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Guest Editorial

Assistive Technology as a Workplace Support

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1. Introduction

What do a watch with an alarm, a day planner, a Palm Pilot, and a computer all have in common? These are examples of devices that can assist employees complete their daily job duties. For the worker with a disability such "assistive technology devices" may be vital to obtaining employment and improving daily work performance. Assistive technology (AT) can assist in bridging the gap between a person's physical abilities and the job requirements. Many workplace challenges can be either overcome or ameliorated by using assistive technology in combination with other types of workplace supports.

Despite the promise of assistive technology, many people with significant physical disabilities remain in facility-based employment programs. Underutilization of AT to facilitate competitive employment is related to a number of critical issues. This includes lack of information on available technology; lack of coordination across services; lack of training on how to use devices for users, families, and professionals; and lack of coordination in the evaluation and selection, as well as lack of funding of assistive technology alternatives.

This issue of the *Journal of Vocational Rehabilitation* (JVR) will take a look at assistive technology as a workplace support. I know you will agree that the authors have valuable information to share around the utilization of assistive technology to facilitate integrated competitive employment outcomes for individuals with significant disabilities. Gamble, Dowler, and Orslene from the Job Accommodation Network provide the reader with a review of the literature on the use of workplace AT and offer a model for selecting appropriate assistive technology. Wehmeyer, Palmer, Smith, Parent, Davies, and Stock provide the reader with a single-subject design meta analysis of technology use by people with intellectual and developmental disabilities. Strobel, Fossa, Arthanat, and Brace focus on the need for accommodation and emerging technologies in the employment of people with visual impairments. Arthanat and Strobel also provide an article on wheeled mobility devices and vocational functioning and wellbeing. Stodden, Roberts, Picklesimer, Jackson, and Chang present their findings from a survey of 1,600 Disability Support Coordinators working in postsecondary educational institutions. The survey focused on the types and frequency of educational supports, accommodations, and services offered to students with disabilities attending two- and four-year postsecondary institutions. Finally, Brooke, McDonough, and Hardy present a case study on using social security work incentives and some unique services and supports to make the process of acquiring assistive technology easier for beneficiaries and their families. The following overview offers some basic information on assistive technology as a workplace support.

2. What is assistive technology?

The most frequently quoted definition of assistive technology comes from the Technology-Related Assistance of Individuals with Disabilities Act of 1988,

which was reauthorized in 1993,1998, and most recently in 2004. In 1998, the Act was renamed the Assistive Technology Act. This law defines assistive technology as *any item, piece of equipment, or product system, whether acquired commercially or off the shelf, modified or customized, that increases, maintains or improves functional capabilities of individuals with disabilities.* This definition has been used consistently across legislation to include the Americans with Disabilities Act (ADA) and the Workforce Investment Act of 1998.

3. What types of assistive technology are available?

Assistive technology is considered either "low or high tech" depending on the complexity of the devices, and the materials used to produce them. Low technology devices usually are inexpensive and easy to purchase or make. Consider the following examples. A person with unsteady hand movements uses dycem (a non skid mat) to stabilize work materials. An individual with limited coordination uses a key guard over a computer keyboard to enable him to strike the correct key.

Materials to fabricate a low-tech solution can be found at many generic merchandise stores (e.g., hardware, home improvement, or computer stores) or ordered from catalogues. The cost will typically be less from these sources than if purchased through specialized vendors. Modifying purchased items can also produce low-tech solutions. Low-tech does not necessarily require specialized training to identify or make and are relatively easy to implement for individuals with disabilities. For example, a stapler could be mounted on a base with a paper guide so that an individual who uses only one hand can staple papers.

High technology devices are characterized by the use of electronics, special manufacturing techniques, and materials. Typically, high technology is obtained through specialized vendors and requires assistive technology services such as a rehabilitation engineer, rehabilitation counselor, occupational, physical, or speech therapist to acquire and put into place for the individual who requires the accommodation.

4. Does a person need to learn how to use assistive technology before conducting a job search?

The identification of a person's career goals and interests is the first step to successful employment. Attempting to determine a person's technology needs prior to knowing the person's interests can result in the purchase of assistive technology or skill training in the use of a device that does not translate to a competitive employment position. In addition, it may be difficult, if not impossible, to identify assistive technology devices without knowing what the person wants to do.

Requiring that technology be identified and purchased prior to the job search may delay access to the community. An individual may learn to use an assistive technology device as a prerequisite to employment that is not compatible with the negotiated job duties. For example, a young man learned to use a specialized software program to access a computer keyboard in anticipation of becoming employed. However, when he got his job, the software program was not compatible with the company's database. An evaluation of the person's needs for accessing the system had to occur, and an individualized program developed to facilitate employment.

The identification of assistive devices prior to employment should be considered if the device increases the person's functional capacity *in any environment*. In other words, the purchase of AT should match a functional need that an individual has rather than requiring that devices be identified as a prerequisite to employment. For instance, a person in a facility-based program may want to learn how to access a computer using assistive technology if the activity has an immediate functional purpose such as online banking, keeping a personal journal, or accessing computer games for leisure recreation as examples. Obviously, increased independence is a goal and should be facilitated for any task or activity and within any environment in which the person lives, works, and plays. However, requiring that a person learn to use assistive technology as a prerequisite to a job search is contrary to the concept of customizing and negotiating a job based on the individual's skills and interests.

5. How will an employment specialist know if a job can be customized to match the interests and abilities of an individual with a disability if the person is not taught to use assistive technology prior to employment?

While learning to use devices should not be a prerequisite to employment, the identification of assistive technology that a person already uses can be very helpful. Determine if the job seeker uses assistive technol-

ogy devices to complete functional activities. This information can be obtained through informal interviews, during person-centered planning meetings, as well as during observations.

For instance, the individual who uses a mouth stick and speakerphone at home may be able to do the same at work. Another person who uses a head pointer to type letters to friends on a typewriter may be able to type on a computer keyboard for data entry. Or, the person who uses a raised toilet seat and grab bars in the restroom at the facility-based program will need the same equipment in the workplace. These are just several examples, and the intent is to identify currently used devices rather than randomly selecting and training on devices that may not transfer to a yet unidentified job in the community. Job specific assistive technology identification and selection would begin during the job negotiation and customization process.

A word of caution should be inserted here regarding allowing the technology that a person uses to "drive" the job search process rather than the interests of the individual. The purpose is to gain information about the individual as with anyone who needs assistance with obtaining and maintaining employment. The individual's interests, strengths, and skills should all be used to assist in customizing a community job.

6. How will an employment specialist determine if a person will be able to physically complete job duties when working with an employer to customize a position?

Asking questions and informal observation can provide a wealth of information to include physical abilities and personal care support needs. Ideally, interviews and observations should take place in a setting of the person's choice while completing an activity selected by the individual. Functional activities for observation may include going out to dinner, going shopping, going for a walk in the person's neighborhood or park, or attending a community event.

Using an activity selected by the job seeker with a significant disability can provide insight into his or her interests and abilities. The employment specialist or personal representative can evaluate if the individual is able to select an activity of interest, set up and arrange a way to get to the location, use his or her wheelchair independently, use public or private transportation, and so forth. For someone with a physical disability, the employment specialist will be able to observe the individual's physical capacity. If the individual chooses to go out to eat, the employment specialist can learn a great deal about his or her potential needs in the workplace. For instance, the employment specialist will learn if the individual can maneuver a wheelchair in a confined space, manipulate the menu, use utensils for eating or drinking, as well as other personal care support needs such as taking off a coat or using the restroom. Watching the person complete an activity, such as removing a coat, can tell the employment specialist something about the person's physical ability to reach and his or her mobility. This observation can provide beginning insight into how much physical assistance or technology the individual may need on a job site. Visually being able to picture the person's mobility skills will assist the employment specialist when he or she is negotiating a customized job. The employment specialist will be able to consider how the person's skills can be matched to a job, given assistive technology and other workplace accommodations, as well as key information provided by the individual. Without this knowledge, a person may be "matched" to a job that is physically incompatible even with the application of assistive technology services and devices.

7. Who should be responsible for determining what assistive technology a person needs in the workplace?

Often, employment specialists working with individuals who have physical disabilities are very good at identifying solutions and making low-tech devices. An example might be extending the legs on a table so that the person who uses a power chair can access a computer workstation. Another example might be purchasing a typing stand to make it easier to manage data entry tasks. These are solutions that someone who is familiar with an individual's physical abilities can make upon observation of a specific need. Another source for low technology solutions may be a carpenter, a "handy" parent or friend, church volunteer, or perhaps the local high school's vocational tech department. In addition, the local school system may have therapists who are knowledgeable in assistive technology who can provide advice. Establishing a relationship with these individuals may prove invaluable when customizing community jobs.

In some situations, the advice of a trained professional will be required. An agency will want the support of a professional who provides assistive technol-

ogy services such as a rehabilitation engineer or occupational, physical, and/or speech therapist. If a relationship is established with a rehabilitation engineer for instance, he or she may be able to observe a job and create a modification that will promote access to employment. These assistive technology services can be funded through vocational rehabilitation. For instance, a young woman with cerebral palsy was hired in the credit department of a bank. Part of her job was to open the mail and remove credit card payments. She was unable to open the envelopes without ripping the enclosed checks. A rehabilitation engineer fabricated a device from lightweight aluminum that she used to open the envelopes.

8. Isn't assistive technology expensive?

The Job Accommodation Network (JAN) surveyed employers who call for accommodation information to obtain feedback on the cost and benefit of accommodations (http://www.jan.wvu.edu/media/LowCostSolutions.html). The survey results indicated that 71% of accommodations cost $500 or less with 20% costing nothing. As an example, simply rearranging the environment may make a workplace accessible and cost nothing. Low technology solutions tend to be less expensive, while the cost of high technology solutions can be very expensive.

JAN is a free consulting service designed to increase the employability of people with disabilities by: 1) providing individualized worksite accommodations solutions, 2) providing technical assistance regarding the ADA and other disability related legislation, and 3) educating callers about self-employment options. Funded by the Office of Disability Employment Policy (ODEP) of the U.S. Department of Labor, JAN can be reached by phone 800-526-7234 (V/TTY) in the United States or e-mail [jan@jan.wvu.edu]. JAN also provides a Searchable Online Accommodation Resource (SOAR) system that users can access to explore various accommodation options for people with disabilities in work settings [http://www.jan.wvu.edu/soar/]. Employers may access these services as well as individuals with disabilities, their advocates/personal representatives, family members and other professionals.

9. Don't employers have to pay for assistive technology if the person needs the device to work?

Small businesses with 15 or fewer employees are not required to pay for accommodations under the Americans with Disabilities Act. Companies with more than 15 employees may be required to provide and pay for a reasonable accommodation to a qualified applicant or worker unless undue hardship would result. The ADA defines reasonable accommodation as efforts that may include, among other adjustments: making the workplace accessible, restructuring a job to best use a person's skills, modified work schedules, modifying equipment, adjusting training materials or policies, and providing qualified readers or interpreters [ADA, Sec. 101 (9) (A, B]. The type of accommodation provided is determined on a case-by-case basis and depends upon the person's needs and the possible solutions.

Most employers will work collaboratively with people with disabilities to resolve accommodation needs. However, if an employer is not meeting its duty of reasonable accommodation, there are several places to go for assistance. The United States Department of Justice (DOJ) and the Equal Employment Opportunity Commission (EEOC) provide more information on the ADA. Publications are available to download at http://www.usdoj.gov/crt/ada/adahom1.htm.

If a business makes the workplace accessible (access improvements) for ADA compliance, there are two tax incentives for employers to make accommodations and these tax incentives can reduce their federal taxes in the year that the expenses are incurred. One incentive is a tax credit that is subtracted from the business' tax liability after taxes are calculated. The other is a tax deduction that is subtracted as part of determining the business' tax liability. For more information, request IRS Publication 334, Tax Guide for Small Business, and Form 8826, Disabled Access Credit, or access these publications on the IRS web site at [http://www.IRS.gov]. Businesses should consult their accountants or a representative of an IRS office to ensure that all requirements are being met and that the correct tax form submitted.

10. Are there any other funding options to pay for assistive technology related to work?

There are a number of public and private options for funding assistive technology services and devices. These potential resources include State grants, loan funds, vocational rehabilitation, Social Security Work Incentives, Medicaid, private insurance; and other charitable sources such as foundations. Each of these options has specific requirements and guidelines that must be followed in order to access funds

for the purchase of AT services and devices. Funding technology does not have to all come from one source. Funding tips are available online from JAN at [http: //www.jan.wvu.edu/links/Funding/GeneralInfo.html].

The following web sites can provide additional information

ADA Home Page: http://www.ada.gov

Disability Rights Section Home Page: http://www.usdoj.gov/crt/drs/drshome.htm

Job Accommodation Network Homepage: http://www.jan.wvu.edu/

Training and Technical Assistance to Providers Homepage: http://www.t-tap.org

US Equal Employment Opportunity Commission: http://www.eeoc.gov/

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