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ABSTRACT

This collection of four reports focuses on the provision of assistive technology for individuals with disabilities. The first report, "Making More Effective Use of Assistive Technology in the Vocational Evaluation Process" (Anthony J. Langton), discusses how integrating assistive technology into the vocational evaluation process will enhance the capacity to serve individuals with severe disabilities as well as be a valuable resource for all programming. Suggestions on how assistive technology and rehabilitation engineering services could be incorporated into the evaluation process are presented. The role of the vocational evaluator and the challenges faced by the field of vocational evaluation are also explored. "Cooperative Service Delivery: A Cost-Effective Strategy" (Lydia S. Gaster and others) presents a service delivery model for providing assistive technology services that is projected to reduce costs to individual programs by as much as two-thirds or more. The use of cooperative agreements between a host and a number of affiliate programs to establish the base for a comprehensive assistive technology clinic is described. "Critical Issues Impacting on the Use of Assistive Technology" (Anthony J. Langton) identifies and briefly discusses critical concerns which should be addressed in planning and delivering assistive technology services, including the integration of services, funding availability, awareness level, access to information, rural needs, coordination of services between agencies and programs, the identification of qualified service providers, quality assurance, service provider training, consumer involvement, and follow-up support. "Utilizing Technology in the Vocational Rehabilitation Process" (Anthony J. Langton) describes the results of a study group consisting of rehabilitation case management staff and technology specialists that identified nine key decision points and service activities to determine where technology services should be utilized. Each report contains references. (Author/CR)

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And Others

ISSUES & APPLICATIONS IN ASSISTIVE TECHNOLOGY July 1991

Making More Effective Use of Assistive Technology in the Vocational Evaluation Process

ANTHONY J. LANGTON

Abstract

Assistive technology is a resource which should be an integral part of vocational evaluation programs. With the availability of numerous aids, devices and support resources, assistive technology presents vocational evaluators with a versatile tool to improve and expand services. Despite the advantages which are readily available, most vocational evaluation programs make very limited use of assistive technology. Integrating assistive technology into the vocational evaluation process will enhance the capacity to serve individuals with severe disabilities as well as be a valuable resource for all programming. Suggestions on how assistive technology and rehabilitation engineering services could be incorporated into the evaluation process are presented. The role of the vocational evaluator and the challenges faced by the field of vocational evaluation are also explored.

Introduction

Assessment is one of the most important service components of the rehabilitation process. Critical decisions such as eligibility determination, placement in specialized programs, and identification of vocational potential rely extensively on the conclusions of vocational evaluations and similar assessments. Despite the key role played by assessment in serving the severely disabled, the needs of a large number of these people are not being adequately met. Many of the individuals served in vocational evaluation are not able to perform to their maximum potential without the use of some type of assistive technology. Accurate performance measures for many individuals cannot be effectively done without some accommodation being made.

Determining how to accommodate individuals with severe disabilities in the assessment process is not easy. There are no simple solutions that work with all people. The use of assistive technology and rehabilitation engineering services is a resource which can help vocational evaluators and other assessment staff to more effectively serve individuals with severe functional limitations. Presently, however, there are very few vocational evaluation programs which effectively incorporate assistive technology into the assessment process (IRI,1986).

Making "Reasonable Accommodations" in the Evaluation Process

Despite reports to referral sources and employers of the need to make "reasonable accommodation", the evaluation process itself remains relatively "inaccessible" for many individuals with severe disabilities. Standardized assessment procedures and work sample systems generally focus on what individuals with severe functional limitations cannot do rather than determine what they could be capable of doing. Accommodating persons with severe limitations requires an evaluator with more than just assessment expertise. Knowledge of what can be done through assistive technology, and having access to these resources, is needed.

Most vocational evaluation programs are equipped with a standard array of psychometric tests, a combination of commercially developed and custom made work samples and, when available, access to work site situational assessments (Pruitt, 1986). While these tools have been reasonably effective in determining vocational potential of persons with a wide variety of performance deficits, they do not work as well with persons with severe limitations. These assessment approaches were designed primarily to be used without additional aids or devices. This is reflected in strict standardization practices and cautions in training about "invalidating" normative data. Assessing someone with severe dexterity or coordination problems or a speech deficit without use of assistive technology can be even more "invalid".

Most vocational evaluators, however, have had little or no exposure to assistive technology or rehabilitation engineering. The capability of vocational evaluations to serve non–speaking or motor–impaired individuals is limited by this lack of training and information. Thomas (1981) discussed the importance of rehabilitation engineering and the role it should play in the vocational evaluation process. Despite early recognition that the use of technology and technology related services would enhance vocational evaluations, few programs have effectively combined these two important services.

Challenging Disability Stereotypes

Another reason for working to integrate assistive technology into the assessment process deals with the problem of "stereotyping". There has always been a tendency to "categorize" people by disability, often setting limited vocational and educational expectations. Many of the stereotyped jobs for persons with blindness, high level spinal cord injury or mental retardation continue to resurface. Simple inspection jobs, bookkeeping and accounting occupations and service positions are still frequently considered as primary choices for at least entry level "career" decisions. Unfortunately many of the individuals placed in these positions are put into jobs without likely possibility for advancement and their "career" prospects become extremely limited.

In analyzing why this continues to occur, several fundamental problems become apparent. **First,** the process of choosing vocational alternatives for a person with a severe disability is a difficult and often demanding task. Selecting career options involves analyzing a wide number of variables and considerations. Limited time for career exploration in vocational evaluations often fails to provide sufficient opportunity to explore areas and complete needed assessment. **Second,** functional limitations imposed by many disabilities present serious obstacles to completing required tasks in the standard manner. Problems with fine motor control, blindness or inability to speak make many occupational choices not feasible through commonly used ability/task matching techniques. **Third,** most rehabilitation personnel have a limited knowledge of what assistive technology is. Without a working knowledge of available aids and devices, many occupational choices are incorrectly found to be not feasible. In reflecting back on recommendations made in vocational evaluations, there were numerous cases where this trait/factor matching process ruled out occupational choices which were probably feasible.

Making occupational decisions without considering the potential impact of assistive technology will continue to perpetuate stereotyped vocational outcomes. Through utilizing commercially available aids and devices, many of them simple and low cost, it is possible to reduce or eliminate many functional limitations which tend to rule out possibilities.

A Look at Assistive Technology

There are many approaches which can be taken to describe assistive technology. In the simplest terms, assistive technology is a "tool" which can enable individuals with functional limitations to reach their maximum potential through the use of aids, devices or related technical services. Options range from "low tech to high tech" items, inexpensive off-the-shelf products to costly, custom made equipment.

Matching functional needs with the appropriate possible option to solve the problem, which may involve some type of technological aid or device, is an essential part of using assistive technology. It is important to remember, however, that technology solutions are not the answer to all functional problems.

Assistive technology encompasses many diverse activities. Various definitions which have been offered for "rehabilitation engineering" and "rehabilitation technology", and now "assistive technology", all point to an ever-widening scope of technology services and resources. As a resource, assistive technology is an indispensable tool which should be found in all vocational evaluation programs. Applying these resources and services within the vocational evaluation process can be done in many ways.

Technology resources available for use in vocational evaluation

- Technology information resources
- Adaptive aids and devices
- Technical assistance
- Specialized staff

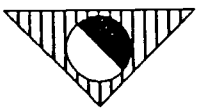
How to Incorporate Technology Resources

A variety of approaches on how assistive technology can be introduced within the vocational evaluation process exist. There are no "technology packages" or simple formulas. Assistive technology and rehabilitation engineering cover such a broad range of tools and resources that it is difficult to easily categorize

models and approaches. Assistive technology is an excellent problem solving tool which can be very effective in helping individuals perform to their fullest capabilities throughout the evaluation process.

All vocational evaluation programs should incorporate assistive technology information into their programming. Delivering vocational evaluation services without access to information on assistive technology severely limits the accuracy of the assessment and raises questions on the reliability and validity of recommended outcomes. Fundamental to vocational evaluation is the concern to determine what an individual can do, by identifying skills and abilities, rather than concentrating on what cannot be done. Assistive technology represents an essential tool necessary to effectively determine what functional skills and capabilities an individual may possess.

Comprehensive vocational evaluation programs should provide clients with the opportunity to actually use assistive aids/devices. Determining if an aid or device will be effective in reducing or eliminating a functional problem is difficult to predict without actually trying it out. While it is unrealistic to expect that evaluation programs will have easy access to all the aids/devices commercially available, it is reasonable to expect access to representative pieces of assistive technology.

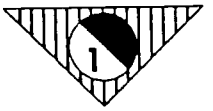


Tech Points in the evaluation process

One approach utilized, identified key places, called Tech Points, showing where technology resources should be considered. Determining where technology resources and services should be used yielded some interesting findings. A review of a similar effort for the overall rehabilitation process (Langton, 1991) showed nine points where "technology" consideration was recommended. It was noted, however, that the use of technology resources and services should be considered at any time. The Tech Points also become a quality assurance mechanism to review important decisions as well as to see if technology is considered as a possible "tool" which could be utilized.

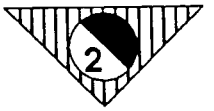
Application of technology in vocational evaluation follows a similar pattern. In the evaluation process five Tech Points have been identified.

These include:



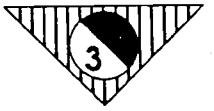
Initial case review

- discuss use made of assistive technology
- identify potential technology needs



Evaluation planning

- build-in needed technology assessment
- arrange for any specialized services

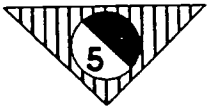


Assessment task selection and administration

- modify assessment tasks to accommodate individual
- utilize technology to estimate maximum potential

Career exploration

- explore alternative areas using technology resources
- try out assistive technology in selected areas



Developing recommendations

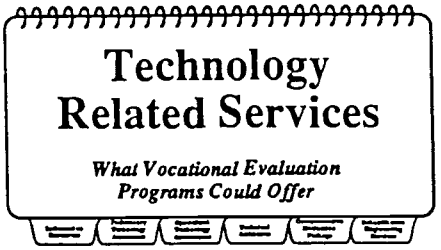
- problem solve through possible use of assistive technology
- identify technoloogy resources/ services needed to achieve goals

As with the overall rehabilitation process, consideration of technology resources as a tool should be able to occur at any point in an evaluation. *Many of the applications of technology within vocational evaluation can be done directly by the vocational evaluator.* Through a basic awareness of technology resources and services, the vocational evaluator should be able to analyze the client's functional needs and to complete a preliminary estimate of the need for assistive technology. Problem solving to identify ways to minimize or overcome functional limitations, through use of aids or devices or modifications to a work environment, are within the scope of what the vocational evaluator could do.

Working as part of a team, the vocational evaluator should play a key role in determining if technology resources are needed. Other members of the "technology team", such as a rehabilitation engineer or speech pathologist, may need to be consulted.

Technology Related Services: What Vocational Evaluation Programs Could Offer

The extent that vocational evaluation programs could utilize assistive technology depends on many factors. Essential to any application of assistive technology will be the interest and skill level of the vocational evaluator. In programs where the evaluator realizes the importance and potential of assistive technology, almost unlimited technology related services could be incorporated into the vocational evaluation process. Access to resources and the necessary specialized expertise will be essential for thorough integration of technology into any vocational evaluation.



There are at least six "levels" of assistive technology utilization that vocational evaluation programs could consider. These will differ with the particular resources available and the ability of the vocational evaluator to gain the skills needed to be a "technology specialist". Some of these, such as "rehabilitation engineering services", would obviously require that an engineer with rehabilitation expertise be available to deliver the specialized services needed.

Information Resource

All vocational evaluation programs should have access to information on assistive technology. This could come from utilizing database information such as the Job Accommodation Network or AbleDATA. In many cases it would be beneficial for the vocational evaluation program to collect information and develop their own "technology reference area". There are excellent materials which are readily available that can be used to start a resource collection. Printed materials, as well as a number of electronic databases, organize and describe thousands of assistive technology resources and services.

The availability of a technology resources collection would provide a valuable resource to the vocational evaluator and be useful for "awareness building". Providing "information services" can be an excellent marketing tool for evaluation and other facility services. It is feasible to assign the "information specialist" role to an existing staff person to organize and develop. This could be the vocational evaluator, other facility staff or possibly a capable clerical staff person.

Preliminary Technology Assessment

Prior to evaluation, or integrated into preliminary assessment activities, evaluation programs could offer preliminary technology assessment services. This could include a general assessment of what assistive technology needs a particular individual might have. *The objective of this type of assessment would be to identify areas of strength and determine ways to minimize any limitations which may exist.* Findings from this assessment would be useful to develop strategies on how to obtain maximum performance in vocational evaluation or in a classroom setting.

An evaluator would need an in-depth knowledge of assistive technology and some specialized skills to provide this service. It could be possible to utilize other staff, such as occupational therapists or speech pathologists, to assist with the delivery of this type of service. This would be useful as a pre–evaluation component which could be specified for individuals with anticipated technology related needs.

Specialized Technology Assessment

Specialized technology assessments focusing on particular areas of assistive technology such as seating and positioning needs, computer access, augmentative communication, environmental control, adaptive driving, or work site accommodation could be provided. *These would require specialized expertise, and in cases such as use of augmentative communication, available staff with the appropriate skills and credentials for making recommendations.* Evaluation programs would need direct access to assistive technology equipment in the targeted areas.

Marketing these specialized assessments could provide an excellent supplement to standard vocational evaluation services. Through utilizing available training opportunities, it would be possible

for a vocational evaluator to develop the expertise needed for many of these services. Establishing a "technology team" comprised of staff from varied backgrounds would be a feasible way for large facilities or agencies to provide these services.

Technical Assistance

Making the resources of specialized technology assessments available to other programs or agencies, including community contacts such as employers through offering technical assistance, is another option. This could include general consultation on the use of assistive technology in response to technology related inquiries. Conducting more specific "feasibility studies" for employers on possible use of assistive technology in work site accommodations through problem solving suggestions is another possibility. This could be marketed as part of a loss control prevention effort to reduce unnecessary injuries. Fabricating custom developed devices or adapting commercially available products could also be considered.

The decision to market technical assistance services will require specialized staff expertise and resources, in addition to vocational evaluation staff. Commitment of considerable staff time for promoting and providing services will be necessary. Services are usually established on an hourly fee basis. Given necessary resources to build on, this type of community based outreach can be an excellent service component.

Comprehensive Evaluation Services

Any program which offers "comprehensive evaluation services" should include assistive technology resources and services. *Thorough and accurate evaluation of persons with severe disabilities necessitates support from assistive technology.* Resources should be incorporated into regular evaluation programming. This can be done directly by evaluation staff with the necessary expertise as well as by utilizing consultants from a "technology team".

Variable length for such an evaluation should be possible. It can be expected that this type of evaluation will require more time than a standard vocational evaluation. The trend toward shortened evaluations has limited the opportunity for vocational exploration and restricted the time needed to investigate alternative approaches to completing tasks.

Resources needed to provide this level of comprehensive vocational evaluation services will generally result in the services being marketed on a regional or statewide basis. The technology team of specialized staff needed will also make it more feasible for larger facilities to provide this service. Cooperative programming between smaller facilities and agencies to collect the needed staff resources and specialized equipment is possible.

Rehabilitation Engineering Services

Vocational evaluation programs in rehabilitation or medical facilities may be interested in offering a full range of assistive technology services, including rehabilitation engineering. This would aid in the marketing of comprehensive technology services. It would be necessary to have specialized staff available, including a rehabilitation engineer.

This level of service would most likely be marketed on a regional or statewide basis. Through a well coordinated effort, it could be possible to use vocational evaluation as a base for implementation of a full range of technology services.

These levels or types of technology related services present varied options for vocational evaluation programs to consider.

Identifying Need for Technology Services

One method for vocational evaluators to determine when assistive technology resources or services are needed is to first look at basic functional capacities. Identifying performance deficits in areas such as communication, mobility, motor skills or strength and endurance is a first step in considering any use of technology. Once functional deficit areas are identified, then problem solving with the resources and services available through assistive technology can be tried.

Functional Considerations

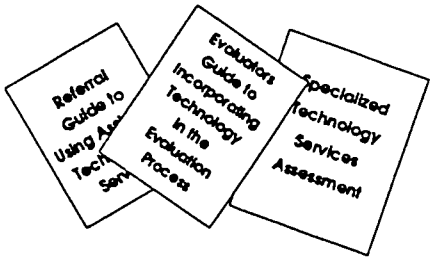
- Communication
- Mobility
- Motor skills
- Strength/endurance
- Sensory
- Cognition/memory
- Academic achievement
- Self care skills

Utilizing the Tech Points discussed, the vocational evaluator should be able to systematically consider whether technology resources or services would be necessary. Questioning the possible need for assistive technology is a critical function of the vocational evaluator.

Coordinating the Use of Assistive Technology

Effective utilization of assistive technology requires a common understanding between referral sources, vocational evaluation programs and specialized technology service providers. All staff need a basic understanding of what assistive technology is and what can realistically be expected from its' use. In rehabilitation situations, the referral counselor and vocational evaluator play key roles in identifying the need for assistive technology. By working with technology teams, they help identify possible solutions to functional needs.

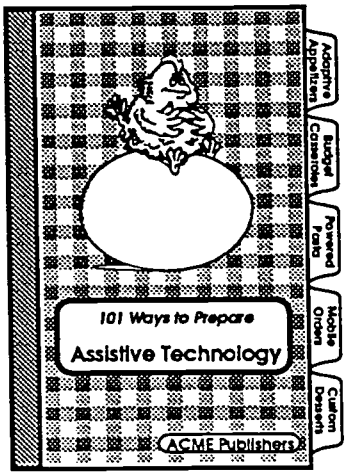
Resource materials are needed which provide key questions and basic information on applications of assistive technology.



These references would help develop some of the common awareness needed for technology resources to be utilized to their fullest benefit.

Summary

The search for ready made "cook book" answers to vocational evaluation problems and needs has and will continue to occur. We all hope to find easy solutions to complex problems. Assistive technology finds itself in the position of being seen as the easy solution to wide ranging problems.



There are no easy solutions to complex problems, yet we still keep looking. Assistive technology, as a tool and resource, can provide solutions, or at least alternatives, to many of the problems faced by persons with disabilities. There are no universal recipes which can be applied across the board.

Effective application of technology resources and services is an individualized process. Determining if technology should be used, deciding on what is needed, and then identifying how this should be accomplished is a process that requires specific expertise and skills of a technology team.

Role of the Vocational Evaluator

The field of vocational evaluation, and rehabilitation itself, has changed significantly in the past ten years. The role of the vocational evaluator in this changing scene is sometimes unclear. With a focus on placement, many facilities have shifted resources and staff to placement specialists and job coaches. This has left many programs with fewer vocational evaluators. Involvement in work hardening and work site modification has also been a contested area. What was once considered the vocational evaluators "territory", now is being challenged by occupational therapists and other staff.

As a field, vocational evaluation has tended to be more reactive than proactive. Change is inevitable. Anticipating change and making the necessary adaptations is essential for the field of vocational evaluation to remain an important part of the rehabilitation and education processes.

The application of assistive technology as an important resource has become well recognized. Less well defined is who the "technology specialist" should be. Working to incorporate technology into the vocational evaluation process will enhance the capabilities of the services provided while also offering vocational evaluators the chance to take on an important role. In many settings the opportunity exists for the vocational evaluator to develop the necessary expertise to fill this "technology specialist" role. This will require that the vocational evaluator gain access to information and develop new skills.

Working along with other service delivery staff, such as rehabilitation engineers, occupational therapists and speech pathologists, the vocational evaluator could be the connecting link necessary to make more effective use of technology resources. With skills in assessment and job analysis techniques, the vocational evaluator is well qualified to identify the need for assistive technology and to match these needs with available resources.

Integration of assistive technology resources and services into the vocational evaluation process will depend primarily on the capabilities of vocational evaluation staff. Determining possible applications of assistive technology requires someone who has a knowledge of what exists and an understanding of what could be developed. Many vocational evaluators have the appropriate background to gain the additional skills needed to do this.

Role of the Client

The motivation and attitude of the individual with the disability remains the most important consideration when determining ultimate vocational or independent living potential. This also holds true when considering use of assistive technology. Participants in a workshop conducted by the Cerebral Palsy Research Foundation (1990) attempted to identify what variables were positive predictors of "successful" applications of technology resources. Reviews of 20 individuals where technology services or resources were used, both successful and unsuccessful cases yielded an interesting finding. Despite extensive efforts to determine if early intervention, services of a rehabilitation engineer, availability of funding, follow–up services or any of over 15 service variables made the difference, one factor was identified.

The one variable consistently found was the "attitude" of the individual. Persons who exhibited a strong will to succeed seemed to find a way to make that happen. Many times the use of assistive technology provided the means to make this possible. Listening to the person with the disability who lives with the functional limitations everyday is important. When a person in evaluation shows the "will to succeed", it is a good opportunity to thoroughly explore how assistive technology might be helpful.

Conclusions

There always seems to be "critical" issues or problems that the field of vocational evaluation "must" address. Issues of importance surface from many areas. Determining which of these is relevant to an individual program is usually not easy. Assistive technology certainly falls into this description. It is difficult to determine whether something like assistive technology should be made part of "every" evaluation program. There undoubtedly are benefits that assistive technology can provide to any vocational evaluation program. Unless vocational evaluators and program managers have at least a basic understanding of "assistive technology", many will not see the potential that the use of technology can have.

Even more important, many will not see the opportunity that the field of vocational evaluation faces with the need to take a proactive stance on utilizing assistive technology. Utilizing technology in the evaluation process will help insure the continued effectiveness of vocational evaluation as a key resource. Failure to do so will leave the way open for other disciplines or segments of the rehabilitation process to assume a leadership role.

Assistive technology, as a resource, cuts across boundaries of age, disability, service area or discipline. As a tool it represents an excellent means to help make the transition between school, work and living independently. In responding to the challenges of the Americans with Disabilities Act, assistive technology stands out as a principle means to achieve the sought after goals of maximizing potential and equalizing opportunities for all citizens. The timing is right for the field of vocational evaluation to respond and become a key to making this change occur.

Technology in the Vocational Evaluation Process

- All vocational evaluation programs need to incorporate assistive technology information.
- Comprehensive vocational evaluation programs should include opportunity for use of assistive aids/ devices.
- Programs which market assistive technology services need to have staff available with specialized expertise.

Integrating assistive technology into the vocational evaluation process will require a close look at the role of the vocational evaluator. Already having a good understanding of job requirements and worker traits, the vocational evaluator has the basic skills needed to effectively match technology resources with functional needs. Exploring how assistive technology can be better integrated into the evaluation process will offer new options for the vocational evaluator.

Training for vocational evaluation staff in the use and application of technology resources and services remains one of the most critical obstacles. Training programs in vocational (work) evaluation, as well as other rehabilitation service areas, include very limited course work directly related to assistive technol-

ogy. Opportunities for in–service training will need to be utilized to provide current evaluation staff with the necessary skills.

Vocational evaluators who are good at problem solving are likely candidates to use assistive technology. Assistive technology can provide a vast array of options and alternatives which otherwise might not exist.

For more information on assistive technology contact RESNA, an association for the advancement of rehabilitation and assistive technology, 1101 Connecticut Ave., N.W., Washington DC 20036, (202) 857–1199.

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SC Vocational Rehabilitation Department

ISSUES & APPLICATIONS IN ASSISTIVE TECHNOLOGY July 1991

Cooperative Service Delivery: A Cost-Effective Strategy

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ANTHONY J. LANGTON
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Abstract

Delivering assistive technology services requires an extensive investment of staff and equipment on the part of individual agencies and programs. The Center for Rehabilitation Technology Services has designed a service delivery model to reduce the costs incurred by individual programs. Cooperative agreements between a host and a number of affiliate programs were used to establish the base for a comprehensive assistive technology clinic. Projected cost comparisons indicate this approach will reduce costs to individual programs by as much as two-thirds or more. Additional incentives for participating include staff training opportunities, access to a technology team and the opportunity to utilize assistive aids and devices.

Introduction

The field of assistive technology constantly struggles to overcome reimbursement problems related to services and equipment costs. The high cost of experienced clinicians and engineers coupled with assistive technology's labor–intensive nature prevents many agencies from providing such programs. An assistive technology cooperative provides a potential solution to this dilemma. Such an organization may consist of several area agencies and health care facilities sharing the expense of assistive technology services. By joining a cooperative, a facility can access assistive technology services for less than a third of the cost of starting and supporting a program on its own.

The Greenville Assistive Technology Cooperative (GATC) located in Greenville, South Carolina, provides an example of such a cooperative. The cooperative consists of several health care facilities, the local school system, the Easter Seal Society, Vocational Rehabilitation, local medical equipment dealers and the Department of Mental Retardation.

Background

The Greenville Assistive Technology Cooperative was organized as a project to study alternative service delivery systems. South Carolina's Piedmont area was chosen as the test site because it possesses the state's highest concentration of assistive technology expertise. Many of the "grass roots efforts" to provide assistive technology services started in this region. The Cooperative will be replicated in South Carolina's remaining three regions: Midlands (Columbia area), Pee Dee (Florence area) and Low Country (Charleston area). As seen in Figure 1., these cooperatives will form the hub of each region's service delivery activity and together provide statewide coverage.

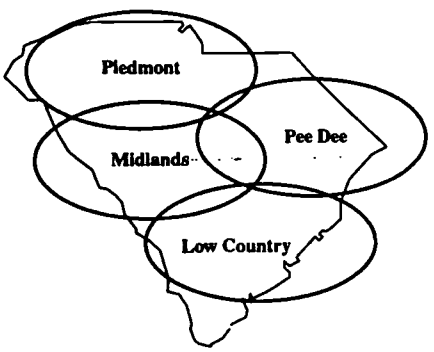

Figure 1.
Regional Service Areas

Prior to the Center for Rehabilitation Technology Services' efforts, little had occurred to develop and expand assistive technology services. Service provision in the region has been fragmented at best. Programming within individual agencies was frequently delivered by staff with limited specialized training in

assistive technology. Those programs with staff who had specialization in areas of assistive technology were limited in most cases by available resources.

The Cooperative's evolutionary process has taken many turns. Extensive ground work was required to "sell" the concept to the various supporting agencies. Differences in missions and unique problems produced many issues requiring individual attention. It was vital to understand each agency's financial structure and mandate so that it may "profit" by being affiliated with the Cooperative. For example, some agencies can bill third–party payors for the services they buy through the Cooperative; others benefit because they pay less for assistive technology services through the Cooperative.

Host/Affiliate Relationship

A simple host and affiliate relationship was proposed to interested programs and agencies. The "host" facility provides space and operational support to the technology clinic while contributing a limited amount of staff time as well. "Affiliate" members contribute staff time and assistive technology equipment. Involvement as either host or affiliate members entitles access to training resources and equipment demonstration and try-out.

Local Ownership/Control

A fundamental concept emphasized from the onset was the importance of gaining a commitment from local service providers. In order to foster this, a free standing advisory board comprised of representatives from each participating program and agency was implemented with authority to monitor the technology clinic operation. Initiation of non–profit status was also begun to enable the Cooperative to remain flexible and possibly seek outside funding from a local foundation or service club.

Coordinator Position

Implementation of the technology clinic portion of the Cooperative required immediate availability of a "coordinator" to attend to specific details such as scheduling, locating funding, marketing, and team coordination. While it would have been desirable for this individual to have their own technical expertise, it was felt that it was more important that this person be knowledgeable of overall service delivery and funding awareness. The technical skills necessary for clinic operation could be provided by staff from host or affiliate members.

Methodology

Several steps led to the Cooperative's development. The first step was to create an advisory board consisting of individuals from various community agencies. This was crucial as the Cooperative's success hinged on a commitment from administrative personnel within the member agencies. An integral part of the advisory group included direct consumer representation to increase awareness of consumer needs. Next, the Cooperative's basic structure emerged through numerous advisory board meetings. A "host" facility was sought as the site for the clinical activities. Once the host facility was established, other programs and agencies became participating "affiliates." Much of the financial support for start–up activities came as in–kind support from the host and affiliate agencies. The Center for Rehabilitation Technology Services (CRTS) served as the catalyst for the development of the project.

Other steps crucial to the Cooperative's organization included written cooperative agreements, formal development of a governing board, obtaining non–profit status, the development of revenue–producing activities, and marketing and outreach activities.

Participating Members

Delivering comprehensive assistive technology services required access to staff with varying areas of expertise and specialized equipment. In identifying prospective members, agencies, and programs with resources benefiting the cooperative as a whole were invited. Figure 2. shows the member types the cooperative sought.

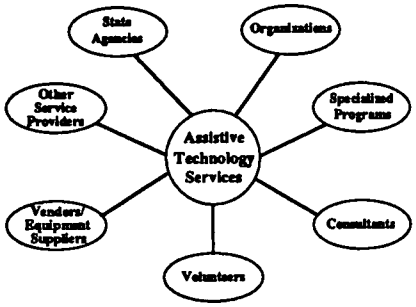

Figure 2.
Assistive Technology Cooperative Members

Cooperative Agreements

Developing specific cooperative agreements for each participating program was an important step. Representatives from host and affiliate programs provided extensive input into the development of these agreements. Despite initial expressions of support from programs and agencies, considerable questions surfaced when each participant was faced with a written agreement requiring staff and resource commitment. It became necessary to set general participation guidelines and to "tailor" these agreements to address individualized needs. This flexibility and need to "negotiate" proved critical to initiating services.

Service Parameters

Selection of what services to offer was influenced primarily by the anticipated ease of reimbursement. Services included prescriptive and evaluative activities in the areas of seating/positioning, environmental control, augmentative communication and computer access. It was immediately realized that capability for fabrication, development of custom devices, and providing the full range of services would eventually need to be included. Expansion will be attempted once a stable service base is in place.

Results

Cooperative activities were initiated in January 1990. Participants in the Cooperative included:

HOST

Greenville General Hospital
(Greenville Hospital System)

AFFILIATE MEMBERS

Center for Developmental Pediatrics

Greenville County Public Schools

Roger C. Peace
Rehabilitation Hospital

SC Vocational Rehabilitation

American Rehabilitation (DME)

Carolina Homecare (DME)

Department of Mental Retardation

Center for Rehabilitation
Technology Services

Shriner's Hospital

Easter Seals Society

Projected Cost Comparisons

Preliminary cost analysis underscores the potential of the cooperative to be a cost effective model for delivering assistive technology services. Significant personnel (labor) and facility (rent) savings can be realized through the advantage of a cooperative arrangement. **Figure 3.** shows the projected monthly cost savings of the cooperative model over a traditional service delivery model.

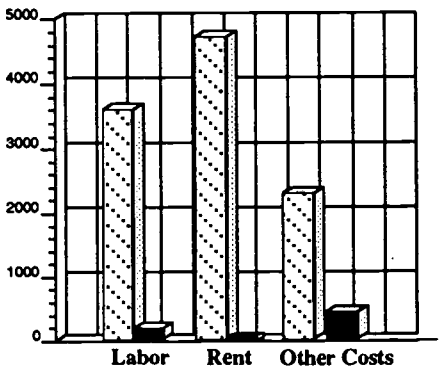

Figure 3.
Projected Cost Comparisons

Traditional Model

Cooperative Model

Figure 4. shows the comparison of contributed value between the host and the affiliates. The host portion of the graph represents office space and staff contribution. The affiliate portion indicates staff and equipment contributions.

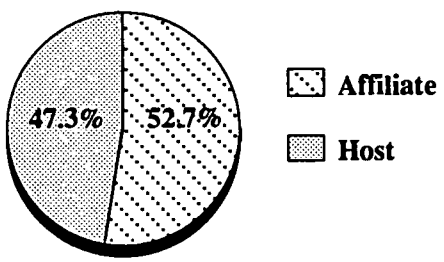

Figure 4.
Affiliates and Hosts

Discussion

A cooperative model is proposed as a way to provide financially feasible, low–volume services requiring a high degree of expertise. A cooperative can work as long as the benefits outweigh the costs of affiliation. Any staff time donated by affiliates must be counter–balanced by some amount of financial recovery or staff training. Cooperative affiliation must also be perceived as a staff recruitment tool and should produce positive public relations. Participation should also offer member agencies access to skilled professionals difficult to recruit such as rehabilitation engineers and other technology specialists. When the proper balance is struck, a cooperative may be one solution to the financial problems plaguing most service delivery programs.

One important factor that must exist in the early stages of a cooperative is the availability of a "facilitator" to pull the various programs and agencies together. This type of delivery approach depends on a significant contribution of time on the part of staff from a key program, in this case the Center for Rehabilitation Technology Services, for the concept to be "sold" to interested groups. As noted with the Hasbro-Alabama Positioning Network (1989), it is imperative that this leadership responsibility be provided in order for implementation to be successful.

Conclusions

It is too early to draw any firm conclusions or to predict whether this approach will be successful in the long run. Preliminary indications reveal that the concept, although simplistic and new to assistive technology, offers sufficient merit for consideration as an alternative delivery model.

Acknowledgements

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SC Vocational
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ISSUES & APPLICATIONS IN ASSISTIVE TECHNOLOGY July 1991

Critical Issues Impacting on the Use of Assistive Technology

ANTHONY J. LANGTON

The delivery and utilization of assistive technology services involves a wide array of resources and expertise. Staffing, facilities, equipment and information resources need to come together to form a network of services which can respond to needs of individuals with differing conditions and functional problems. With such a broad spectrum of services and activities to address, the set-up and provision of assistive technology services are impacted by a large number of factors.

The following issues identify and briefly discuss critical concerns which should be addressed in planning and delivering assistive technology services. These concerns are not presented in any particular order or sequence. In planning for assistive technology services, it is suggested that the list of critical issues confronting each service delivery program be prioritized in some order of importance or urgency. This will be of benefit in developing a strategy as to which issues require immediate attention. A majority of these concerns will fall in the planning phase and should be addressed prior to services being initiated whenever possible.

Integrating services

Assistive technology should be an integral part of program or agency services. The utilization of technology and technology related services should be an available option at any point in the overall services provided by a school, rehabilitation agency or hospital facility. Key decision points such as eligibility determination, individualized planning or placement and discharge should all include the availability of assistive technology.

The benefit of assistive technology can be best realized with planned and systematic use of both staff and information resources. In programs with flow charts showing services and decision points, the availability of assistive technology services should be clearly indicated. The question, "would technology or technology related services be appropriate?" should be asked at key decision points. This is important for services to individuals with severe disabilities where significant improvement and expanded options can be possible through early access to technology services.

Funding

There is little doubt that the single most critical factor impacting assistive technology services is the availability of funding. The type and extent of services provided are usually determined by what can be paid for and supported. Instead of having a consumer needs driven system, we face a service spectrum which is more controlled by what Medicaid, an insurance carrier, a rehabilitation agency or a family can afford or will approve. As a result of this there are many important needs which go unmet.

Funding for aids and devices, technology related services and general program support must be a high priority item for any individual, program or agency offering assistive technology services. Funding is available to cover many of the services and devices which are needed. Educating funding agencies and exploring ways to effect change on the delivery system structure are tasks which must be taken on as a regular part of technology service delivery. This places a heavy demand on the service providers time which, unfortunately, impacts on the services which can be provided.

There are no easy answers to the funding dilemma. Efforts, such as the "Funding Symposium" conducted by the Center for Rehabilitation Technology Services which addressed the broad picture of assistive technology funding and support, are needed. (A Guide to Funding Resources for Assistive Technology in South Carolina, 1989).

Awareness levels

The vast majority of the general public and a significant portion of professionals and disabled consumers have a limited awareness of what assistive technology is. A surprising number of individuals are almost totally unaware that current resources and services are available to assist individuals with functional limitations to perform independent living, educational, vocational or recreational activities.

This awareness issue has two important facets. First, the awareness and realization that individuals with disabilities can be productive and capable members of society is a fundamental problem. As a society, we need to increase our overall awareness that persons with disabilities have widely ranging skills and capabilities. The employment statistics are a clear indicator that individuals with disabilities are generally not viewed as capable workers by most employers. Secondly, the impact that assistive technology can play to increase and enhance the functional capabilities of individuals with disabilities needs to become more prominent.

Efforts to increase public awareness and raise the knowledge of education, rehabilitation, health care and other professional should be a part of program efforts. Through increased awareness of technology and technology related services, it may be possible to have more people wonder, "What if . . .".

Accessing information

Knowing where to go for information is a critical need felt throughout the service delivery spectrum. Consumers and professionals need to be able to "shop" for services and information on assistive technology . The rapid growth of information and the number of databases and sources of information has made locating information a major task. The information access needs of consumers and professional differ, however, and this creates a demand to offer alternative sources of information. Making information available at a centralized point through toll free access is an important component that would benefit statewide services. Ideally, providing multiple access points for information through local resource contacts combined with public awareness efforts would help meet the needs of consumers in their local areas and establish a comprehensive statewide system.

Providing information access through multiple means including toll free telephone lines, electronic database systems such as Hyper-ABLEDATA, and utilization of existing information networks are need areas which should be considered. Access to this information should be "user friendly" as much as possible. Professionals, as well as consumers, typically have difficulty knowing what to ask for or even where to go for information. Information on assistive technology is essential to have for any service delivery "system" to be successful.

Rural needs

Outreach of assistive technology services into rural communities presents many unique challenges. Limited availability of facilities and support resources combined with limited transportation and financial concerns requires innovative delivery approaches. Agencies and programs offering assistive technology services are typically located in urban or higher population areas where medical facilities, equipment dealers and other service providers are located. Rural areas typically have significantly fewer service options available.

Issues of increasing the awareness of assistive technology, determining ways to make service providers available locally to meet rural needs, and providing the necessary support and follow-up need to be addressed. Service delivery models which incorporate regional centers and mobile outreach capabilities are becoming increasingly common as one approach to meet rural needs. The lack of adequate accessible transportation in rural areas is a significant restriction in providing equal access to services. The prospect of transporting individuals to cities where services are more readily available is an option. However, transporting individuals is both costly, logistically difficult to accomplish, and often unpopular with rural residents. The need for readily available support and follow-up stresses the importance of providing some direct service outreach into rural areas.

Coordination of services between agencies and programs

The resources and support needed to deliver comprehensive assistive technology services to the full age spectrum of persons with disabilities mandates the need for coordinated service delivery. It is unrealistic to expect the resources and capabilities of any single agency or program to meet all of the needs of those individuals that they immediately serve. Limited funding available and the scarcity of qualified service providers strongly suggests the need for programs and agencies to develop cooperative agreements and collaborative relationships.

The need for assistive technology transcends all ages and disabling conditions. The possibility of an effective transition from school to work and into independent living options depends on the coordinated technology related services for many severely disabled individuals. Shared utilization of staff, joint funding and combined needs assessment efforts are examples of coordinated activities. The need for a coordinated statewide effort to effectively utilize resources is a high priority of the network of Technology Related Assistance Act grant projects which are being established.

Identifying qualified service providers

Achieving the promise of technology requires the availability of skilled service providers. With the applications of technology ranging from computers to specialized toothbrushes to modified vehicles and adapted work sites, the staff needed to effectively match an individuals needs with appropriate technology is demanding. Rehabilitation engineers, technology specialists, occupational, speech and physical therapists, equipment vendors, fabrication and repair specialists and others illustrate the wide spectrum of qualified service providers needed. In most situations these individuals will not work within a single agency or program.

Locating available service providers and developing resources where none exist is a critical need. This is felt necessary especially in rural areas where many of the specialists needed are not commonly available.

In most states the availability of qualified service providers is limited. Individuals with specialized training in rehabilitation engineering or aspects of assistive technology are in short supply. There are many individuals, however, who possess many of the basic skills needed to become "service providers". Identifying who these people are, whether they are professional staff, volunteers or just interested individuals is an important step in service delivery. Once these individuals are identified, the next step is to provide necessary training to develop essential competencies and service delivery skills.

Quality assurance

The development of assistive technology services has raised the important need to establish standards to assure that consistent, quality services are provided. Quality assurance refers to both equipment (aid/device) performance as well as skill levels of service providers. The development of quality assurance standards has been an ongoing priority of RESNA and other organizations interested in the delivery of technology related services. In order for this to occur, consistent definitions and a well documented body of knowledge describing what "assistive technology" is must be developed. This process has been initiated in areas such as wheelchair standards and certification of orthotic and prosthetic personnel. Expansion of these efforts to encompass the entire field of assistive technology will need to continue.

The realization of the importance of "assuring quality" has been clearly indicated to Congress and to the many programs and agencies utilizing technology related services. Parallel efforts in the rehabilitation counseling, special education and medical services areas can serve as guideposts for the assistive technology field. Eventually specific certification will be required to provide assistive technology services. In the interim, programs and agencies providing or procuring assistive technology services must be responsible to monitor and work at ensuring that quality services are provided.

Training service providers

The need for both pre-service and in-service training of assistive technology service delivery personnel is critical. The availability of qualified service providers is presently limited and will remain a critical concern for the foreseeable future. A national priority to address training needs in the assistive technology field is urgently needed.

Programs and agencies offering assistive technology services will be required to meet their own training needs as best possible until an overall approach is implemented. Skill development training modules, curriculum units on technology for existing training in occupational therapy, rehabilitation services, and other programs along with a number of workshops and training seminars are examples of what is being done to satisfy some of the immediate needs.

The training needs in the field must be addressed from an immediate as well as long term perspective. Sequential skill building units, the training of "technology specialists" to function as a resource to general staff, and an overall increase in awareness of assistive technology are needed. The implementation of new long term training programs in rehabilitation engineering and various aspects of technology applications are critically needed.

Involving consumers

The role of consumers in the delivery of assistive technology is

extremely important. As users of the technology, individuals with disabilities need to function as consultants, advisors and, at a minimum, active participants in the service delivery process. This emphasizes the importance of making consumers aware of what is available. In all too many situations, consumers are not fully aware of what capabilities exist. Decisions regarding the utilization of technology should be made based on a thorough knowledge of what is available and what resources exist.

Consumers need to be an active, welcome component of all service delivery systems. Recent efforts with the Technology Related Assistance Act grants and the pending Americans with Disabilities Act highlight the importance of effective consumer responsive programming. A well informed consumer community is essential for this to be possible.

Providing follow-up support

Utilization of any type of aid or device will require the availability of follow-up support. Inherent in any equipment is the eventual failure and need for maintenance, repair, and replacement. The users of assistive technology will in most cases remain "users" throughout their lives. It is essential that services remain available for individuals following placement in a job or graduation from a program.

The provision of technology services and the linking with an appropriate piece of technology represents the start rather than the completion of a process. Continued eligibility for services and follow-up assistance are important concerns being addressed by programs and agencies.

Summary

There are no simple answers or universal solutions to meeting the challenges of providing assistive technology services to the widely differing individuals who need assistance. The critical issues that have been identified may help establish a framework to analyze some of the components of an assistive technology service delivery "system".

These issues may differ somewhat in a particular state or geographic area. However, these factors are core considerations for any service delivery activity.

The promise of technology can be a reality for the thousands of people with disabilities through the combined efforts of many key individuals.

What if . . .

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ISSUES & APPLICATIONS IN ASSISTIVE TECHNOLOGY July 1991

Utilizing Technology in the Vocational Rehabilitation Process

ANTHONY J. LANGTON

Abstract

Use of assistive technology resources and services within vocational rehabilitation programs was analyzed. A study group consisting of rehabilitation case management staff and technology specialists identified key decision points and service activities to determine where technology services should be utilized. Nine TECH POINTs were identified and are briefly explained. Additional considerations for further work are discussed.

Background

Determining vocational potential remains one of the most challenging and important aspects of rehabilitation services. Vocational rehabilitation counselors are expected to make eligibility decisions and determine if an individual has a "reasonable expectation" to benefit from rehabilitation services. Rehabilitation engineering technology must play a key role in this process.

Technology resources can be beneficial to a large number of rehabilitation clients, particularly those individuals with severe disabilities. Although widely acknowledged as important, little in the way of a systematic strategy on how to integrate technology into the rehabilitation services process has been presented.

Mandates for use of technology

The 1986 Amendments to the Rehabilitation Act, Public Law 99–506, for the first time, specifically mentioned "rehabilitation engineering" as a service which should be made available. With passage of Public Law 100–407, The Technology–Related Assistance for Individuals with Disabilities Act of 1988, the federal government echoed its recognition that all people with disabilities can benefit from technology (American Rehabilitation, 1990).

Earlier, in 1973, passage of the Rehabilitation Act Amendments directed vocational rehabilitation programs to initiate programming designed to focus services on the needs of those individuals with severe disabilities. The Rehabilitation Services Administration (RSA) has continued to make it clear that rehabilitation engineering technology is an essential resource needed for the severely disabled and other rehabilitation clients (RSA, 1990).

Vocational Rehabilitation Process

Services delivered through vocational rehabilitation agencies follow standardized case management procedures. Comprehensive rehabilitation services are comprised of a large number of sequential activities which are individualized to meet the needs of specific clients. Figure1 illustrates the overall vocational rehabilitation process. Technology and technology related services are, or should be, an important part of many of these activities.

Problem

The use of technology resources within the rehabilitation process remains limited. Technology and technology related services have yet to be clearly defined by many vocational rehabilitation agencies. Often the technology services which are provided are not effectively integrated into regular case management activities. When utilized, rehabilitation engineering services are most commonly considered during placement

activities in the latter stages of the rehabilitation process (IRI, 1986).

Case management staff often do not have a sufficient understanding of when or how technology should be utilized. As a result technology resources are often not considered. Individuals who may have vocational potential could be determined to lack eligibility because the capability of technology to reduce handicapping conditions and increase performance is not considered.

Methodology

Although vocational rehabilitation programs differ in their resources and specific policies, they operate within the same guidelines and generally follow similar procedures. This project looked at the overall rehabilitation process to develop a method(s) to better integrate technology services.

A study group of rehabilitation case management staff and technology specialists met to determine when and where technology resources should be utilized. Findings from this group were then compared with VR case status activities.

Results

Nine separate places in the rehabilitation process were identified where consideration of the use of technology or technology related services should take place. These points each represent decision points where technology resources/ services could be recommended or phases of services where technology resources could be appropriate.

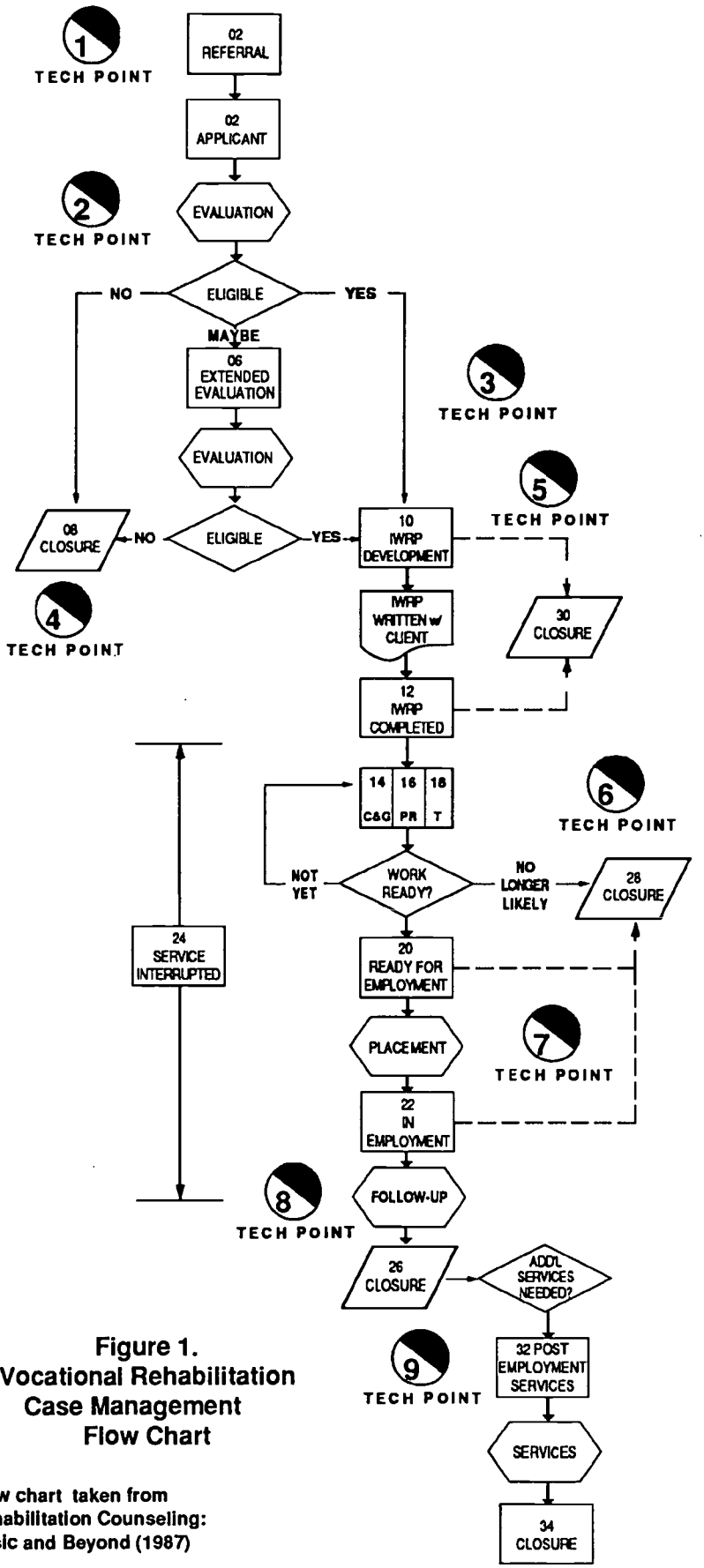

Figure 1.
Vocational Rehabilitation Case Management Flow Chart

Flow chart taken from Rehabilitation Counseling: Basic and Beyond (1987)

Tech Points

The TECH POINTS are briefly outlined indicating questions or considerations that should be made regarding the possible application of technology services. Reference is given to VR case status numbers, such as (02), where appropriate. Figure 1 also shows locations of the TECH POINTS within the overall rehabilitation process.

Initial Referral (02):

During preliminary contact with individuals seeking rehabilitation services, counselors should question whether technology resources could be of benefit. This should include communication, mobility, environmental control, work station adaptations or any other aspect of assistive technology. *Individuals should not be denied services or referred elsewhere without a basic technology consultation.* This may require services of a rehabilitation engineer or other technology specialist.

Evaluation phase :

Can this individual be evaluated with standard assessment procedures? Will any accommodations be needed to thoroughly assess the individuals capabilities and effectively determine vocational potential? Assistive aids and devices for communication, mobility, manipulation, writing and other task performance should be available as part of the evaluation. Individuals needing in depth technology assessments should be referred for extended evaluation.

Extended Evaluation (06):

Resources of a technology team should be available to provide specialized technology assessments. Technical assistance from rehabilitation engineers or other technology specialists should be available as needed. Determination of *"reasonable expectation"* should include consideration of technology resources.

Closed Non–feasible (08):

Prior to being determined ineligible, the functional problems encountered and the utilization made of assistive technology resources and services should be indicated. *Consultation with the Technology Team should be done prior to closure.* Information from this consultation should be sent with referral to alternative resources or for considerations for independent living services.

Plan Development (10):

The IndividuallyWritten Rehabilitation Plan (IWRP) should *identify assistive technology and technology related services necessary to achieve vocational goals.* Documentation of specific types of services needed and equipment options for consideration are necessary.

Planned Services (14,16,18):

Technology resources or services needed to complete training or physical restoration should be provided. Accommodations are likely to be necessary for school activities or independent living issues. Access to a rehabilitation engineer or other Technology Team members should be available for problem solving.

Placement Phase (20):

What technology needs are there for placement? *Accommodations needed are likely to include work site modification, independent living assistance, custom equipment development, transportation/mobility, etc.* Problem solving as well as fabrication resources would need to be available. Access to the Technology Team or individual technology specialists would be required.

Follow–up (22):

Follow–up should be provided on the performance of specific assistive aids/devices or work site accommodations made. During trial placement periods, problems (if any) should be identified and determination of need for technology support resources made. Site visit by technology specialist may be necessary.

Post Employment Services (32):

Support should be provided for maintenance or repair of aids or devices. Arrangement for replacement of equipment or provision of technical assistance should be available.

Conclusion

The integration of TECH POINTS within the case management process should enable vocational rehabilitation agencies to better identify when they should use technology services and more accurately determine what technology services their clients need. Development of specific questions and procedures at each point will depend on resources available within particular vocational rehabilitation programs. Tracking of technology resource/service activity at each point will enable programs to more effectively evaluate its benefits and cost–effectiveness.

The following information summarizes additional considerations which should be taken into account when implementing the "Tech Points" approach:

Key Decision Points

In all rehabilitation programs the delivery of rehabilitation services relies heavily on the capability of the vocational rehabilitation counselor to work with the client to identify feasible goals and to develop a workable plan to achieve these goals. Critical decisions during the *evaluation, individual written plan development and work readiness phases of the rehabilitation process* were identified as primary points where technology resources should be emphasized.

Continuous Process

The problem solving and support available from technology services should remain available throughout the rehabilitation process. The identification of specific "check points" was developed as a way to assist case management staff in monitoring the utilization of technology. *It is important that technology services and resources be considered anytime during the rehabilitation process.*

Population Considerations

Decisions on the use of technology obviously must depend primarily on the specific needs of the individual. Depending on the nature of a person's disability and functional limitations, the need and scheduling of technology intervention will vary. While not as obvious, utilization of assistive technology with non–physically disabled populations may still be necessary depending on functional limitations.

Role of Staff

Determining whether technology resources should be utilized remains primarily the responsibility of the vocational rehabilitation counselor. *As case manager, the rehabilitation counselor needs to have,*

1) a basic understanding of assistive technology and

2) access to technology support staff.

Utilization of rehabilitation engineers or other technology specialists as part of a "technology team" should be available to assist at these various points.

Time Frames

Availability of technology support staff and turn around time are important variables in the successful integration of technology services. Response time to requests should fall within the agency guidelines for length of time which individual clients normally remain in particular statuses. Utilization of extended service options may be necessary.

Need for Training

Developing a general awareness of assistive technology for all case management is important for the TECH POINT approach to be successful. Specific training materials describing questions to be asked and resources available will also be necessary.

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