficient
C61.	How to use AT across environments.	Proficient
C62.	The need for portability and limitations of portability of specific AT devices for students in various environments.	Proficient
Access to information		
Upon completion of a teacher training program, the teacher of students with visual impairments should possess the ability to		
C63.	Teach students with visual impairments the use of AT for access to information in the classroom.	Proficient
C64.	Teach students with visual impairments to produce files in a readable format, including braille, large print, or an electronic form.	Proficient/advanced

(cont.)

Table 2
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Competency	Description	Level of expertise
C65.	Teach students problem-solving techniques for the use of AT in the classroom when materials are not in an accessible format.	Proficient/advanced
C66.	Teach students with visual impairments to use the Internet.	Advanced/proficient
C67.	Teach students with visual impairments to transfer files to appropriate AT devices.	Proficient/advanced
C68.	Teach the student to stay current with new technology, access online manuals, and obtain technical assistance from vendors.	Proficient
C69.	Identify and use a variety of sources for braille and large-print materials.	Proficient
C70.	Identify and use a variety of sources for electronic and recorded materials.	Proficient
C71.	Identify and use a variety of options for accessing information presented on chalkboards, whiteboards, DVDs and other video sources, overhead projectors, and computer projector systems.	Proficient
Upon completion of a teacher training program, the teacher of students with visual impairments should possess knowledge of		
C72.	Assistive technology services that allow a student to participate at the same level of involvement in learning activities as their nondisabled peers.	Proficient
C73.	PC computer and MacIntosh computer accessibility options (universal options menu, accessibility wizard, and display settings) for individuals with visual impairments.	Proficient/basic
Instructional planning		
Upon completion of a teacher training program, the teacher of students with visual impairments should possess the ability to		
C74.	Plan for AT instruction that is comprehensive, relevant, and focused on the needs of the individual student.	Proficient/advanced
C75.	Plan for assessment-based AT instruction.	Proficient
C76.	Plan instruction that will increase students' keyboarding skills.	Proficient/advanced
C77.	Develop organizational and time-management skills to make planning instruction effective and efficient.	Proficient
C78.	Infuse AT instruction into the general academic curriculum.	Proficient
C79.	Infuse AT instruction into the expanded core curriculum.	Proficient/advanced
C80.	Write AT goals and objectives in lesson plans.	Proficient
C81.	Modify tutorials on AT when needed.	Proficient/basic
Upon completion of a teacher training program, the teacher of students with visual impairments should possess the knowledge of		
C82.	How to record and analyze data to measure students' progress in the use of AT.	Proficient
C83.	Research on AT and its application when planning instruction.	Basic/proficient
C84.	How to incorporate the use of AT in the instructional planning process.	Proficient
Assessment		
Upon completion of a teacher training program, the teacher of students with visual impairments should possess the ability to		
C85.	Complete a comprehensive AT assessment (along with an AT specialist), when appropriate, for students with visual impairments at different ages or grade levels.	Proficient
C86.	Interpret and write AT plans and reports.	Proficient

(cont.)

Table 2
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Competency	Description	Level of expertise
C87.	Write measurable goals in a student's IEP, including those for the use of AT equipment.	Proficient
C88.	Assess the student's level of independence after exposure to AT and techniques of access.	Proficient
C89.	Conduct formative and summative assessments (along with an AT specialist) to assess a student's understanding of the AT instruction.	Proficient
C90.	Assess the effectiveness of AT devices.	Proficient
Professional development		
Upon completion of a teacher training program, the teacher of students with visual impairments should possess the knowledge of		
C91.	Funding mechanisms for AT professional development.	Basic
C92.	Resources of local, state, and national professional development training programs.	Basic
C93.	Federal, state, and local agencies that provide technology assistance to individuals with visual impairments.	Basic
C94.	Assistive technology conferences (such as those held by Closing the Gap, California State University–Northridge Center on Disabilities, California Transcribers and Educators for the Blind and Visually Impaired, and the Association for Education and Rehabilitation of the Blind and Visually Impaired).	Basic
C95.	Major AT manufacturers and vendors.	Proficient/basic
C96.	Local, state, and national consumer organizations (such as the National Federation of the Blind and the American Council of the Blind).	Proficient/basic
Upon completion of a teacher training program, the teacher of students with visual impairments should possess the ability to		
C97.	Obtain AT to assist families through service organizations (such as the Lions Club and associations of the blind).	Basic
C98.	Engage in professional development activities to demonstrate continual growth in current and emerging AT services.	Proficient
C99.	Access resources, such as journals and web sites.	Proficient/basic
C100.	Advocate for AT professional development.	Basic
C101.	Engage in reflective practice and evaluate his or her attitudes toward the application of AT services.	Proficient
Collaboration		
Upon completion of a teacher training program, the teacher of students with visual impairments should possess the ability to		
C102.	Participate as a member of a multidisciplinary team in assessing the needs of students with visual impairments.	Proficient
C103.	Participate as a member of a multidisciplinary team in planning and developing an AT program.	Proficient
C104.	Collaborate with local, district, and state AT specialists and education instructional technologists.	Proficient/advanced
C105.	Collaborate with the district personnel in the evaluation and purchase of AT equipment.	Proficient/advanced
C106.	Collaborate with related service personnel (such as orientation and mobility specialists, occupational therapists, and physical therapists) in the determination of and instruction to use appropriate AT.	Proficient/advanced

(cont.)

Table 2
(Cont.)

Competency	Description	Level of expertise
C107.	Collaborate with vocational rehabilitation personnel in addressing AT needs during transitions.	Proficient
C108.	Collaborate with general education educators and paraeducators in using general technology with students with visual impairments.	Proficient
C109.	Communicate effectively with AT specialists from other disability areas, such as speech therapy and deafness.	Proficient
C110.	Explain the use and care of AT equipment to parents, other educators, teachers, specialists, and aides.	Proficient
C111.	Advocate to administrators for the need for AT for students.	Proficient

Delphi method has innate limitations, including the following:

1. This study was limited to the opinions expressed by the panelists.
2. The focus of the study was only on assistive competencies for teachers of students with visual impairments.
3. The use of the Delphi method had inherent limitations, such as these:
   a. the lack of generalizability,
   b. a reliance on the administrative and analytical skills of the researchers,
   c. a dependence on the quality of the participants, and
   d. inadequacy in coping with paradigm shifts (Clayton, 1997).

In addition, the entire study was conducted using an Internet survey system. The panelists had some difficulty accessing the questionnaires online and had problems saving their responses. As a result of the Round 1 difficulties, the panel was given two options for completing the questionnaire (online and paper based). Although the rate of attrition was low for this study, these issues may have had a negative effect on the overall rate or quality of responses.

Recommendations

On the basis of the conclusions and implications of this study, the following recommendations are made for future research. First, as with any study, replication would further enhance the results. Although it was determined that the Delphi method was the best consensus-building model for this study, future studies could also use other methods, such as focus groups or large-scale surveys. Now that a set of competencies has been developed, it would be prudent to have a focus group of experts refine the competencies to be more comprehensive. To validate the findings of this study further, a large-scale survey of teachers of students with visual impairments, university faculty, and assistive technology specialists should be conducted.

Second, the set of assistive technology competencies could be used to develop a curriculum for programs that train teachers of students with visual impairments. This study answered the basic question of what should be taught with regard to assistive technology and to what level it should be taught. The next step is to use these competencies to affect teachers of

students with visual impairments at every level of service. While the competencies may have their greatest impact on university programs, the list of competencies should also be used by professional organizations, which can look to this list of assistive technology competencies as a compass for the direction they need to take in future professional development activities. State education agencies and school districts that provide in-service training could also use these competencies for the same purposes. The competencies could be used as a means of developing curriculum units that could be used in the preservice and in-service training. Other disability professional fields could also replicate the process used in this study to develop a highly reliable and highly valid set of disability-specific competencies.

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Derrick W. Smith, Ed.D., COMS, *assistant professor, Department of Education, University of Alabama in Huntsville, 301 Sparkman Drive, 247B Morton Hall, Huntsville, AL 35899; e-mail: <derrick.smith@uah.edu>.* ***Pat Kelley, Ed.D., COMS,*** *retired associate professor, Virginia Sowell Center for Visual Impairments, Texas Tech University, P.O. Box 41071, Lubbock, TX 79409-1071; e-mail: <pat.kelley@ttu.edu>.* ***Nancy J. Maushak, Ph.D.,*** *associate professor, Department of Education, Texas Tech University; e-mail: <nancy.maushak@ttu.edu>.* ***Nora Griffin-Shirley, Ph.D., COMS,*** *assistant professor and director, Virginia Murray Sowell Center for Research and Education in Visual Impairment, and coordinator, Orientation and Mobility Program, Division of Educational Psychology and Leadership, Program in Special Education, College of Education, Education Building MS1071, Texas Tech University, Lubbock, TX 79409; e-mail: <n.griffin-shirley@ttu.edu>.* ***William Y. Lan, Ph.D.,*** *chair, Department of Education, Texas Tech University; e-mail: <william.lan@ttu.edu>.*

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