



DIRECTIONS

Technology in Special Education

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THAT'S THE JOB I WANT!

How Technology Helps Young People in Transition

Robert L. Morgan, David A. Ellerd, Brent P. Gerity, and
Rebecca J. Blair

Source: Teaching Exceptional Children, Vol. 32, No. 4, Mar/Apr 2000

What opportunities do high school youth with mental retardation have when it comes to job placement?

Why do special educators and others in secondary transition programs place most of these youth in fast-food jobs, custodial positions, and other service occupations? Is it because they prefer these jobs, or do they have insufficient information about other opportunities?

To what extent is the scope and breadth of information about jobs and careers limited by what educators provide these young people?

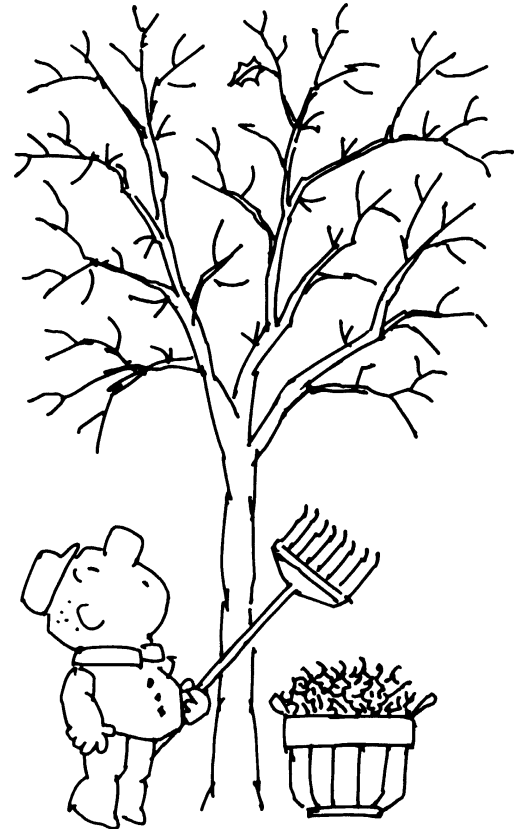
Are the career choices of these youth "self-determined" only in a narrow sense, bounded by the information at hand?

How can we provide youth with realistic, efficient information about career paths and ensure that their choices guide transition planning?

These questions are central to some of the dilemmas encountered by youth and the educators who support their transition. This article shows how technology can help sort out answers to these and other transition issues for young people with disabilities.

The Problem: Youth Lack Opportunities to Make Informed Choices About Employment

In many cases, youth and their families have not actively participated in selecting jobs or planning educational activities related to those choices (West & Parent, 1992). Although the literature has described the importance of "self-determined" transition plans (Guess, Benson, & Siegel-Causey, 1985; see box, "What Does the Literature Say?"), no efficient mechanism exists for providing youth with comprehensive information on jobs and identifying preferences so that teams can properly individualize transition plans. Youth with disabilities may be unable to make credible decisions because of inadequate information about jobs (Benz & Halpern, 1993). The outcome may be placement in non-preferred jobs, limited career awareness, and low motivation. Vocational interest



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inventories or assessment procedures designed to identify job preferences for youth with mental retardation may be useful in the initial stages of career exploration (Jastak & Jastak, 1979). Several of these inventories require at least fourth-grade reading skills (McLoughlin & Lewis, 1994). Of 16 inventories reviewed by McLoughlin and Lewis, only four are considered "reading-free" (Becker, 1988; Geist, 1964; Holland, 1985; Jastak & Jastak, 1979). One of these four (Holland) employs color slides. The remaining three represent individual jobs with a single line drawing. While valuable in identifying potential interests, these inventories raise important questions:

- Can youth with disabilities make informed decisions about jobs based on line drawings?
- Can one picture adequately represent complex, multifaceted jobs?
- Do any of the existing reading-free assessments provide a rich array of educational information about jobs so that youth with disabilities are better informed about tasks performed, work environments, salaries and benefits, and employee characteristics?

Given current assessment methods, some youth may have difficulty making informed decisions about job choice (Agran & Morgan, 1991). Youth need alternate methods for gathering comprehensive information. Clearly, the most functional way for youth to establish preferences is through actual job placements (Wehman). Placements in work environments provide opportunities for developing employment preferences. However, arranging placements may create problems related to supervising students at dispersed sites, scheduling, transportation, liability and safety, and high costs (Wehman). In reality,

educators can usually avoid or minimize these problems (Wehman, 1992). Transition teams might best make job placements, however, after youth receive comprehensive information about employment options and identify a short list of preferences. Intuitively, youth who first identify preferences and then gain experience in preferred employment should have higher probabilities of success than those placed in non-preferred jobs. We need an efficient and cost-effective method that provides youth with comprehensive information. A Potential Solution: Using Video and CD-ROM for Identifying Preferences One way to provide more information to youth and to represent the complexity of employment environments is to use motion video on CD-ROM. The video medium realistically portrays the complex stimuli in employment environments, presents information efficiently, and offers a permanent resource for future use. Currently, many school computers have CD-ROMs and play video in a compressed format (i.e., at 10-15 frames per second instead of 30 frames) and show an image on about one-fourth of the screen. Because of significant progress in digital compression technology, full-motion and full-screen capacity will soon be a reality. Although no reading-free job preference program for youth with disabilities currently uses the video CD-ROM medium, software programs for job exploration are beginning to appear (e.g., Attainment Inc., 1999; JIST Resource Directory, 1998). For students without disabilities, computer-based career assessment and automated career information

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A Framework for Aligning Technology With Transition Competencies

Part 6

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*Source: Career Development for Exceptional Individuals, The Council for Exceptional Children
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Learning, Education, and Rehabilitation Body Support, Alignment, and Positioning

Some individuals need assistance to maintain a stable position or support portions of their body. The primary competency in this area of functioning is that individuals (or their caregivers) need to be aware of the fact that devices are available that can provide support to facilitate their ability to function across various domains. The services of physical therapists and other medical personnel generally are required to ensure appropriate interventions. Care must be taken to ensure that appropriate procedures are being followed so that the health and safety of the individuals who are in need of support in this area are not placed in jeopardy. Consequently, only one example is provided for illustrative purposes.

Table 1 shows two specific devices available for seating and positioning that can help people function to a higher capacity in the post-school setting. The *Rigid Pelvic Stabilizer* secures the pelvis in the chair enabling the individual to have more control over trunk and upper extremities. The *Desk-Length Armrest* provides support to the arm when in a wheelchair, enabling better control over fine motor movement of the hand. Both of these

devices can enable some users with physical disabilities to function in work settings.

Travel and Mobility

Competencies in this category include the ability to move horizontally, vertically, or laterally. Included in this category are competencies related to walking, using public transportation, and bicycling (Bishop & Falvey, 1989). Specialists, such as those who provide mobility training for individuals who are blind, may be called upon to provide services associated with this functional area.

Technologies that address travel and mobility competencies for transition to post-school environments include simple to complex devices. Shorter individuals could use a *Merry Walker Pediatric Ambulation Device*. This device has several options for adjusting the walker to meet individual needs. For the person with lower extremity disabilities, a mobility aid might be a *Folding Walk-A-Cane*. The cane assists the individual with maintaining stability while walking and also provides assistance for getting out of chairs. The folding feature allows the user to stow the cane when it is not in use.

Most technologies that aid in public transportation are built into the

transportation vehicle, such as a wheelchair lift. One device, the *Step Lift*, can be used both as a wheelchair lift and as steps for ambulatory individuals. This lift can provide an intermediate step between the ground and the bus steps for ambulatory persons with impaired balance or lower extremity function. Either way, public transportation becomes more accessible for independent travel to work, shopping, and other places in the community. Other technologies that might enable this competency area could include communication systems to determine transportation schedules and travel routes. Environmental control devices, such as the previously mentioned *DEUCE* system, could be used to call a transportation information phone line. Similarly, a computer with Internet capabilities could be used to view the schedule and map, as posted by the transportation company.

Bicycling is another means of transportation for persons with disabilities. Students with lower cognitive abilities may not be able to independently use public transportation or walk to a job site. The *Easy Ride Tandem Bike* can offer a solution, pairing the individual who has a disability with another person. For a person with physical disabilities, an adapted bike could provide similar

transportation independence. The *Grove Innovations Hand Cycle* enables the nonambulatory person to pedal a bike using the arms to pump the pedals.

Environmental Adaptation

The environment in which a person is placed can be adapted or the person can adapt to the environment. This category includes functions associated with these adaptations as seen in the performance of many of the activities of daily living, both indoors and outdoors. Environmental adaptations can cut across all of the other functional areas, as well. Competencies within this function would include time management, breaktime and lunchtime behaviors, care of uniforms, safety procedures, time clock operation, job-related skills, which should be taught in conjunction with specific work tasks in the natural environment, and street crossing. It also may be necessary to make a number of physical modifications to facilities to accommodate functions in this category. Often, assistive technology specialists are called upon to provide help with environmental adaptations.

Many of the environmental adaptations that are necessary to provide access to the workplace for people with disabilities can be accomplished using low - or no - tech solutions. To assist with time management, a simple timer could be used to signal the end of a time period, which may signal a change in activities. For higher functioning individuals, these time signals may be accompanied with paced cues to keep the worker on task and functioning at a reasonable pace. A standard tape recorder could be the

technology used to facilitate this competency. Independence and work skills also include care of uniforms and work clothes. Accessible washers and dryers make laundering easier for people who use wheelchairs. One adaptation moves the controls to the front of these two appliances so people in wheelchairs can reach them. Ironing is also a necessary skill for maintaining work clothes. The *Electric Iron Safety Guard* provides a guard around the iron so users will not touch the hot iron plate with their fingers.

Standard safety procedures and notices in work settings are often too complex for persons with disabilities to understand. Making the signs with icons or pictures can enhance the understanding of nonreaders. These same signs or safety procedures for more complex tasks may be rewritten using more graphic step-by-step procedures to assist the user who is cognitively able to perform the work task but may need some assistance with remembering safety procedures for tasks that are infrequently performed, such as cleaning a machine.

Time clocks are used in most work settings; thus the ability to use one becomes an important skill for a student entering the workplace. A simple modification for the person in a wheelchair is to lower the time clock to an accessible height. For a person with more severe motor disabilities, such as severe cerebral palsy, the time clock function could be computerized and made available through the company's computer network. This would allow people to "punch" the time clock using their already-adapted computer system.

It is more difficult to prepare students for specific work tasks because they vary so much in the workplace. Sometimes following a few environmental adaptation guidelines, such as those outlined in *The Workplace Workbook* (Mueller, 1990), is all that is needed. Other times, the activity needs adaptation or a device needs to be purchased to assist with the task. A low functioning student working in a sheltered work setting may need an adapted electric stapler, one operated by hitting a switch. A student who is blind and is preparing to be an automobile mechanic may benefit from a *Vacuum/Fuel Pump Gauge* which is adapted with Braille markings for use in servicing the air conditioning units in cars. The range of job tasks in which students will be engaged as they enter the workforce is so large that there is a greater chance for the need to adapt existing work tools and setting rather than seeking commercially available devices that are already adapted. Rehabilitation engineers can provide advice about adaptations, fabricate new devices, or make modifications to existing ones. Adapted traffic lights are one environmental adaptation that has been made in many areas as a result of the Americans with Disabilities Act of 1990. For examples, traffic lights have been adapted to signal pedestrians when to walk across the street. Sometimes auditory signals are used and other times verbal directions are provided. These signals assist those with visual and cognitive impairments to safely cross the street. The standard "walk" and "don't walk" signals serve as visual cues as well. A more costly adaptation that would enable all persons to cross a street is the construction of a pedestrian bridge over the road.

Finally, behavior management strategies are environmental adaptation technologies of another category that should not be overlooked. They are related more to the technology of teaching than to technology devices. These strategies can be used to facilitate appropriate behaviors in many settings but especially in lunch and break time settings. Because these strategies are individualized and typically use simple counting systems, they are less obtrusive and would not impinge on the relaxed atmosphere of the lounge setting. Systematic instructional procedures that use positive reinforcement to teach chained tasks, such as the assembly of bicycle brakes, also can be used to teach tasks that are required in light industrial jobs.

Competencies in this functional area include those associated with instructional activities, various types of therapies, and rehabilitation processes. Often, technologies to support learning and education relate to adaptations and special equipment that facilitate note-taking, test-taking, reading, and writing. Special education teachers and regular class teachers, speech-language pathologists, rehabilitation counselors, psychologists, and others may be involved in providing direct services in this category.

The range of technologies available to assist with learning, education, and rehabilitation is increasing daily. A common tool is the tape recorder, which can be used for note-taking, test-taking, and even reading (listening and writing (authoring)). A more sophisticated device available for students with visual impairments is the *Braille 'N Speak*, a portable Braille

keyboard that stores the notes for later review or transfer to a computer.

A *Macaw*, or any other communication device, can assist nonverbal individuals to provide answers to verbally presented test questions. The American Printing House for the Blind distributes software for taking content tests in a variety of curricular areas. The program reads the test to the test-taker.

To assist with reading tasks, many books are available on tape. Not only is there a great collection on tape for persons with visual and physical impairments, many additional ones are available in public libraries and on the commercial market. For the person with severe physical limitations, page turners are available. These allow the reader to turn the page of a book without the aid of an assistant.

The use of any of the above devices can enable those who have difficulty in processing or producing conventional written information in school, home, or work environments. The task of writing can be facilitated in other ways, as well. For example, the *MYDESC Custom Desktops* provide adjustable surfaces for easier writing. Such devices let the user tilt the desktop to an angle that puts less stress on the eyes, neck, and shoulders while writing. Adapted writing tools also are available to make the physical task of writing easier. One example is the *Ribbed Writing Pen* which is wide, weighted, and covered with a non-slip ribbed surface that helps the person relax during writing. Such adaptations are particularly useful for those who are in jobs or higher education environments in which considerable writing is involved. §

All tables and references mentioned in this article can be obtained by contacting Dreamms For Kids, Inc.

Look for part 7 in our December issue

Job continued from page 2

delivery systems (CIDS) are available in each state through the Occupational Information Coordinating Committees (cf. U. S. Department of Labor, Employment and Training Administration, 1999).

The Youth Employment Selections (YES) Project

With a grant from the Office of Special Education and Rehabilitation Services of the U.S. Department of Education, the YES project is developing a job preference program using motion video on CD-ROM. A youth works with a facilitator, such as a special education teacher or a transition specialist, at a computer. The youth makes computer selections by using a mouse or by pointing to a touch screen. The outcome is a short list of 5-10 preferred jobs selected by the youth. The transition team can then use this list as the focus of transition activities. This program is appropriate for youth and adults with disabilities, such as mental retardation and autism, who are unable to take advantage of reading-based programs. The YES program includes the following:

- Seven CD-ROMs with motion video and narration. Video and audio information present critical attributes of many jobs.
- A facilitator's manual that describes how to conduct the program. The facilitator can refer to the manual to find additional information on each job (such as typical salaries, benefits, schedules, working conditions, opportunities for advancement, qualifications, and training requirements). §

Look for part 2 in our December issue

ACCESSIBLE LEARNING

by Lorianne Hoenninger

Another October is past, and the Closing the Gap conference is once again a fading memory. Each year it seems that this is the best conference ever, only to be surpassed the following year. This year was no exception. There were many excellent new products, and the creativity was flowing from presenters from all over the world. If anyone has not yet seen the new "Intellitalk II", visit Intellitools at <http://www.intellitools.com> and send for the demo CD. The new "Intellitalk II" is a fully customizable text to speech program available for both the Windows and Macintosh platforms, with the capability to create tests and activities in a variety of formats, for students with a wide range of needs and disabilities. It is a must for students participating in inclusionary placements.

Rick Metheny from the Alleghany County Public Schools was kind enough to share some of his Hyperstudio and Intellitalk II activities with conference participants. Go to <http://cube.allconet.org/users/rmetheny/ctg2000/ctg2000.html> to download a "solar system" activity that Rick created, as well as an activity template to create your own activities.

"Scan 'n Read1.05r" has been updated for compatibility with Mac OS9!! For those readers unfamiliar with "Scan and Read", this freeware product can be used to create accessible books with text, graphics and sounds. Students use a switch to turn pages and have text read to them. Rumor has it that "Scan and Read" is now available for the Windows platform as well. If any readers know where to download a Windows version, please email me.

Jon Adams's new "Super Switch Ensemble", available from <http://www.switchintime.com> changes your Power Macintosh into both a switch and an Intellikeys accessible, full featured music "lab". From cause and effect to music composition, this program brings out the musician in each student.

Look for "Shop Until You Drop" from SoftTouch at <http://www.funsoftware.com>, available in December. This switch accessible program is geared for the secondary life skills student. Visit a virtual bank and virtual stores, spend virtual money on virtual purchases, and dress in your virtual new clothes. Hmm...maybe that is what that famed Emperor of yore was wearing?!

Speaking of functional skills, fans of the Edmark Reading Program will be excited to know that at long last, the software series has finally been updated from the Apple II. Both Macintosh and Windows versions will be available sometime in February from Edmark. Check <http://www.edmark.com> for announcements.

And while your waiting, visit <http://www.edmark.com/free/>. Edmark has excellent games and calculator programs available for the downloading. Titles include "Fribble Cookies", "Fribble Place", "Calculator Collection", "Kinetics Lab", "Make-A-Story in Japan" and many others!

<http://4teachers.org/tools/quizstar> - this web site, created by the Regional Education Technology consortium, is a free service that enables teachers to create custom multiple choice, true/false, and short answer quizzes and

tests for students to take online. Features a variety of helpful tools for scoring, email notification and record keeping.

<http://trackstar.scrtec.org/> - TrackStar is a free online resource that allows teachers to create or use existing web based lessons. For example, a lesson on Maurice Sendak available at Trackstar, has carefully chosen text with appropriate links embedded in the lesson. A student needing to write a report on this author would not need to search the entire internet, just read and organize the provided linked information into his/her report.

<http://www.awesomelibrary.org/> - The Awesome Library organizes the Web with 14,000 carefully reviewed resources, including the top 5 percent in education. There are separate portals for teachers and students.

<http://www.quia.com/> - Java-enabled learning activities your students can play over the Internet including matching games, online flash cards, word search puzzles, concentration games, and interactive quizzes. Create your own customized games or use games created by other teachers. Quia keeps data on student scores, and will even analyze your quiz questions in terms of their effectiveness, valuable feedback options for teachers.

I hope you find these programs as fun and useful as I do. As always, if you have questions, do not hesitate to e-mail me at lorianne@erols.com, visit my website at <http://members.nbci.com/ALTA.1> or write c/o: Accessible Learning Technology Alternatives, P.O. Box 597, Shirley, NY, 11967.§

HalfthePlanet Highlights

DISABILITY ACTIVISTS CLIMB CAPITOL HILL

Activists react to Supreme Court case that threatens to repeal the Americans with Disabilities Act (ADA). <http://www.halftheplanet.com/departments/vote/?sid=nf10500>.

EXPRESS YOURSELVES! YOUTH ESSAY COMPETITION

Learn more about this opportunity for youths, grade 1 to the post-secondary level, to write and win prizes from \$100 to \$500. <http://www.halftheplanet.com/departments/education/?sid=nf10500>.

CAMPAIGN 2000 BULLETIN BOARD

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SCARED OF DOCTORS? ARE YOUR KIDS?

Learn how more and more hospitals are creating programs that make what was once a frightening experience a positive one <http://www.halftheplanet.com/001010/departments/health/article7.html?sid=nf101800>

UNIVERSAL DESIGN

Home modifications and daily living aids can break down barriers and increase the accessibility of virtually any space. What works for you? What doesn't? Share your best modifications! <http://www.halftheplanet.com/community/boards/Forums/Index.cfm?CFApp=52>

*Subscribe:

<mailto:listserv@ls01.halftheplanet.com>, write "subscribe newsletter" in the body of your e-mail.§

Conferences

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Fax: 850-219-9610

E-Mail: fetc@nettally.com

Date: January 11-13, 2001 TAM 2001 - A Technology Odyssey Papers Call or

Albuquerque, New Mexico

<http://www.tamcec.org/tam2001/>

Date: June 25 - 27, 2001 NECC 2001

Call for Participation

Chicago, IL

<http://confreg.uoregon.edu/necc2001/call/>

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Family Center on Technology and Disability Update

First, we want to welcome the following members to the Network:

*One Economy, Washington, D.C.

*RehabTool.com

*Department of Physical Medicine and Rehabilitation

*University of Missouri

RESOURCES

From Benton Foundation. The Digital Divide Network is beginning the groundwork to develop a searchable, national database of public Internet access points and other local digital divide initiatives. Users will be able to input their location and find out what's going on in their community regarding the digital divide. We've partnered with a range of national organizations and government entities, including the American Library Association, the US Departments of Education and Commerce, HUD, PowerUp, and other institutions to gather the latest information on the types of digital divide initiatives available in each community across the US.

We're already beginning to process local initiative listings collected by our project partners, but we'd like to invite individual organizations to go online and tell us directly what you're doing in your community. We're especially interested in learning about public Internet access centers (CTCs, libraries, churches, etc) as well as tech-related training programs, community networks and other digital divide initiatives. If you're involved in a digital divide program in your community, please tell us about it. We've set up an online survey, which can be found here:

<http://www.digitaldividenetwork.org/database-form.adp> Once you've finished filling out the survey, please be sure to hit the "submit" button in order to send your survey results to us. We expect to have the database online in January 2001. Until then, feel free to spread the word about the project. We look forward to hearing from you!

NEWS

Technology Changing Fundamental Notion of Students

Assistive technology has assisted some students with disabilities in moving to more inclusive settings. Now, according to David Rose, founder of the Center for Applied Special Technology, the next 25 years are about "a second stage of technology use," which is much more important for education reform in general. The new tools aren't about fixing students, they are about fixing the environment for learning. They're about removing a disabling condition that students with disabilities now face in their classrooms." To read the full article, go to: <http://www.specialednews.com/story%20archive/1000/CASTfuture1005.html>.

As always, we continue to look for good organizations that are interested in assistive technology and families with members with disabilities. Brochures can be obtained by sending an e-mail to Susan Goodman at: Sgoodman@ucp.org. All it takes to join the Family Center network of organizations is an e-mail message!§



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