

GW HEATH Resource Center

Low-Tech Assistive Technology: Changing Roles and Paradigms in Rehabilitation

By Shirley F. Tibbs



Introduction

The uses, variety, and scope of assistive technologies (AT) for people with disabilities are growing rapidly. The Technology Related Assistance for Individuals Disabilities Act of 1994 (PL-103-128) defines assistive technology devices as any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized that is used to increase, maintain, or improve functional capacities of individuals with disabilities. An AT application may be as basic as a rubber grip on a door handle or as advanced as a voice activated environmental control system.

Historically, the application of assistive or rehabilitation technology, especially high technology devices and services, was provided primarily by Occupational Therapists, Physical Therapists, Rehabilitation Engineers, Augmentative Communication Specialists and other similar providers. These high-tech devices were often expensive and perhaps difficult or burdensome to operate, transport, or interface with other systems. While the device may have met the consumer's identified need, technology abandonment was often a consequence due to issues such as a lack of training in operating the device, lack of follow-up by professionals, or a repair in case of breakdown or malfunction.

However, in recent years, the variety and availability of assistive technologies for people with disabilities have increased considerably. And, as the technologies have become easier to obtain and operate, two groups have become integral members of the rehabilitation team when considering assistive technology solutions: the consumer or

person with a disability and the vocational evaluator. The roles and contributions of each shall be discussed in this paper.

Low-Tech AT Devices for All

Manufacturers are beginning to develop products using the principle of universal design, a philosophy that aspires to products and environments with the greatest possible utility for all people, regardless of age and ability. The low-tech tools and devices listed in the table below exemplify universal design principles, most are designed to meet a specific need, and all can be found at local retail establishments.

In a sense, low-tech AT has been “destigmatized”; no longer just for people with disabilities, everyone now uses these devices. Devices and tools that minimize trauma (e.g., a shock absorbing hammer by Stanley), facilitate independent living (e.g., Velcro straps on shoes), increase efficiency (e.g., electric staplers, hole punches, voice activated telephones), and allow one to write without exerting pressure on the writing instrument (e.g., uni-ball Gel IMPACT pen by Sanford) are used by “aging baby boomers,” busy executives, carpenters, and individuals with quadriplegia alike.

People with disabilities are empowered to join the many consumers who frequent hardware, discount, and other retail stores in search of that special device to meet a need they have identified. An individual who needs a particular tool with a larger grip, for example, can visit stores to try out items until she finds one that meets her need. Or, in lieu of finding a larger grip, a low-tech solution may be fashioned from a foam bicycle grip can be slipped over the handle of a broom, or by lubricating the

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inside with hairspray or dish detergent and sliding it over the handle. Tennis balls or racquetballs, with holes cut through them, may also serve the same purpose.

Low-tech AT in the Rehabilitation Process

Assistive technology solutions are considered for all consumers who participate in a vocational evaluation through their State Office for Vocational Rehabilitation. (Note: Vocational education that is conducted through private programs or in secondary school settings do not necessarily incorporate AT solutions.) Vocational evaluators are expected to be aware of a wide variety of low- and high-technology resources to address the individual's need for assistive technology and services. Although vocational evaluators may not be experts about all types and uses of assistive technology, they may become valued members of the rehabilitation team by identifying appropriate technology solutions to consumer's needs, thereby increasing the likelihood of successful rehabilitation.

AT can significantly impact rehabilitation outcomes. By training, vocational evaluators identify an individual's vocational strengths and functional limitations or needs. This analysis, along with behavior observation about how a consumer completes a task, provides the foundation for the exploration of assistive devices. (Langton & Lown, 1995). Vocational evaluators identify and define functional limitations and needs and apply their knowledge about how AT may best meet those needs. Together, the consumer and the vocational evaluator can identify appropriate AT devices. Mastery in the use of a particular device enables the consumer to fully realize his vocational capabilities, aptitudes, and potential. This, in turn, allows for a more accurate assessment and the formulation and implementation of a more realistic rehabilitation plan.

A wide variety of low-tech assistive devices, purchased "off the shelf" at local stores, can be easily incorporated into the vocational evaluation process. These devices can help individuals with disabilities to enhance performance, conserve energy, and improve efficiency. In addition, some low-tech AT devices may arrest or prevent the

development of cumulative trauma conditions, such as repetitive stress injuries. For example, ergonomic armrests prevent the wrist from dropping (bending back) while keying, during key pauses, or while mousing. Numerous keyboard styles, such as large print and split style, may be used to prevent or arrest cumulative trauma, and may be more functional for individuals with only one functional hand (<http://www.ergo-2000.com>). Ready access to a wide variety of low-tech AT solutions can encourage consumers to explore and select assistive devices. To maximize the client's vocational potential during the vocational evaluation process, evaluators are encouraged to become familiar with low-tech AT options, and to gather an array of such devices into a "toolbox". The toolbox can then be used to address any number of consumer needs and challenges. Routine use of select devices from a low-tech toolbox may also lead to increased, self-motivated use of AT by individuals with disabilities.

Appropriately selecting and effectively applying a stable of low-tech AT devices may require challenging established notions about what constitutes AT and what these devices are designed to do. However, over time and with practice, the routine use of assistive devices in the vocational evaluation process may be limited only by the vocational evaluator's creativity and budgetary constraints.

The Vocational Evaluator's Role

In the rapidly changing world of technology, the vocational evaluator is not expected to be an expert about every technological device. However, they must be generally familiar with a variety of AT applications, and must also know various sources of AT. Additionally, in order to determine if assistive technology services or devices are appropriate for a consumer, the vocational evaluator must be knowledgeable about an individual's particular needs and functional limitations, as well as their past use of and experience with AT devices. In certain instances, the consumer may already have a device that effectively meets the identified need. Or, she may have abandoned a piece of technology found to be ineffective. An initial interview with the consumer can help avoid subsequent misguided efforts to "reinvent the wheel" or to advocate for

AT already deemed inappropriate or ineffective. However, in the event that a particular device was tried and abandoned, the vocational evaluator will need to determine why the consumer wasn't satisfied. For example, was the device the proper size and fit? Did it not meet the consumer's actual need? Was the consumer properly trained or proficient in the use of the device? Thus, any discussions and decisions about AT must be in partnership with the consumer.

The Job Accommodation Network (JAN) is an invaluable resource for the vocational evaluator. JAN provides a wide range of information regarding job accommodations, the employability of people with disabilities, and links to many other relevant sites on assistive technologies, including low-tech devices. JAN can be contacted at 1 (800) 526-7234 or at <http://janweb.icdi.wvu.edu/>. ABLEDATA is another excellent source of information on assistive technology. An easy-to-navigate website, at <http://www.abledata.com>, contains information about thousands of AT products and services as well as numerous related links.

The extensive variety of AT devices has expanded successful rehabilitation outcomes, such as full participation in an individualized education or rehabilitation program, job placement, fuller participation in society, and successful employment. Assistive devices can meet functional needs and expand vocational options for individuals with disabilities. However, it is important that the consumer achieve a level of proficiency and that there be "goodness of fit" with any assistive device to ensure an accurate vocational assessment of the consumer's skill and in order to establish realistic goals for rehabilitation and employment.

The Consumer's Role

Assistive technology can have profound impact for the consumer, at work or at home. Until recently, technologies such as voice-activated computers seemed beyond the technical or financial reach of most consumers. Today, such technology is increasingly affordable and more commonly found in educational, work, and home settings. Of course, in order to be effective, the consumer must be ready to use the assistive technology device or service.

Low-tech AT, just as the most sophisticated, expensive assistive technology, is worthless if not used. Therefore, a discussion of assistive technology and consumer willingness to use a device is the first step in its successful application. Consumers are encouraged to ask questions, discuss the uses, state preferences, and engage in ongoing conversations with their vocational evaluators about assistive technology. As the user of AT, the consumer is the critical player in the process.

The Toolbox

A variety of readily available, low-tech assistive devices for use in the vocational evaluation process are an asset to any program and any practicing vocational evaluator. Consumers and vocational evaluators are more likely to explore the use of assistive devices in the vocational evaluation process if the devices are routinely available. Many items in the toolbox can be purchased at local hardware, office supply, building supply, medical supply, discount, and retail merchandise stores.

Contents of the toolbox may include devices for measuring, timing, fastening, cutting, gripping and grabbing, illuminating, magnifying, or calculating. These may also include computer peripherals (such as trackball mice, a variety of keyboards, or ergonomic arm rests), and sound-activated, cordless, or other multi-task devices.

Assembling the toolbox may require new routines. Whenever shopping, the vocational evaluator might take a few minutes to explore the store in search of devices that meet their consumer's functional needs for inclusion in the toolbox. After a bit of practice, this "scan for tools" becomes a routine part of every shopping trip. It may be useful to maintain a running "wish list" of devices for purchase whenever program funds are available.

Exemplary Tools

Any of the following low-tech devices may be used to meet an identified need, increase productivity and endurance, reduce or prevent cumulative trauma disorders, or enhance efficiency. Low-tech AT can easily be incorporated into the vocational evaluation process. And because many of these items are widely available and commonly found in homes, offices, and businesses, consumers are likely to

continue to seek and use the devices long after vocational evaluation activities.

- The Stanley tool company has been a leader in the development of ergonomic hand tools such as saws, hammers, nail sets, and utility knives with rubber grips.
- Stanley Bostich makes office devices such as the upright stapler and staple remover with rubberized grip. Starrett makes digital tape measures (Starrett Digitape in 16' and 25' lengths).
- Zircon makes a sound activated level, various electronic measuring devices, and locators for wall studs, pipes, and electric wires.
- Bausch and Lomb makes excellent magnifying devices.
- Plantronics telephone headsets are high quality and fit in any telephone equipped for a headset.
- Fiskars makes a variety of scissors with rubber grip handles, for both right and left-hand use, and a utility knife with a closed grip.
- Talking calculators and talking dictionaries are available at most Radio Shack stores.
- Black and Decker make an easy to use cordless screwdriver and 5-1/4" blade cordless circular saw that have excellent safety features.
- OXO makes a range of functional devices for cooking, kitchen use, and food preparation, as well as ergonomic garden tools and devices for independent living.

An extensive list of recommended devices, approximate costs, and suggested vendors appears at the end of this article.

Conclusion

Low-tech AT is no longer just for people with disabilities: nearly everyone can use it to accomplish tasks more efficiently, effectively, and independently. Numerous low-tech, relatively inexpensive assistive devices are readily available at local stores in the community. Immediate availability of these devices for use in the

vocational evaluation process yields improved services and positive, perhaps life-changing, outcomes for the consumer. Vocational evaluators are strongly encouraged to develop a low-tech AT toolbox for routine exploration of assistive devices in the vocational evaluation process. The applications and possibilities that AT provides are well worth the expense and effort, both for the vocational evaluator and the consumer. As much, and perhaps more than costlier, high-tech devices, low-tech AT enables individuals with disabilities to demonstrate their capabilities and qualifications, thereby improving their prospects for successful vocational rehabilitation.

References

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The author is a graduate student in the Collaborative Vocational Evaluation Training Program at The George Washington University. She began with a well stocked, basic toolbox of AT devices that has since grown to 2 foot lockers, 2 large toolboxes, 5 sturdy toolbags, and a couple of backpacks. Devices range from a Firestorm cordless circular saw to OXO cooking tools, and she uses many of them in her everyday life. In other words, as a soon to graduate Vocational Evaluator, her "toolbox" is ready.



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Recommended Items for the Low-Tech AT Toolbox

	MEASURING DEVICES	
Sound activated level	\$30.00	Hardware store
Digital tape measure, 25'	\$30.00	Hardware store
Digital tire gauge	\$10.00	Bike store
Large number measuring cups	\$7.00	Discount store
Digital ear thermometer	\$30.00	Pharmacy
Digital blood pressure cuff	\$40.00	Pharmacy
	TIMING DEVICES	
Egg timer	\$7.00	Discount store
Digital timer on a rope	\$9.00	Discount store
Vibrating timer	\$25.00	Medical supply store
	FASTENING DEVICES	
Upright desk stapler with grips	\$8.00	Office supply store
Industrial stapler	\$22.00	Hardware store
Ratcheting screwdriver	\$8.00	Retail store
Cordless screwdriver	\$25.00	Hardware store
Hammer- anti vibe	\$22.50	Hardware store
	CUTTING DEVICES	
Scissors with rubberized grip	\$10.00	Retail store
Utility knife with closed grip	\$10.00	Retail store
Shortcut, toolbox saw	\$17.00	Hardware store
	GRIPPING AND GRABBING DEVICES	
Dycem gripping material (12" round)	\$25.00	Medical supply store
Foam shelf liner, 3'	\$3.00	Discount store
Foam bicycle grips (four 6" pieces)	\$6.00	Bike store
Small magnetic pickup tool	\$3.00	Hardware store
Large magnetic pickup tool	\$12.00	Hardware store
Self adhesive velcro strips	\$2.00	Retail store
Jar/bottle opener	\$7.00	Discount store
	ILLUMINATING DEVICES	
Headlamp	\$22.00	Sporting goods store
Snakelight, professional model	\$20.00	Hardware store

Coiled light	\$10.00	Office supply store
MAGNIFYING DEVICES		
Sheet magnifier	\$5.00	Office supply store
Magnifying glass	\$10.00	Office supply store
CALCULATING DEVICES		
Talking calculator	\$20.00	Electronic supply store
Large button calculator	\$10.00	Discount store
COMPUTER PERIPHERALS		
Trackball mouse	\$29.00	Retail store
Gel wrist rest	\$15.00	Office supply store
Gel mouse rest	\$15.00	Office supply store
Copy clip (paper holder)	\$10.00	Office supply store
Computer monitor riser	\$15.00	Office supply store
Foot rest	\$ 20.00	Office supply store
CORDLESS OR MULTI-TASK DEVICES		
Cordless circular saw	\$80.00	Hardware store
Cordless screwdriver	\$25.00	Hardware store
Cordless drill driver	\$40.00	Hardware store
Cordless telephone with charging base and headset	\$50.00	Office supply
MISCELLANEOUS DEVICES		
Rubber grip staple remover	\$3.00	Office supply store
Scissor action staple remover	\$3.00	Office supply store
Bicycle gloves with gel palms	\$10.00	Bike shop
Pens with gel ink and rubber grip	\$7.00	Office supply store
AVOCATIONAL DEVICES		
Rubber grip gardening gloves	\$10.00	Hardware store
Ergonomic garden tools	\$10.00	Discount store