Factors that Affect the Successful Implementation of Assistive Technology

Noel Estrada-Hernández, PhD, CRC
The University of Iowa
Iowa Center for Assistive Technology Education and Research
James R. Stachowiak, MA, ATP
Michigan Integrated Technology Support

Abstract

This statewide research project developed and conducted a survey to assess Assistive Technology (AT) needs in Iowa’s K-12 schools. Data gathered on the 1,105 teachers intended to develop an understanding of the current status of AT service provision, AT knowledge and experience, available resources, and other factors affecting the delivery of effective AT services in the state of Iowa. Results confirm findings from previous studies that suggest various personal, professional, and system factors that hinder the effective implementation of AT. Implications for teacher preparation programs are presented.

Keywords: Assistive Technology, implementation of, Special Education, Teacher Education

Correspondence regarding this article should be submitted to Dr. Estrada-Hernández to: noel-estradahernandez@uiowa.edu. This project was sponsored by The University of Iowa Social Sciences Research Program, Office of the Vice President for Research.
Factors that Affect the Successful Implementation of Assistive Technology

When Individualized Education Plan, (IEP), team members are unclear regarding their role, or do not possess adequate knowledge about assistive technology (AT), the end result is poor exploration, acquisition, or implementation of AT. One key stakeholder in making AT a success in K-12 schools is the classroom teacher. Teachers, an integral part of the IEP team, need to be key stakeholders for the successful implementation of AT in the classroom. However, for many teachers, a lack of awareness, knowledge, or comfort with AT limits their efforts in serving students with disabilities. Research states that knowledge of and comfort with AT has a profound effect on the use of this technology by students with disabilities (Abner & Lahm, 2002; Stachowiak & Estrada-Hernandez, 2010). However, many teachers in K-12 schools either do not have the required knowledge to effectively use the technology with their students or are not comfortable incorporating and using AT in the classroom.

Although there are stated standards and competencies for teachers of students with disabilities in the provision of AT services (for a review see Baush and Hasselbring 2004), little research is available that identifies the teachers’ perceived awareness, knowledge, and skills, and the status of AT services in K-12 schools. This statewide research project developed and conducted a survey to assess AT needs in Iowa’s K-12 schools from the teacher’s perspective as a key stakeholder. Ultimately, this study intended to develop an understanding of the current status of AT service provision, AT knowledge and experience, available resources, and other factors affecting the delivery of effective AT services in the state of Iowa. The following research questions guided the present study:

1. Are teachers aware of the Assistive Technology used in their schools?
2. How do teachers rate their level of awareness, knowledge, and skills regarding Assistive Technology and its service provision?

3. What are teachers’ perceived barriers, perceived positive aspects, and perceived needs in relation to the provision of AT services in their schools?

**Literature Review**

*Research Review: Teacher Preparation*

Perhaps the most important factor in the successful implementation of AT in the classroom is the teacher. Many studies have been conducted that explore teacher preparation and comfort with AT. Early studies (e.g., Derer, 1996, as cited in Weintraub & Wilcox, 2006) suggested that teachers lack adequate skills to incorporate AT effectively in the classroom. Maushak, Kelley, and Blodgett (2001) conducted a pre- and post-survey with pre-service teachers. As part of the research process, the pre-service teachers participated in a workshop designed to teach them about AT and how to incorporate AT in an inclusive classroom. Participants’ knowledge scores, although generally positive, in some cases revealed that individuals had limited awareness of AT and various disability related issues. The researchers concluded that there was a need to strengthen the inclusion of AT in the classroom at the pre-service level.

*Research Review: Teacher Preparation Programs*

Although many researchers have focused on AT knowledge and use at the practitioner level, others have focused on teacher preparation programs. For example, Judge and Simms (2009) identified whether special education programs required AT courses for initial certification and degree completion. They also explored potential differences in types of certification programs and educational levels by program (e.g., undergraduate or graduate). Results of the
study found that education programs with emphasis on secondary special education and mild to moderate disabilities required AT courses the least in comparison with other programs with emphasis on severe to moderate disabilities and elementary special education. The researchers also noted that 86% of the academic programs surveyed required at least one AT course and 14% required two courses (Judge & Simms, 2009). Results of this study validate the ones presented by Maushak et al. (2001) pointing to the need to continue to develop the skills of future teachers in AT concepts and applications to students with disabilities.

Michaels and McDermott (2003) explored how knowledge, skills, and dispositions are related to AT currently/ideally integrated within special education teacher preparation programs. Results indicate that only 45.5% of the 143 program coordinators surveyed indicated that their program had a special AT course. Results also suggest that in order to have a more direct impact from the teacher-preparation, perspective programs should increase faculty expertise in AT, better infuse AT in more consistent ways in special education curricula, incorporating AT devices and computer applications within campus computer labs, and fostering and building relationships with AT providers (Michaels & McDermott, 2003).

**Research Review: Use and Inclusion of AT**

Use and inclusion of AT has been the focus of various recent studies in the special education/early intervention arenas. Stoner, Parette, Watts, Wojcik, and Fogal (2008) conducted a study that explored perceptions regarding the use of AT in an early childhood program. Results of this qualitative study suggested that although AT was in use in many classrooms, especially in the classrooms of students with disabilities, it was largely underused. Participants perceived AT as a “supplement” to the curriculum rather than as an “integrated” aspect of the curriculum (p. 83). Also, teachers identified AT as an area of training need. Student characteristics (i.e.,
demographics) and time needed and spent in AT activities were also identified as important factors influencing the integration of AT in the classroom (Stoner et al., 2008).

Baush, Ault, Evmenova and Behrmann (2008) conducted a nationwide study (n = 699) to explore the status of AT service provision to students with disabilities. Main findings suggested there is still a serious lack of awareness related to what constitutes AT. This was based on the different federal definitions used regarding AT. Their results also suggest that there are many professionals acting in the delivery of AT services beyond teachers and AT specialists including: speech and language therapists, para-professionals, administrators, and other not specified professionals.

McLaren, Bausch, and Ault (2007) explored collaboration strategies used by general and special education teachers when providing AT services to students with disabilities in school settings. Results of their qualitative analysis emphasize practices such as focusing on relationship building with other professionals, obtaining similar training opportunities for all teachers, being open to the collaboration process, a fear of technology, lack of initiative in taking ownership of technology, lack of time or opportunity to meet, and beliefs about the need for collaboration, as factors that not only hinder collaboration/consultation in the service provision for AT, but also the successful implementation of an AT solution (McLaren et al., 2007). Previous studies (e.g. Baush & Hasselbring, 2004) also have outlined time, shortage of school personnel, and adequacy of training on AT as potential barriers to successful AT implementation.

**Research Review: AT in Iowa Schools**

Within the past decade, the state of Iowa has been really active in exploring the AT needs of education professionals and students alike (Iowa Department of Education, 1997; 2001). Both of these studies identified a lack of training on AT as the main barrier to services. Also results of
these studies suggested a need to define funding sources and the roles of the different stakeholders within the AT service provision process (Iowa Department of Education, 1997; 2001). Other important findings include the need to collect satisfaction data on how the different stakeholders perceived the AT service delivery process in Iowa schools and a better clarification/definition of ways in which AT services should be provided.

**Methods**

**The State of Iowa**

Located in the Midwest region of the United States, Iowa has a population of approximately 3 million individuals. Iowa is characterized by the diversity of its population as well as for its agriculture and manufacturing industries. Of the approximately 468,000 students in Iowa’s K-12 school system, 60,369 have IEPs. Because of the predominance of smaller rural districts, the Iowa school system is organized both by Local Education Agencies (LEAs) or school districts and by regions or Area Education Agencies (AEAs; Iowa AEA, 2010). There are nine AEAs in Iowa. These regional service agencies provide school improvement services for students, families, teachers, administrators, and their communities. The AEAs work as educational partners with public and accredited private schools with the goal of helping all children reach their full potential regardless of individual characteristics or needs (Iowa AEA).

**Participants**

This study included representation from schools in all AEAs in the State of Iowa as well as participants from the state’s School for the Deaf and the Braille School. The researcher did not have direct access to the teachers; therefore, the survey developed by the researcher for this study was sent to building administrators, (A total of 285 that included both district and building administrators), who were asked to distribute the survey to their teachers. A total of 1,105
individuals responded to the survey in their teacher capacity. Almost 21% of the teachers were male (n = 222) and 79.5% (n = 878) were female. Participants’ ages ranged from 20 to 74 years with a mean of 42.41 years and a standard deviation of 11.5.

In relation to their academic preparation, 54.6% (n = 603) of the participants indicated the highest degree they had earned was a bachelor’s degree, 44.5% (n = 492) of the participants indicated that the highest degree they had earned was a master’s degree, and 0.09% (n = 10) had earned a doctorate degree. When asked about their academic roles, 59.1% (n = 653) of the participants reported being General Education teachers. Special Education teachers were represented by 40.9% of the participants (n = 452). In response to an item asking the extent of their AT training, 70.5% of the participants indicated that they had not received formal AT education, and only 29.5% reported receiving AT training through professional conferences or colloquia. Only 0.02% of the participants indicating having an AT-related certification endorsed by the Rehabilitation Engendering and Assistive Technology Society of North America (RESNA) (e.g., ATP, ATS, RET). Some participants indicated that they did have other AT-related credentials such as in augmentative communication or as a Braille interpreter.

**Data Collection**

This study developed a survey to collect data on teachers’ perceptions of the status of AT in their schools. The survey was conducted in an electronic format. The electronic survey was sent directly to 285 K-12 school administrators in Iowa which represented all AEAs, public schools, and schools for the Deaf and Blind. This survey, the Assistive Technology Needs Assessment (ATNA), was developed by the researcher and a panel of seven experts. This panel was composed of professionals in the fields of education, assistive technology, and rehabilitation counseling. Face and content validity (Field, 2009) of the instrument was established via
consensus from the panel of experts. During this process, the experts provided their feedback in terms of the adequacy and representativeness of each of the items included in the survey. The ATNA consisted of three parts. Part 1 collected all demographic information of the research participants. Part 2 of the instrument consisted of 40 items rated on a 5-point Likert scale measuring agreement levels (from strongly agree to strongly disagree). The third part of the instrument consisted of three open-ended questions regarding participants’ perception of the benefits and barriers associated with the delivery of AT services in their schools and their perceived AT needs. An item analysis was conducted to determine the reliability of the items in the ATNA scale. Out of the 1,105 surveys received, 840 yielded complete data sets. These 840 responses to the 40 items yielded a Cronbach’s alpha of .90, suggesting that the instrument provided reliable measurements.

Data Analysis

To determine the teachers’ levels of awareness, knowledge, and perceptions of the status of AT in their schools, the survey’s 40 items were analyzed using descriptive statistics. In addition, a Principal Component Analysis (PCA), often referred to as exploratory factor analysis, was conducted to determine if these 40 items could be reduced to primary components that represented a theme. A PCA is a statistical technique used to uncover the underlying structure of a collection of multiple variables (in this study these variables were the individual survey items). For the purpose of the present study, PCA was useful in analyzing how the 40 items of the research instrument would statistically group themselves into factors that can be used to draw inferences. It should be noted that PCA was a good analysis for this study because the researchers did not had any a prior hypothesis about the potential research question findings.
Qualitative data, on the open ended questions, were analyzed following standard thematic analysis methods which included three steps. First is open coding, in which the researcher works to reduce the data to smaller units or codes. Second is axial coding, in which the researcher groups and labels the reduced data into initial categories. Third is selective coding, in which the researcher refines and reduces the previously identified categories into smaller groups (Leech & Onwuegbuzie, 2008).

Results

AT Utilization in Schools

As part of the professional demographic questions in the survey, participants were asked about their knowledge regarding the current AT devices that were provided to students with disabilities in their schools. The list of AT devices included in the survey was defined by the panel of experts who worked in the development of the instrument. It has to be noted that some of these individuals had or were working as AT specialists within the school system and knew firsthand what was being used in schools. The researchers added an “other” option to allow for the identification of devices not included in the list. Results indicated that Scan and Read Programs (e.g., Kurzweil 3000, Read and Write Gold, WYNN), Alternative Keyboards (e.g., large key, different layout, onscreen), and Augmentative Communication Devices were the most commonly used AT devices reported. See Table 1 for details on all reported AT devices. In addition, participants indicated the use of other devices and services, such as iPods, the AlphaSmart, and Boardmaker, which were provided to students with disabilities in their schools. Based on the data frequency count and the low percentages reported, many participants were not aware of the types of AT used in their schools.
Table 1. Most Frequent AT Devices Utilized in Iowa Schools

<table>
<thead>
<tr>
<th>AT Device</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scan and Read Programs (Kurzweil 3000, Read and Write Gold, WYNN, etc.)</td>
<td>23.4</td>
</tr>
<tr>
<td>Augmentative Communication Devices</td>
<td>20.9</td>
</tr>
<tr>
<td>Alternative Keyboards (large key, different layout, onscreen, etc.)</td>
<td>18.6</td>
</tr>
<tr>
<td>Text to Speech Programs</td>
<td>14.1</td>
</tr>
<tr>
<td>Word Prediction Software</td>
<td>13.0</td>
</tr>
<tr>
<td>Alternate Mouse Options (joystick, trackball, headmouse, etc.)</td>
<td>12.7</td>
</tr>
<tr>
<td>Speech Recognition Programs</td>
<td>10.0</td>
</tr>
<tr>
<td>Screen Magnification Programs</td>
<td>7.7</td>
</tr>
<tr>
<td>Braille Writer</td>
<td>4.4</td>
</tr>
<tr>
<td>CCTV</td>
<td>3.9</td>
</tr>
<tr>
<td>Portable Video Magnifier</td>
<td>2.8</td>
</tr>
<tr>
<td>Electronic Braille Notetaker</td>
<td>2.2</td>
</tr>
</tbody>
</table>

Note: Based on N of 840.

AT Knowledge

Results from the Assistive Technology Needs Assessment (ATNA) suggested a need for more training not only on the legal aspects and basic concepts of AT but also on types of AT support for students with sensory and physical disabilities. This was evidenced by a range of only 12% to 29% of the participants who indicated having knowledge of AT and its applications to students in various disability categories. The areas of development and inclusion of accessible instructional materials were identified as training and service needs by 79% of the responders. Only 31.6% reported receiving appropriate AT training from their schools, and 49% indicated knowing where to obtain AT information.
AT Service Delivery

In relation to the process of providing AT services, only 28% of the participants agreed that AT was properly considered in IEP meetings, and only 35% agreed that parents and students had an active role in the evaluation and selection of AT devices. Furthermore, only 15% agreed that the AT assessment, recommendation, trial, and implementation process occurred in a timely manner, and only 18% agreed that effective follow-up was provided for these cases. When questioned regarding direct interventions, 40% of the surveyed teachers indicated that they did not know their role during the AT service provision process. Only 19% indicated that their school had formal policies or guidelines related to AT services. Finally, 27% of the participants reported knowing how to incorporate AT into a student’s IEP.

AT Issues and Satisfaction

Teachers reported not being aware of the different reasons students chose to abandon their AT devices. Only 21% of the teachers did not perceive funding as a barrier to services, 91% indicated that teachers were satisfied with and valued the work of the AEA-AT team, and 18% agreed that parents seem satisfied with how AT services were provided in schools. In response to this specific question, 76% of teachers provided a neutral response.

Factors Defining the State of AT in K-12 Schools

A principal component analysis was conducted which allowed the researcher in developing a clear conceptual definition of the resulting factors based on the items that loaded in each factor (Field, 2010). Results of this analysis suggested an eight factor solution. In other words the 40 ATNA items grouped together in eight distinct groups that provided a unique theme to be analyzed. This model accounted for 62.24% of the total variance. Table 2 provides the variance contribution by each factor included in this model.
Table 2. Total Variance Explained by the Eight Factor Model on Teacher’s Perceptions of the Status of AT in K-12 Schools.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Variance Explained</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT responsibilities and Awareness</td>
<td>10.60 %</td>
</tr>
<tr>
<td>AT Knowledge and Skills</td>
<td>10.48 %</td>
</tr>
<tr>
<td>AT Process and Outcomes</td>
<td>9.59 %</td>
</tr>
<tr>
<td>AT Classroom Implementation</td>
<td>8.68 %</td>
</tr>
<tr>
<td>Experience with AT</td>
<td>7.74 %</td>
</tr>
<tr>
<td>Awareness on Universal Design for Learning</td>
<td>5.71 %</td>
</tr>
<tr>
<td>AT Issues and Barriers</td>
<td>5.70 %</td>
</tr>
<tr>
<td>AT and the IEP Process</td>
<td>3.73 %</td>
</tr>
</tbody>
</table>

Note: Based on N of 840.

The eight factors were defined based on the themes of all the items that grouped per factor. Factor 1, *AT Responsibilities and Awareness*, contained eight items that described participants’ general awareness regarding AT service provision and their role in facilitating such a process. Sample item included: “I understand the legal mandates that regulate the provision of AT in educational settings;” “I know how to properly include AT in a student’s IEP.” Factor 2, *AT Knowledge and Skills*, included five items that described participants’ specific knowledge in using AT with specific populations. Sample items included: “I know how to use AT for students with communication impairments;” “I know how to use AT for students with visual impairments.” Factor 3, *AT Process and Outcomes*, included seven items that addressed the AT service provision and its results. Sample items included: “My school has formal operational policies and procedures to guide the process of evaluating, assessing, obtaining, and implementing AT for students with disabilities;” “The formal process of evaluating, assessing, obtaining, and implementing AT occurs in a timely manner.” Factor 4, *AT Classroom Implementation*, included six items that addressed the use of AT devices in the general
classroom. Sample items included: “I effectively integrate AT into the general classroom;” “I consult with other teachers about ideas for successfully implementing AT in the classroom;” Factor 5, Experience with AT, included five items that addressed the teacher’s experience using AT and working with students with disabilities. Sample items included: “I know the difference between low tech, mid tech, and high tech AT;” “I have had experience working with a student who uses assistive technology.” Factor 6, Awareness of Universal Design for Learning, included two items that addressed the knowledge and application of University Design for Learning in the classroom. These items were: “I understand Universal Design for Learning concepts;” “I utilize Universal Design for Learning concepts in my classroom and lesson plans.” Factor 7, AT Issues and Barriers, included four items that described obstacles to the effective implementation of AT in K-12 settings. Sample items included: “My school lacks adequate funding for AT;” “Cost is often the primary factor when choosing AT for a student in my school.” The last factor, AT and the IEP Process, included three items that described the participant’s perception of AT inclusion in the IEP process. Sample items included “AT is properly considered on every IEP, regardless of the type or significance of the student's disability;” “I am unaware of the potential barriers to successfully implementing assistive technology in a classroom.”

Open-ended Questions

This portion of the survey was composed of three open-ended questions in which teachers were asked about their perceived barriers, perceived positive aspects, and perceived needs in relation to the provision of AT services in their schools. Responses were categorized and presented within the contexts of perceived barriers, positive aspects, and AT needs.

Perceived barriers. The leading category was awareness or knowledge. Because teachers are part of the IEP team and often initiate requests for AT, a general lack of knowledge
of the AT options available may hinder a teacher’s ability to provide detailed needs assessments. This deficit might even prevent a teacher from seeking out AT, not because the teacher does not want to introduce AT to his or her classroom, but because the teacher does not know in what way AT could help individual students. Time is also a factor that was cited far less often; however, a respondent noted that “it takes time to set up, learn, and implement some systems.” Other barriers identified by participants were difficulties with daily operation of the AT equipment.

Issues of organizational structure were addressed that provided validation to the survey data. These responses told of difficulties with obtaining equipment and/or assistance in a timely manner or expressed confusion as to the proper channels of information and assistance within the district or AEA. In essence, many teachers did not know what to do and/or whom to contact when they had a student who might have required AT, or if they did know what to do, role and gatekeeper issues beyond their control prevented the teacher from quickly getting what they needed.

Finally, issues of social validity were noted with less frequency. Teachers reported that using AT equipment sometimes embarrassed students. The students tended to see the equipment as one more thing that made them different from the other students. These concerns appeared more often during middle school/junior high and then decreased somewhat during high school.

**Perceived positive aspects.** Responses indicated that equipment and organization were important components of AT service, citing availability and speed of delivery as important for those who needed it. They reported having a variety of technology but were not very specific beyond mentioning Kurzweil and hearing adaptations. “The low-tech supports are probably the best. Anything that doesn’t require a computer is used fairly frequently—mostly those for level 3 students.” Of the unique comments, one teacher indicated that AT encourages other students to
be more accepting of those who are different. A second teacher felt that AT “instills confidence” in students with disabilities. Another was confident in the correct implementation of AT in his or her school.

**Perceived AT needs.** The largest single category of those surveyed felt that teachers and staff members in their schools/districts needed more training. This theme was not only evident in the ATNA survey answers, but in the open ended questions as well. Many respondents in these categories specified that the training required should focus on particular types of equipment. Some of these respondents named specific devices and/or software. As one teacher commented, “Kurzweil training is always beneficial. If we get a student who has vision problems, then we will need all three: training, support, and resources.”

Other responses included a need for more knowledge on different AT options available to teachers, sometimes with additional concerns of adequately performing needs assessments for students or incorporating all necessary recommendations into an IEP. This was captured by a teacher who said, “We are the persons that provide the AT in our school. There is a tech support person that would help us, but we do all the research, integration, and implementation for the students and any follow-up assessment for their usefulness and success with them.”

Finally, some participants suggested the need for additional staff (e.g., special education teachers, AEA representatives, or AT professionals, and support staff in general), new sources of funding, any/all forms of resources, assistance with equipment set-up and operation, and additional time (often for meetings or working directly with students).

**Discussion**

The literature suggests that in order for students to benefit from AT interventions, the following factors should be considered: availability or knowledge of the technology, confidence
in its use, selection or choice of alternatives, and training (Weintraub & Wilcox, 2006). This study was conducted to capture how teachers in Iowa perceived AT services in their K-12 schools. Specifically, this study explored teachers’ self-reported AT awareness, knowledge, and skills, as well as perceived assets, barriers, and needs related to effective AT service provision for students with disabilities. The results of the present study identified both individual and systemic factors that seemed to impact the way AT services are provided in Iowa schools. Results clearly supported the findings of earlier studies that teachers need to become more aware of, skilled with, and comfortable with the use of AT. Clear evidence of this is the 39% of participants who indicated receiving AT education in their pre-service programs, fact that has been reported in previous studies (e.g. Bausch & Hasselbring, 2004; Michaels & McDermott, 2003). In addition to the areas of AT solutions for sensory impairments, legal issues of AT, inclusion of AT in the classroom, and development and inclusion of accessible instructional materials were identified as training needs by research participants who answered the ATNA survey. The development of Universal Design for Learning skills and its inclusion in the classroom was another area identified as a relevant and contemporary need by participants in this study.

Lack of awareness and training may be a factor that translates into how the teachers act within and perceive the AT service delivery process. Results of the ATNA survey are similar to those reported by Abner and Lahm (2002), who suggested that teachers do not know how to properly incorporate AT into a student’s IEP. Moreover, results of the present study suggested that a low percentage of teachers know exactly what their role is in the consideration of AT services, believe that parents and students have an active role in the evaluation and selection of AT devices, and consider that this evaluation process along with the proper implementation and
follow-up services are provided in a timely manner. Within the exploration of AT service provision, it is noteworthy to mention that although teachers need to be more aware of AT solutions and applications, half of the participants indicated being able to search and identify information on their own.

Data collected in the present study also pointed to systemic factors that addressed the manner in which AT services are provided. Teachers reported being satisfied with the support provided by the AEA’s AT team, which provides assistance in the evaluation, assessment, trial, and implementation of different AT solutions. Yet, these participants were strong in disclosing that they were not clear regarding the expectations imposed on them as teachers during the AT service provision process. They also indicated that there was not a clear and uniform way in the delivery of AT services through the different AEAs and that the way the main stakeholders communicated with each other also varied among AEAs, which caused confusion and misdirection. Contrary to what was reported in prior research, participants in this study did not perceive that there was funding to acquire AT, but that funding and allocation of resources for training was a main systemic issue affecting how AT services were evaluated and implemented.

Limitations

The limitations of the present study need to be presented. Because of having administrators distribute the survey to their teachers; the researchers did not know exactly how many teachers received the survey. Results of this study may be more representative of those AEAs with really active and research oriented school administrators and should not be generalized to teachers as professionals. In addition the fact that the data collected in this survey was self-reported data and was not triangulated with additional information may limit the way these results could be used.
Implications for Teacher Preparation

If teachers are going to be successful in implementing AT and assist students with disabilities, their AT related skills and comfort should be developed. Literature clearly identifies that lack of teachers proficiency (in the use of technology), may create artificial ceilings for student’s outcomes (Dimmitt, Hodapp, Judas, Munn, & Rachow, 2006). For teacher preparation programs the development and inclusion of a new course in an already specialized curriculum is somewhat cumbersome; this author recommends as an initial step the infusion of AT material into the basic teacher preparation curriculum. Some of the questions that this infused material should answer include but are not limited to: (a) What is AT and what are the main differences between low, medium, and high tech devices?, (b) What are some of the most common AT solutions by disability type?, (c) How is AT evaluated and recommended to a student with a disability?, (d) How is an Individualized Education Plan (IEP) developed and what is my role as a teacher?, (e) How can AT be successfully included in an IEP?, (f) What is Universal Design for Learning?, (g) How can teachers effectively integrate AT and Universal Design for Learning in their classrooms?, (h) What strategies can teachers use to identify existing resources and support for AT needs within their school district?, (i) What data should teachers collect in order to document further needs and outcomes of AT interventions? These questions could be addressed in courses such as Foundations of Special Education or Methods and Assessment. If a teacher preparation program cannot facilitate this opportunity, other alternatives should be explored, for instance, having guest lecturers from an AT team in their school district who bring practical expertise to the classroom. Other alternatives could be acquiring the AT knowledge and potential practical applications through the use of distance education, webinars, and podcasts (see Chmilar & Cheung, 2007).
Higher education professionals should be proactive in initiating or enhancing their AT knowledge, comfort, and skills. In doing so they can attend workshops or online webinars, or consult with specialized professional organizations such as the Council of Exceptional Children or the Rehabilitation Engineering and Assistive Technology Society of North America on the best practices related to AT service delivery. A “train the trainer” model could be developed so that experienced AT professionals could be mentors and provide adequate training and professional experience to higher educators in their preparation programs so they can train their students before they engage in their teacher practica experience. The expected outcome is important: better prepared teachers and better served and satisfied students with disabilities.
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