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AUTHOR Cress, Cynthia J.
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ABSTRACT

Disabled Access to Technological Advances (DATA) was a 3-year federally funded project to demonstrate how the application of computer technology can increase the employability of severely disabled persons. Services were provided through the integrated efforts of four agencies in Dane County, Wisconsin: an independent living center, a rehabilitation research and engineering center, a vocational rehabilitation organization, and a computer application and training organization for disabled persons. Fourteen clients, most of them with cerebral palsy, were accepted, evaluated, and supplied with apropriate technology, training, support, education, and counseling. The skills learned were then applied in job-related situations, including educational training, trial work, job search, and employment. By the end of the project, six clients were employed in full- or part-time competitive employment directly related to their career goals, three others had completed trial or volunteer work related to their career goals, four clients utilized technology primarily in career-related education and job search, and one client utilized technology only in job search. Appendices include planning forms, client selection criteria, client profile form, client screening checklist, evaluation forms, and individualized action plan forms. (JDD)

DISABLED ACCESS TO TECHNOLOGICAL ADVANCES (DATA) FINAL REPORT

Crew, C.J.

1986

Trace Research and Development Center on Communication, Control, and Computer Access for Handicapped Individuals
University of Wisconsin-Madison

[redacted], Wisconsin 53715-2280 (608)262-6966 TDD: (608)263-5408

DISABLED ACCESS TO TECHNOLOGICAL ADVANCES (DATA)

FINAL REPORT

Principal Agency: Access to Independence, Inc.
Subcontractor: Trace R & D Center
Subcontractor: Wisconsin Division of Vocational Rehabilitation
Subcontractor: Computers to Help People, Inc.

DISABLED ACCESS TO TECHNOLOGICAL ADVANCES (DATA)

FINAL REPORT

Final Report Prepared by:

Cynthia J. Cress
Research Specialist
Trace R & D Center

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DATA PROJECT PERSONNEL

ACCESS TO INDEPENDENCE
1954 E. Washington A e.
Madison, WI 53704
(608) 251-7575

Eileen Berkeley
Project Director, years 1 & 2
Director - Access to Independence

Owen McCusker
Project Director, year 3
Director - Access to Independence

Kay Houston
Project Coordinator

TRACE RESEARCH AND DEVELOPMENT
CENTER, Waisman Center
1500 Highland Ave.
Madison, WI 53705
(608) 263-6966

Mary Brady
Research Specialist, year 1

Charles Lee
Technical Specialist, years 2 & 3

Cynthia Cress
Research Specialist, years 2 & 3

Gregg Vanderheiden
Director - Trace R & D Center

WISCONSIN DIVISION OF
VOCATIONAL REHABILITATION
160 Westgate Mall, Suite 10
Madison, WI 53711
(608) 266-3655

Jerry Meysembourg
Vocational Specialist, year 1

Manuel Lugo
Office Supervisor, year 1

Tom Newman
Vocational Specialist, years 2 & 3

COMPUTERS TO HELP PEOPLE, INC.
1221 W. Johnson St.
Madison, WI 53711
(608) 257-5917

Mike Reece
Computer Training Specialist

John Boyer
President - Computers to Help
People, Inc.

Executive Summary
Disabled Access to Technological Advances

The DATA project was a three-year project established to demonstrate how the application of computer technology can increase the employability of severely disabled persons. Services were provided by the integrated efforts of four service agencies in Dane County: an independent living center, rehabilitation research and engineering center, vocational rehabilitation organization, and computer application and training organization for disabled persons. Types of disabilities addressed by computer-related technology include deficits in vocal communication, computer access, environmental control, writing, typing, and information processing. Innovations in project design include mainstreaming services with community training opportunities, using computers as tools to address client needs in a variety of employment fields, and coordinating a range of support services between different agencies.

Fourteen clients were accepted, evaluated, and supplied with appropriate technology, training, support, education, and counseling, which was then applied in job-related situations, including educational training, trial work, job search, and employment. By the end of the project, six clients were employed in full- or part-time competitive employment directly related to their career goals, three other clients had completed trial or volunteer work directly related to their career goals, four clients utilized technology primarily in career-related education and part-time job search, and one client utilized technology only in job search. Of these clients, six clients showed improvement in target skills directly related to technological intervention, five other clients showed some demonstrable improvement in target skills presumed to be associated with technological intervention, and three clients showed no change in target skills attributable to technological intervention.

While the application of technology could be demonstrated to improve employability for eleven of the fourteen clients, technological skills and training was not the only factor influencing relative success at obtaining and keeping employment. In fact, one of the clients with no applicable use of technology was

among the clients attaining full-time employment. Common factors among those clien who gained employment before project completion include high motivation to succeed in career and overcome obstacles, independent initiative to practice with and master the technologies, realistic career goals commensurate with training, and absence of insurmountable barriers to employment. Barriers to employment for other clients which were not resolved during the course of the project included (in order of frequency): inappropriate motivation and goals, skills or ability deficits not addressed by technology or project training, financial disincentives, and chronic poor health. Other related barriers encountered but partially resolved for at least some clients include employer attitudes towards disability, client attitudes towards technology and employment, cognitive and language skill deficits, and physical barriers and limitations of employment settings.

Characteristics of the DATA project which were particularly effective in meeting project and client goals were as follows: coordination of all related services to meet clearly defined vocational goals, flexibility in project sequences and requirements to accomodate different skills and experience of clients, thorough investigation of low cost and simple technological applications, demonstration of the range of skills and tasks that can be addressed by computer technology in any field, and interaction between clients, service personnel, and community business leaders. Suggested modifications for future projects similar to DATA include: systematic motivation and attitude intervention, full-time job development personnel, and coordination of this with career counseling.

The project was successful at the goals of improving employability of clients through application of technology and coordinated services. It was less successful at achieving full-time employment for all clients, due to various barriers not addressable by project resources. A conclusion of this project is that although technology is not required for the employment of all severely disabled persons, for some clients technology is a unique and essential factor which can raise client skills to a competitive level.

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DATA REPORT

The DATA project (Disabled Access to Technological Advances) was developed in response to a perceived need for better provision of prevocational and vocational services for severely disabled individuals, in particular through the application of special computer technology. This project was conceived as a result of a long range planning effort by Access to Independence, Inc., an independent living service center addressing the independent living concerns of physically disabled persons in Dane County. This planning effort identified vocational training and the development of non-sheltered employment opportunities as high priority needs to be addressed by that organization. The primary goal of the DATA project was to develop an effective method for assisting severely disabled persons to reach their optimal vocational potential by utilizing computers or other technological aids in conjunction with a coordinated system of community services and resources. Included in this goal is the demonstration of how such a method can be replicated in other geographical areas.

A major obstacle to employment for many disabled persons relates directly to their physical limitations. With the advent and expanded use of microcomputers and other technological aids in recent years, many of these mobility, manipulation and communication limitations can be overcome, enabling disabled individuals to pursue and qualify for jobs involving tasks that were previously not possible for them to perform. Particular vocational limitations for severely disabled individuals which can be addressed by special technology include writing, word processing, communication (both telecommunication and conversation), computer access, environmental control (such as remote control of devices), limited use of hands and other mobility concerns.

Jobs for which computer technology is now applicable include not only computer programming or data entry positions, but a wide variety of fields such as education, business management, engineering, law, social services/counseling, and clerical positions. Some of the regular functions performed by computers in schools and the work place include word processing, data storage/retrieval, graphics creation, programming scientific/statistical analysis, specific assessment and training of motor, cognitive linguistic, and educational skills. In a rapidly increasing number of fields, computer proficiency/literacy is becoming not only an asset, but a necessity for successful employment. Thus computers and other electronic aids actually perform a dual role for disabled people allowing them to perform both special functions necessitated by their handicapping condition and regular functions which are required by non-handicapped individuals (Vanderheiden, 1982).

Although many severely disabled people have the potential for competitive employment, most disabled persons do not yet have access to of the range of such technological advances available to increase their employability.

Project Goals

In July of 1983, Access to Independence submitted a proposal to the U.S. Department of Education in conjunction with three other agencies of Dane County. The Trace Research and Development Center, the Wisconsin Division of Vocational Rehabilitation (DVR), and Computers to Help People Inc. (CHPI). This proposal was in response to program announcement No. 84.128A entitled "Special Projects and Demonstrations for Providing Vocational Rehabilitation Services to Severely Disabled Individuals". The DATA project was established to demonstrate an effective means for the

program development and provision of the necessary training, counseling, assistive devices, and related support services to assist 12 to 15 severely disabled persons to become job ready. The following objectives were identified within this goal:

1. To show how the application of computer technology and supportive services can help severely physically disabled persons achieve employment commensurate with their skill and educational levels.

2. To demonstrate to the business community, research and service agencies, and legislative bodies that persons who would not have been employed to their fullest potential without the project's assistance can be employed in a competitive job market if they have the means to compensate for some of the barriers of their disability.

3. To develop, describe and report a functional method for applying technology and services, and evaluate critical elements of the process to either repeat or change in future service projects.

The impact of such an extended project can be both long and short-term for community and national rehabilitation centers, businesses and individuals served. In the short-term, 12-15 individuals become employed or prepared for employment in the competitive job market. These individuals gain not only knowledge and skills in the use of computers to aid in the career of their choice, but also skills in the areas of independent living, advocacy, job search, and employment retention. By obtaining employment these individuals become more economically self-sufficient, thereby decreasing their dependence on programs such as SSI and SSDI. While the DATA project includes direct client service, the primary long-term purpose of such a project is to demonstrate how different service agencies can coordinate both existing and new services for cost-effective and efficient utilization of community resources. Pertinent information includes description of the roles and responsibilities of different agencies; procedures and objectives; evaluation of services; technological applications; assessment and research procedures, and recommendations of

changes, policies and sources of information for future programs addressing employment of the severely disabled. Additional agencies and individuals which potentially benefit from information about the DATA project include vocational rehabilitation agencies (especially DVR), independent living centers, rehabilitation engineering centers, other agencies for disabled people (such as United Cerebral Palsy and Goodwill), secondary and post-secondary educational institutions, governmental agencies, officials, potential clients and employers.

A distinctive feature of the DATA project was that the program coordinates the services of existing agencies rather than developing a new or separate entity. Some of the other features of this project not typical of other computer training or rehabilitation programs include:

1) The computer training was mainstreamed into regular college or university classrooms, rather than offered in a segregated manner. This feature improves chances for project replication elsewhere.

2) Computer training was available to enhance opportunities for a range of career choices, rather than narrowly focused only in the area of computer programming. This feature greatly increases the number of people who could benefit.

3) A range of support services was afforded participants in a coordinated fashion, rather than addressing only the vocational skills or only the hardware needed by the individual. This feature enhances each participant's chances for success in obtaining and retaining employment.

Participating Agencies

Steering Committee

Between one and three representatives from each service agency served as members of the Steering Committee. The Steering Committee met formally once a month to review project plans/progress, select program participants, recommend and evaluate specific staff responsibilities for client service and project maintenance, and monitor timelines for client action plans and project objectives. Additional meetings to address specific project

issues and concerns were held occasionally, and Steering Committee members interacted frequently at other times in connection with daily client-related activities. The peer participating agencies and their responsibilities are described below.

Access to Independence, Inc. is an independent living center that provides a comprehensive range of service to physically disabled residents of Dane County, Wisconsin, to assist them to live independently. Services include information and referral, advocacy, education and training, counseling, and peer support to address concerns related to housing, attendant care, financial benefits, and other individualized needs related to independent living.

Access to Independence served as the lead agency for this project, and coordinated all project activities. In addition, Access:

- directed the overall planning and coordination of this project;
- developed and administered subcontracts, grant applications, and budget policies;
- participated in the recruitment and selection of project clients;
- provided case management, advocacy, and independent living skills training and services;
- developed and supervised a Business Advisory Council;
- provided pre-vocational skills training, arranged some trial work experience, and assisted in job placements;
- coordinated follow up with project clients after placement on the job.

The Wisconsin Division of Vocational Rehabilitation is the state rehabilitation agency providing services and assistance to physically and/or mentally disabled individuals which serves Dane County, for purposes of this project:

- provided client referrals;

- provided financial assistance for client training and assistive devices;

- assisted in the development of a Business Advisory Council;

- provided consultation regarding job site modifications and job placement;

- provided follow-up client contact.

The Trace Research and Development Center for the Severely Communicatively Handicapped is a rehabilitation engineering center in the area of computer access, communication and control for severely disabled individuals. Under current funding, the Trace Center conducts research, development, information dissemination, training, and service delivery activities. In conjunction with the Communication Aids and Systems Clinic:

- evaluated the communication, control, and computer access needs of selected potential clients;

- designed and implemented individual systems using the best available technology which is appropriate and affordable for the client;

- provided engineering support to design and construct custom interfaces where necessary;

- participated in the planning, management, and evaluation of the overall project;

- developed and refined assessment and training procedures for job-related skills;

- analyzed and reported results obtained which are of national as well as local interest.

Computers to Help People, Inc. (CHPI) is a non-profit computer company which has as its primary purpose to use computer technology directly for human benefit, through teaching, information dissemination, and on-the-job training. CHPI has three main thrusts:

1) it provides computer services to business customers; 2) it helps disabled people obtain computers and computer-based aids; and 3) it conducts computer literacy courses. An added feature of its professional expertise is that it is run and operated by severely disabled people, and is dedicated to hiring qualified disabled people.

For this project CHPI:

- provided consultation on computer use and adaptations;
- offered individualized or small group tutoring services to program clients, either to supplement their computer training or to familiarize them with the basic operation of computer-assisted devices.

Training Institutions

Since computer training within the project through CHPI concentrates primarily on introduction to general computer use or consultation and training in the operation of various computer programs (e.g., wordprocessing, education programs), training in computer programming and languages was provided by two area colleges: Madison Area Technology College (MATC) and the University of Wisconsin-Madison (UW).

MATC offers Associate Degree programs in data processing computer operations and data processing computer programming. The University of Wisconsin-Madison offers both bachelor's and graduate degrees in computer sciences and computer sciences and statistics. At both educational institutions, an individual may take courses in programming without pursuing a degree in that area. Both educational institutions have developed a cooperative working relationship with DVR; a number of disabled students are currently enrolled in both institutions.

DATA clients utilized a variety of educational resources at each of these facilities. Nine of the fifteen DATA clients attended classes at one of these universities during the 3 years of the project (see Client Profile

section for more information). These classes included not only computer programming and self-improvement courses, but also course requirements for Associate, B.A., or M.A. degrees in such fields as social work, law, accounting, urban and regional planning or recreational therapy. For the purposes of this project, MATC and the University of Wisconsin-Madison:

- provided computer programming training through their regular computer curricula;
- cooperated with project activities so as to enhance the clients' training experiences;
- provided specific coursework for clients to obtain career-related Associate, Bachelors, or Master's degrees.

Business Advisory Council

For additional input about employment concerns, job market characteristics and potential employment prospects or recommended services to best prepare clients to participate in a competitive job market, the DATA project established the Business Advisory Council (BAC). The BAC was composed of 11 representatives from local organizations including private business, state government and the University of Wisconsin-Madison. Specific advisory functions of the BAC include:

- To help determine areas which have greatest employment prospects.
- To identify areas/aspects which have caused the greatest problems in past attempts.
- To delineate components that need to be included in the clients' training.
- To assist in resource development, secure additional funding or equipment needed for the project.
- To assist in locating trial work settings, as well as permanent job placements.
- To serve as consultants for the pre-vocational workshops, helping both to plan the content as well as to serve to provide hands-on feedback for clients (i.e., interviewing skills, resume preparation).

- To advise in the evaluation process itself -- what factors from a business point of view need to be included in data collection and analysis.

Community Characteristics

The success and long-term impact of a project such as DATA is greatly affected by the community with which the project is associated. For the clients as potential employees, concerns such as the job market, living costs, number and types of job-seekers in the area are very relevant to them. Community issues of physical accessibility, attitudes of city policy and availability of housing, support services and advocacy groups will directly or indirectly affect the persons chances of successful employment. The following is a profile of the supporting county for the DATA project, Dane County, based on information gathered from local service personnel. Characteristics of the community are divided into those perceived by the Steering Committee and other service personnel as assets and detriments to employment potential of disabled clients in Dane County.

Asset.:

- wide range of service resources (Access, DVR, Trace, CHPI, University, other nonprofit or support agencies);
- relatively physically accessible community;
- good transportation and health resources;
- liberal city policy for affirmative action or legislative policies;
- good independent living support services, and housing alternatives;
- pay level for entry level jobs is relatively high, often with good fringe benefits included;
- large number of advocacy groups, and generally positive attitude in community about disabled persons;
- heavy emphasis in governmental, municipal, and health service jobs (areas more likely to risk hiring a disabled person because of potential savings in benefit payments such as SSDI).

Detriments:

- private sector is weak, with few low-skilled jobs available;
- high competition for entry level positions, particularly from part-time students;
- high percentage of overqualified university graduates seeking employment in Madison (small employment base, tough job market);
- farming is third largest employer in county, and largely an area of employment inaccessible to disabled clients;
- overall living costs relatively high here;
- unemployment rate in city affects competition for jobs;
- severe winters interfere with independence and mobility.

Part I:

Project Planning Overview

The sequence of service provision as initially conceived in the project proposal is summarized in Figure 2. The sections that follow include elaboration of this service process as originally planned, anticipated project milestones and approximate dates of completion of those dates, and description of the major organizational changes which occurred during the 3 years of the project. This overview will be followed by a detailed discussion of pertinent issues and results for each stage of service provision.

Anticipated Project Milestones and Dates Completed

The request for proposal listed the following five major objectives designed to address the need for a more systematic and effective approach for making service and technological resources available to disabled persons to increase their employability. An approximate date of completion is included after each objective; more complete discussion of organizational issues involved under each objective is included in the next section.

1) By the end of 7 months (May 1984), a Business Advisory Council will be developed, made up of key representatives of the local business community, to offer advice on the personnel needs of local business and to assure successful job placements.

   Initial contact with potential BAC members was made as early as November, 1983. The first meeting of a full BAC was in July of 1984.

2) By the end of 12 months (October, 1984), the project will develop a system for coordinating existing and new community resources toward the end of making severely disabled persons employable through the use of computers or other technological aids.

   At the first Steering Committee meetings, staff began analysis and revision of service provision plans. By October of 1984, the committee had finalized a detailed flow chart of the coordination and sequence of related services for project clients.

3) By the end of 18 months (April 1984), an analysis of the types of computer-related jobs available to severely handicapped persons will have been created; this analysis will include a detailed breakdown of key characteristics of these jobs.

A preliminary outline of job categories and related skills was prepared March 1985. A more comprehensive list of job categories/skills was completed November 1985.

4) By the end of 36 months (October 1986), the project will provide the necessary training, counseling, assistive devices, and related support services to assist 12-15 persons with cerebral palsy to become job-ready. At least 5 will be competitively employed, and 7-10 will be in the final stages of the services process.

A summary of the technology applied with DATA clients is provided in Table 5. Clients received the primary recommended technology within 4-10 months after acceptance, depending on the nature of equipment required. Some additional technology such as adaptive peripherals or software continued to be provided for clients as new needs developed, but all clients received and were trained with relevant technology before project completion.

By October 1986, 5 clients were competitively employed, 6 were in final project stages of trial work or job seeking, and 3 clients were still completing higher educational degrees.

5) By the end of 36 months (October 1986), a project report including an audiovisual presentation will be prepared, describing a) the key factors which were found to have led to the success or failure of individual participants; b) the significant roles which must be played by various community service providers; and c) the methods for coordinating all of the various elements of the service system.

A videotape featuring 3 DATA clients discussing the role of technology and the DATA project in increasing their employability was completed March 1986 and presented at 2 professional conferences. A

first draft of the final report conclusions was completed November 1986, and the final draft was completed April 1987.

More detailed Anticipated Project Milestones as defined in the Request for Proposal and approximate completion dates are listed below. Additional discussion of organizational matters follows this list.

Year One - Began October 1, 1983

Begun October 1983 - Convene meeting with all key staff to plan implementation of project.

Begun October 1983 - Conduct interagency staffings to coordinate project plans and develop individualized plans - monthly through end of project.

Begun October 1983 - Research existing training programs nationally - reporting of results primarily in third year.

Begun November 1983 - Determine evaluation and data collection methods.

Begun January 1984 - Review evaluation and data collection methods through staffings - revision continued through March 1985.

Begun December 1983 - Prepare and disseminate information about program.

Begun November 1983 - Prepare materials for presentations to businesses regarding Advisory Council.

Begun March-April 1984 - Make presentations to businesses regarding Advisory Council.

July 1984 - Convene full Business Advisory Council - first meeting.

February-March 1984 - Initiate screen procedure and intake assessments - last client accepted August 1985.

Year Two - began October 1, 1984

Begun November 1984 - Planning and consulting meetings with University and MATC.

Begun April 1984 - Review benefits with participants and develop individual financial plan - when accepted clients and continue with each new client.

Begun June 1984 - Evaluations conducted by UW Hospitals and Clinic - and continued as accepted clients.

Begun November 1984 - Arrange and offer pre-vocational workshop once per month.

Begun December 1984 - Provide training in independent living skills.

Begun November 1984 - Determine kinds of trial work settings desirable - varies by client characteristics - see next section.

Begun November 1984 - Solicit and secure trial work settings and job placements - varies by client characteristics - see next section.

Begun November 1984 - Match participants with trial work settings - varies by client characteristics - see next section.

Begun November 1984 - Evaluate participants' trial work experiences - varies by client characteristics - see next section.

March 1984 - Conduct participant progress reviews - review meeting.

Year Three - began October 1, 1985

April 1985 - Place participants in jobs - first placed.

Begun April 1985 - Assist with appropriate job modifications.

Begun May 1985 - Offer follow-along service to participants in jobs.

Begun June 1985 - Conduct evaluation of participants in jobs.

Begun January 1986 - Arrange for continuation of service following project termination.

Summary of Policy Service Changes

While the service plan described in the proposal accurately reflected resulting policy and services, procedures within the project continued to be evaluated and adapted when necessary. Changes resulted for a variety of reasons including new or improved understanding of clients' needs, availability of more time and energy efficient techniques, input from colleagues, supporting agencies or clients, re-evaluation of policies, and changes in personnel, clients, and situational constraints. The summary of policy and service changes is broken down into changes of project organization, selection criteria, assessment, and service. Each of these points will also be addressed as appropriate in the results section of the report.

Organizational Changes

Client Timelines. Clients moved at very different rates through different phases of the project. Some clients entered the DATA project nearly job-ready, lacking only technology to overcome specific barriers. Indeed, three of the clients were already employed at temporary positions when they joined DATA and were job seeking concurrently with project training and equipment placement. Speed of committee decision to accept DATA clients varied by how quickly necessary information varied from one month to approximately four months.

Monthly Planning Forms. To monitor the speed and efficiency with which committee members proceeded with project goals, a set of monthly planning forms were developed in March 1985, as client service procedures became more complex (see Appendix A). At each Steering Committee meeting, immediate tasks and goals for each client were recorded as well as the anticipated and actual completion date. At successive meetings, previous goal, are reviewed and revised if necessary. This information was recorded not only by client for a concise record of specific service activities for each person, but also by allotted tasks by steering committee members, for a reminder of the range of tasks for which each individual is responsible. A given committee member was directly responsible for early task and for coordinating efforts towards that goal with other responsible persons (committee and noncommitte members).

Role of University/MATC. The University of Wisconsin and MATC were originally expected to have a major organizational role, with representatives from the institution attending planning sessions and steering committee meetings. Although both institutions expressed their support for the DATA project, they have been utilized primarily in their

standard roles as educational entities. Only 2 of 15 clients chose computer programming as a career goal, and thus required computer time at these schools. One attended classes at MATC, another took some guest computer classes at UW. The institutions played greater roles in providing the following types of degrees for clients (in numbers of clients):

DEGREE	UW	MATC
Some Classes	2	4
Associate		1
Bachelors	-	
Master's	3	
Law	1	

Researching Other Projects. According to the original proposal, the summary of procedures and results of vocational rehabilitation projects similar to DATA should have been completed by the end of Year One. Seven projects were reviewed or visited by this time, and these provided useful points of comparison for the design of DATA procedures, as originally included. As committee members continued to gather information about many different projects, it was decided to do a broader review of other projects than originally anticipated. These reviews of other projects continued until the end of the three year project.

Selection Criteria

Near the beginning of each year of the project, the selection criteria for clients were reviewed and revised as deemed necessary to best reflect project goals (see Appendix B for the three versions). Major changes for the second year criteria included a better description of skills addressable by computer technology and an expansion of the intended client population. DATA had originally been asked by funding agencies to restrict

itself to clients with one type of disability, and cerebral palsy was chosen as best reflecting the types of sever physical disabilities addressed by computer technology. During the first year of screening however, fewer potential clients with cerebral palsy were found than expected, therefore, selection criteria were extended also to persons with impairments similar to those typical of cerebral palsy. Of the 15 clients, 7 had cerebral palsy, 3 had spinal cord injuries, 3 had nueromuscular conditions, and 2 had multiple sclerosis.

Changes for the third year of the project included the restrictions that further clients should be selected with the expectation of being job ready by the end of the project. This was to maximize the opportunity for the project to demonstrate its primary goal; to increase the employability of severely disabled clients. More discussion of these and other aspects of the selection criteria is included in the results section.

Assessment

A variety of forms and procedures were used to collect pertinent data on skills and need of clients. In the second year of the project a client profile was developed to collect information gathered about clients into one resource, to catalogue changes in client skills, and prompt evaluation of any missing client data (see Appendix C). Also developed during the second year was a behavior and worklist checklist to code in more detail aspects of client motivation considered applicable or necessary for achieving proper goals. Some of the changes in focus of assessment included a decreased emphasis on independent living or vocational evaluations for all clients. Some clients entered the project with a history of competence at living independently or successful employment

experience, and assessment of further. independent living or vocational needs of such clients was conducted informally.

Service

Trial Work. Some clients entering the DATA project had several years of employment experience already, were temporarily employed, had volunteered services already in trial work through other organizations, or performed job-related tasks through assistantships or practicums while in school. Because of this, the trial work plan become an option to consider according to client needs rather than a manditory phase for all clients before beginning job searching. Trial work was still utilized, according to project criteria as a means to demonstrate client skills and utility of equipment before or during job search. More information on types and amount of trial work for clients is included in the results section.

Funding/Equipment. Since funds for specialized adaptive equipment for clients was designated by federal grant agencies as only available for loan and not distribution of equipment to clients, terms were detailed at the end of the second year for the loan of equipment to clients. In anticipation of the continuance of coordinated services similar to DATA beyond the conclusion of the project itself, equipment was allotted to clients for a loan period of indefinite length to be retained by the client as long as he/she continues to need and properly maintain equipment and maintains association with DATA in a follow-along training phase after the three project years are finished.

Disincentives. One factor which influenced client employability more than anticipated was the effect of financial disincentives, i.e., that a given client might not be able to earn enough money in their chosen line of work to cover costs of necessary housing/medical/attendant care costs from

salary alone. More discussion of specific effects of disincentives on clients is included in the results section on job seeking.

Part II:

Service Delivery Process and Results

Recruitment of Applicants

Planning of materials and procedures for soliciting application of potential clients began in September 1983, with the first Steering Committee meeting. Materials were distributed to service agencies, vocational rehabilitation centers, and job placement organizations beginning in February, 1984. A project brochure described anticipated project goals and procedures, requirements for participants, project services, and anticipated timelines, and provided information for clients to contact Access to Independence, the sponsoring organization, by either phone, TTY, letter, or in person, to arrange a screening interview. Some clients were referred to Access to Independence by persons associated with the applicant, such as therapists, vocational counselors, special education teachers, or parents. Recruitment and consideration of potential clients continued until the last project opening was filled, in August, 1985. Although one of the clients accepted and participating in the DATA project at that point dropped out of DATA early in 1986, it was determined that the remaining portion of 1986 was too short to adequately provide services for any other client. Applications received after all positions were filled were referred to other agencies as appropriate, as were all applications for persons not accepted into the DATA project.

Screening and Selection Criteria

A schematic diagram of the final version of the screening procedure is provided in Figure 1. When applicants first contacted or were referred to the DATA project, they completed a screening interview with the project coordinator, in which the purposes and procedures of the DATA project were explained. If the applicant continued to be interested in joining the DATA project after this interview, they were further screened with the initial

screening checklist in Appendix D. Each of these items on the checklist were determined by the steering committee to be minimum requirements for ability to participate in and benefit from the project, and addressed each of the qualifications involved in the selection criteria derived for DATA clients (see Appendix B). Rationale for including each of the selection criteria are listed below:

1. Type of disability: Selection was originally limited to persons with cerebral palsy because of policies established by the primary funding agency limiting services to a particular type of disability. Cerebral palsy was chosen as best reflecting the types of severe physical disabilities addressed by computer technology, but when insufficient numbers of potential clients with cerebral palsy were found, this criterion was expanded to include severe physical impairments with effects similar to cerebral palsy. Special emphasis was placed on clients with disabilities common to cerebral palsy, such as limited use of hands, vocal communication impairment, or keyboard access limitations (see selection criterion #4).

2. DVR eligibility: Since client services and equipment purchases were negotiated in cooperation with DVR, it was necessary that clients be eligible for DVR services. However, as stated in the criteria, inclusion of a client in the DATA project could potentially influence the reopening of a file closed because of severity of physical disability.

3. Severity of disability: Conditions of the grant indicated that clients should be considered severely disabled. Minimal criteria for severe disability were derived from DVR definitions of severe disability, including: a) use of crutches or a wheelchair, b) three or more limbs affected, or c) sensory disability which interferes with requirements such as being able to get a driver's license. Technological aids might also

upgrade DVR feasibility ratings to severely disabled, but this did not change ratings for any of the DATA clients.

4. Type of Disability: Special emphasis in this project was placed on vocal communication and keyboard access impairments because those are two of the disabilities most directly addressed by computer technology. All clients who participated in the DATA project were severely disabled in physical movement, vocal communication, or both, and several had accompanying cognitive, sensory, or independent living deficits. While non-physical disabilities such as cognitive deficits were addressed by technology for some clients, these persons were accepted into the project based on computer applications for primary physical or communicative disabilities.

5. Age: Any persons within the standard range of legal full-time employment were considered for the project, but priority was given to those who would have maximum length of opportunity to use the long-term benefits of the project in full-time employment. Only two clients were accepted beyond the preferred range of 17-40: one client was accepted at 16 because of demonstrated commitment to learning and potential for beginning full-time work before the end of the project, and another was accepted at 46 because of perceived changes in motivational factors which had been reported as primary barriers to full-time employment in the past.

6. Dane County residence: Since DVR and other Access services were limited to within Dane county, potential clients had to either live in Dane county or be prepared to relocate to Dane County within the timeframe of the project. One client was tentatively accepted to the project before he had officially moved to Dane county from Illinois, and another client continued to be monitored by project staff after finding full-time

employment in Milwaukee.

7. SSI priority: One of the potential benefits of providing services to increase the employability of severely disabled individuals who are receiving some type of Social Security benefits, is a reduction in costs of these benefits when these individuals become full-time employees. This project was established to demonstrate that computer technology is a functional link in increasing employability and subsequently reduce cost of benefits for persons with severe disabilites.

8. Job Readiness: Application of technology to improve employability can be demonstrated in various settings, including job-related education, job seeking, trial work, and actual employment. While three of the DATA clients planned to continue education after project completion, and one client was finishing his requirements by project close, emphasis was placed on clients who would potentially be able to demonstrate changes in project goals in full- or part-time job seeking before the end of the project.

9. Motivation. Since participation in any service project requires commitment and cooperation of the client receiving services, and motivation directly affects degree of both cooperation and commitment to project goals, motivation was one of the selection critera. Information was gathered from other service agencies, personal interviews with clients, and history of client motivation. In April 1985, a behavior/work habits checklist was derived which formalized the decision process by which an applicant might be considered inappropriate for the project because of motivation (see Appendix E). Clients who were ranked from available information with more than one "minus" in the necessary criteria (indicating clear behavioral indication of failure to display a given trait) were not accepted in the project. Clients who scored one minus for

necessary criteria with other minus scores for other criteria were considered borderline cases, and possible motivational barriers were weighed against projected benefits or changes in attitude in conjunction with project activities. Only two clients were accepted who scored with "minus" ratings in essential criteria.

10. Interest in and ability to benefit from application of computer technology: Application of computer technology for the target population of persons with cerebral palsy and related disabilities addresses five primary areas of improvement: communication, writing, typing, computer access (including use for environmental control), and information processing (such as memory or auditory comprehension). Client disabilities and needs in each of these five areas was ranked on a 5-point scale from evaluations (described below) and case histories. Applicants who did not have at least a moderately severe disability in one of these areas addressed by technology, or who showed low motivation to learn and apply technological aids to address their disabilites (as assessed by the motivation checklist) were not accepted in the project.

11. Underrepresented groups. Efforts were made to solicit applications from clients across all racial and ethnic minories represented in Dane Counties, and to encourage participation of persons in non-traditional roles for their gender. The inclusion of only one person from a racial minority reflects the relative cultural homogeneity of Dane County. Non-traditional career goals for female clients include mid-management, accounting, and professional counseling. One male client was seeking employment in the largely female-oriented field of clerical data entry.

Additional Screening Evaluation

Once clients passed the initial screening evaluation, description of

clients and screening results were presented before the steering committee. Additional evaluations were then planned, depending on client characteristics, needs, and existence of previous evaluations. Four of the DATA clients had been evaluated for technological recommendations by either Trace or CASC staff, so technology evaluations were briefer for these clients. Some clients had demonstrated independent living skills by maintaining their own homes and financial affairs for years, and received less extensive independent living evaluations than clients with less clear evidence of independent living skills. Also, highly specialized training of some of the clients (such as law, clinical counseling, and social work) limited the range of likely job openings for clients, and shortened the process of vocational evaluation. Forms for evaluation of technology and extent of disability, independent living skills, and vocational goals are included in Appendix F). If at any point the client's primary vocational and training needs were not addressable by project procedures, the client was referred to other sources. The final acceptance into the project was based on reports of all evaluations conducted, type of gain anticipated from applicable technology, and predicted benefits of technology for vocational goals.

Results of Screening

The numbers of people who applied for the DATA project, received the initial screening interview, were accepted into the DATA project, and who eventually left the project are listed in Table 1. The applicant review process was halted when the number of clients accepted reached 15. The planned screening process as shown in Figure 1 was maintained, except that the CASC and Trace evaluations typically occured (at least in screening form) before the final selection. Also, some of the independent living and

vocational evaluations were combined or abbreviated to accomodate information already available from other sources about the clients.

Numbers of clients who were screened but not accepted into the project are listed in Table 2 by reason for rejection of application (note that numbers exceed the total number of applicants in this category because some persons were rejected for multiple reasons). One of those clients accepted in the DATA project withdrew late in the third year of the project because he no longer wished to seek employment at that time, and felt that none of the project services were applicable for his needs; most summary tables in this report include information about this client because of the timing and length of his participation in DATA procedures. Descriptions of clients accepted into the DATA project are provided in Table 3. The timeline for service activities following acceptance is diagrammed in Figure 2.

Three other clients withdrew or were dropped for various reasons after acceptance into the project. For one client, technology recommended in screening evaluation was subsequently judged inappropriate for his needs, and no other DATA services were relevant; he was dropped in June 1985. Another client's recommended technology was available and relevant, but insufficient to raise her typing skills to overcome primary deficit; she withdrew from the project in February 1985. For another client, cognitive disability significantly interfered with his ability to learn the use of recommended technology and to perform jobs for which he was physically able to use without technology; he was dropped from the project in March 1985.

Client Skills Assessments and Action Plan

Client Profile. After each client was accepted, a client profile was completed which described relevant details of client history, types and

degree of disabilities, application of technology to disabilities, skills and needs in independent living, vocational or peer counseling, expected job category and salary range, and other factors likely to facilitate or interfere with achieving employment (see Appendix C). Any missing information for this client profile not available from the screening evaluations or client history and records was assessed as needed. Since this profile form was developed in February 1985 in response to a perceived need for concise documenting of client information, six of the clients were profiled a few months rather than directly after project acceptance.

Vocational Evaluation. Once screening procedures indicated that technology could address client employability needs, more specific evaluations were conducted to determine exactly what type of job the client was interested in, how education and training can help attain that job, and how reasonable long-term plans seem to be for clients' skills, wishes, and needs. This information was gathered from client reports and goals, and focused in conjuction with vocational counselors if necessary. Seven of the 14 ongoing clients joined the project with clearly defined career goals which were maintained throughout the project, five clients had generally focused career goals that were maintained and refined with time, and two clients changed career goals entirely during the DATA project; one switched from child care to clerical work, and another switched from accounting to human services advocate. Final vocational goals for DATA clients are listed in Table 4.

Employment goals were not limited to only those jobs possible with existing training, since additional educational or trial work experience could be arranged. While clients were counseled to consider job options which both utilized their skills to best advantage and offered sufficient

opportunity to work full-time off benefits, in one case, a client still chose to change careers to a less financially secure employment field to match her interests, even after thorough explanation of potential financial and career limitations associated with this choice. Project staff then adjusted long-term plans with the client to incorporate options of part-time and volunteer work, with only partial reduction in benefits.

Independent Living Skills Assessment. Clients who had not previously completed an independent living skills survey in screening were evaluated using the test instrument in Appendix F. Only five of the fifteen clients showed deficits in independent living skills which had not already been addressed by other service organizations, or other means of compensation (hiring aides, etc.). The three types of skills addressed for DATA clients were positioning of household and worksite materials, transportation management, and independent household management.

Individual Action Plan (IAP). Once all evaluations were completed for each client, an Individual Action Plan was constructed (see Appendix G). This action plan listed projected steps in service activities and targeted rough dates for completion of planned activities. After completion, each action plan was forwarded to steering committee members for signature and approval. For assistance in evaluating progress in achieving planned milestones for each client, a monthly planning form was developed in the second year of the project, to track client progression through planned stages of services, speed completion of activities by monitoring anticipated completion dates, and document services provided for every client (see Appendix A). A summary of the monthly planning tasks by name of the person designated for the task was distributed monthly to each steering committee member, to improve coordination and monitoring of

project tasks.

Technology Selection and Application

Physical Skill Evaluation.

Eight different types of job-related abilities were evaluated for project clients: transportation, seating, writing/typing, computer use, telephone use, manipulation of papers, face-to-face communication, telephone use, and jobsite access. Specific skill measurements recorded for each of these areas of ability, when clients were impaired in a given area were (as appropriate to the type of ability): rate of production, quantity or fatigue level of production, independence of control, quality of results, and overall presence/absence of a skill (e.g. picking up a telephone receiver, taking written notes in class, accessing necessary books or papers). Project-specific technology evaluations were conducted by two engineers at the Trace Center, and supplimented by more extensive physical and communicative evaluations at CASC when necessary.

Of the abilities tested, concerns of seating and transportation were referred to community experts in these respective areas for intervention, as project funding or goals did not cover these applications of technology. One client required a reclining wheelchair to increase his productive work time, which was severely restricted by a 1-2 hour limitation for vertical seating at any one time. For transportation, two clients were referred for assistance when some form of public transportation was not a viable option; one client completed driving lessons and another was fitted with a modified van. Other equipment acquired by clients through various sources during their time with the project are summarized in Table 5.

Equipment Recommendations

Writing or typing augmentation was the most frequent application of

computer technology for project clients. No direct intervention was supplied for the physical activity of writing with a pencil on paper, since clients for whom this was possible had already developed functional writing skills before entering this project. However, many clients, even those who could write manually, required writing augmentation in the form of typing assistance, for formal or professional writing. For instance, clients who were still students needed some reliable means to take quick and readable notes in classes, with some portable writing aid. Three clients used portable lap computers for writing in educational and professional settings.

Use of a computer for writing or typing requires skill at either using the keyboard or providing input to the computer through some alternative device. Clients exhibited three major forms of impairment in this area, each addressed by different technology. If clients could type using some fingers, but their speed was restricted by incomplete knowledge of the keyboard or insufficient typing practice, they were given adaptive typing tutors to teach maximal use of their fingers on the keyboard. If client's speed was slower than 10-15 words per minute, they were tested with some type of abbreviation expansion program to increase their efficiency at conveying sentences. The most common abbreviation expansion schemes were the Trine system or Quickey, both developed at the Trace Center, which were used with eight of the fifteen clients. If clients could not access the keyboard with their hands, the project provided some alternate access tool (such as a head or mouth stick) and a program to allow the computer to be run by one keystroke at a time (the One-finger program). Clients who used the one-finger method were also supplied with abbreviation expansion software, to increase efficiency of this method.

General computer use and facilitation was the second most frequent area of technology application for DATA clients. Although many of the clients could write or type without assistance, they were able to benefit from computer applications for the same types of job-related tasks as able-bodied people. Five clients used a standard computer system for both writing or typing needs, and standard computer functions within their field of expertise, including word processing, spread sheets, accounting, spelling checking. Computer applications in these areas increased both speed and quality of work produced.

Choice of a computer system for a client was based on three factors. First, the selected computer had to be compatible with other types of computers used in their chosen field. If primary applications were software intended for elementary to high school aged users, the most appropriate system was an Apple II based system. If the client worked or planned to work in a corporate setting, an IBM PC or compatible was recommended for the client. Second, if the client needed to use the computer in more than one place, a portable computer was recommended over a standard system. Third, before any computer system was recommended for a client, several similar models were tested with that client. Variations in computer design such as placement of power switch, legibility of screen (particularly for portables), ability to adjust placement of computer keyboard, ability to accept rigid floppy disks, weight and size, and arrangement of the keyboard all affected relative usefulness of the computer for a client, as well as concerns of cost, compatibility, speed, and power of each system.

All of the DATA clients had some vocal communication that they used in face-to-face communication. As can be seen in Table 6, eleven of the

clients had little or no impairment of spoken communication, while the other four ranged from moderate to severe problems. For the client with severe communication impairment, a DEC-Talk synthesizer and Trine System were incorporated with his portable lap computer for use as a communication device. Another client with some understandable speech also used a portable computer for writing and some face-to-face communication. In the last case, the client used non-electronic written aids for elaboration with her moderate impairment when necessary.

Difficulties with telephone use were all addressed by standard commercially available adaptations. For one client with mild communication impairments, a speaker amplifier was necessary to facilitate telephone use. Another client with moderate difficulties was given a simple communication aid with pre-programmable sentences to answer the phone, and a volume-adjustable headset to help understand speech input. Two other clients with functional vocal communication needed phone adaptations to overcome physical difficulties handling the telephone receiver, including larger push buttons, memory dialers, and a hands-free receiver.

Most of the clients were able to adequately manipulate papers. The only client for which poor paper manipulation skills could have been addressed by technology was one student who could not handle large accounting sheets. Several computer software options were available to substitute for spread sheets, but the student decided to switch majors as options were being negotiated.

Several clients required specific modification of jobsite characteristics. Some modifications did not involve technology, such as switching the height of file drawers for one client. Other recommendations were for computer accessories to maximize ease of access to jobsite

computers and workspaces. For one client, we coordinated purchase of several worktables with lower tops and no drawers so the user could get close to the table in a wheelchair and not have to keep his hands high. For another client who did most of his work from a reclining position in bed, we devised a home worksite setup to allow computer operation from two different reclining positions.

One additional area of computer application which was not a primary focus of the technological skills evaluation, but addressed employable skills for some clients was educational or training software. All clients accepted into the project had some physical and/or communicative problem which significantly interfered with their job-related skills. If technology was available and within a reasonable cost, we also provided computer technology to address non-physical disabilities such as information processing, reading, and writing. A critical factor for investing in such software was that such application be a functional long-term solution for the individual leading to employment, rather than a temporary aid for fluctuating types of problems. Examples of software applications include: SAT training for an upcoming examination, spell checking for ongoing writing maintenance, remedial reading and writing software for a client switching careers to clerical work, and cognitive rehabilitation software for ongoing memory and organizational problems.

Technology Purchase. Whenever possible, recommended technology was purchased through standard funding sources such as insurance, workman's compensation policies, or the Division of Vocational Rehabilitiation (DVR). In one instance, a client sold his own personal computer for the money to purchase a portable system, rather than try to seek external funding. When technological evaluation was complete, recommendations for purchases over

$1000 were forwarded to DVR, as well as any purchases not covered by project restrictions (such as van modifications, driving lessons) DVR also purchased some accessories and software for clients under $1000 when the recommendations were judged to have clear vocational impact. Of the 15 clients, DVR funded at least some of the purchases for eight clients.

Procedures for allocating DATA funds were determined by both funding availability and client need. An average of $1500 was available across the 15 clients, and any DATA purchases totalling over that amount for one client could only be made after sufficient funding had been allocated across all clients to purchase needed technology. Equipment purchases totalled over the average amount for only five of the fifteen clients.

Skills Training

The range of training services provided and numbers of clients receiving each service are summarized in Table 7.

Equipment and Computer Training. Client equipment and computer training duties were split between Trace and Computers to Help People Inc. (CHPI). Trace coordinated equipment delivery and some maintenance, adaptation of equipment to specific client characteristics (e.g. constructing a special arm rest to hold a portable computer), and training basic skills at operating equipment and software. Ten clients received some type of equipment orientation. The average time to train clients in operation of their equipment was 1-4 hours. Special software such as the one-finger or abbreviation expansion programs required longer training time than simple instruction in operation of an personal or lap computer. Six clients received extensive training (5-15 hours) of training and continuing consultation for operation and maintenance of these more complicated programs. One client who received a computer and communication system with

software in one package required over 20 hours of training to master the programs, even with his skill at practicing with equipment and reading software manuals.

More long-term computer training was conducted at CHPI. Topics of training included: orientation to an IBM or Apple computer, word processing software demonstration and training, long-term use of abbreviation expansion programs, orientation or training with self-paced educational programs, and introduction to computer programming (PASCAL). One client who wished to expand his effectiveness at using abbreviation expansion programs received joint training in selecting, abbreviating, and using communication vocabularies from CHPI and Trace personnel. Seven clients received training at CHPI for an average of 3 sessions at 2 hours each. One additional client was scheduled for CHPI training but could not attend because of chronic poor health.

Workshops.

Twelve Vocational Skills Workshops were provided for DATA clients, to train job-related skills that are applicable across a large number of individuals. Workshop conveners were selected from area experts on topics, including three workshops by BAC members, two workshops by Steering Committee members, one panel of area employers, two workshops by DATA clients themselves, and the rest by other area service specialists. Some workshops on larger topics were extended over two or three separate sessions. Initial workshops addressed topics considered to be essential for all clients, while some of the last few workshops were targeted primarily at specific clients, such as the workshop on "Projecting Positive Feelings" for a client with particular vocational needs in this area.

Several of the workshops, such as "Employee Rights and Responsibilities" were given in response to client requests for job-related information. In addition, a book on "Marketing Your Abilities" was provided for all clients as a good summary of many workshop subjects. Topics and dates were:

Nov. 1984 - Job Search

March 1985 - Interviewing

April 1985 - Work and Benefits

May/June 1985 - Assertiveness Training

August 1985 - Marketing Your Disability and How to Apply for State Jobs (videos)

August 1985 - Resumes and Cover Letters

Sept. 1985 - Employee Rights and Responsibilities

Feb. 1986 - Projecting Positive Feelings

April 1986 - Stress Management

August 1986 - Time Management

Sept. 1986 - Computer Adaptations for People who are Blind

Sept. 1986 - What Employers Look for in an Employee (panel)

All workshops were considered manditory for clients unless extenuating circumstances prohibited attendance. Typical attendance at workshops was poor, with between one and eight clients at any one workshop. Five of the clients attended fairly regularly, four clients never came to any workshops, and excuses for other missed attendances included lack of transportation, workshop redundant with own experience, general tiredness, forgetfulness, and only 5 formally excused absences for health or other unavoidable causes. In questionnaires during and after the project, several clients reported that workshops either did not address skills relevant to their needs, or did not address them in sufficient depth. Many of these comments were from older clients who seemed confident in their

independent living and vocational skills from experience, and requested more specific application to how to overcome difficulties as a person with disabilities.

Vocational Skills. All clients participated in career planning with their respective DVR counselors as part of the DATA project. This involved discussion of client factors including: employment field of choice, necessary training and qualifications for that type of employment, means for acquiring resources and training, potential types of employers, general job seeking skills, and job postings when appropriate. In four cases, the DVR counselor not only arranged opportunities for clients to receive assessments or examinations necessary for particular job search, the counselor also provided specific instruction and practice in test-taking skills. In addition to his regular duties as a DVR counselor, the DVR representative on the DATA Steering Committee made regular recommendations to the project coordinator about avenues of employment-related training, funding, and job description and search.

Independent Living Skills. In addition to the specifically employment-related skills taught in the vocational skills workshops (like time or stress management), some clients received training in isolated types of independent living skills to address a particular need. For instance, one client received additional orientation to household maintenance once his wheelchair and positional seating aids were changed. Two clients who moved during the project period were given assistance and advice in arranging a new household for maximum accessability. Two other clients were helped with arranging transportation, when standard options for public transport with special needs clients was not sufficient.

Other Training. Some clients who received software did not require

direct computer instruction in its use, but preferred to have the option of consulting service personnel during software practice in case of problems. Two computers were installed in the Access to Independence offices for this purpose, which was used by four of the clients for practice with typing tutors, spelling and vocabulary training software, and cognitive rehabilitation software. Two other clients sampled potential software at these computer stations, but preferred to use the programs for training on their own personal computers at home.

Other types of training included peer counseling for one client through the independent living agency for discussing personal attitudes which interfered with his interviewing and job maintenance effectiveness. Any other services not included in the DATA project, such as speech therapy, driving training, cognitive assessment, or physical rehabilitation not related to equipment facilitation were referred to other sources.

Trial Work

Initial project specifications were to require trial work or all clients before beginning permanent job search. Some evidence of trial work or job experience was necessary for all clients to demonstrate work skills. In addition, for purposes of the project, it was necessary to gather feedback from individual performance on the job of how useful the technology provided was in an employment setting, and to establish limitations of technology for overcoming some employment barriers. However, some clients entered the DATA project with several years of job experience, and were able to demonstrate not only functional job skills, but how technology could be specifically applied for job-related skills such as writing, information access, or communication without the intervening step of trial work between job search and employment. For

instance, one client in law school was completing tasks in his classes similar to what would be expected of him in employment. His primary problems in completing these tasks were producing legible and efficient writing in any setting, and accessing legal casebooks. Both functions were addressed by a portable lap computer which could be linked to legal databases containing the same information in the large casebooks.

Six clients completed trial work experiences during the project. The types of trial work included volunteer receptionist or data entry positions, accounting or bookkeeping, and research assisting. Of these six clients, two continued to full-time competitive positions with the same company. Both jobs, of legal assistant and researcher, were temporary positions, which were recruited and paid at competitive levels. Trial work was also planned for three additional clients who were in full-time educational training during the project, but these clients did not finish their respective educations before the end of the project.

Job Search and Employment

The employment status of each of the clients at the beginning and end of the project is listed in Table 8. The table also includes DVR counselors' initial assessments of client disability and prediction of chances for employment, and degree to which change in employability can be attributed to technological intervention. Six clients showed demonstrable improvement in target skills directly related to technological intervention, five other clients showed some improvement in target skills presumed to be associated with technological intervention, and three clients showed little change in target skills as a result of technology and training.

The criteria for determining demonstrable improvement in employability

were not dependent on achieving full-time employment, but on showing documentable changes in skills addressed by technology. While client L achieved full-time employment during the project, this change in status occurred before the relevant technology (typing tutor) was available, and skills trained in that application were not relevant to her current job. Conversely, client O was finishing his education and had only completed trial work before project close, but gained skills in controlling computer operation, environmental regulation, and writing from a reclining position. This innovation removed a previously insurmountable barrier to employment by making work possible either from the home or from various positions in the worksite, as demonstrated in his trial work setting.

Financial counseling conducted by both the DVR counselor and project coordinator for DATA was an integral part of the job search for several clients. For the DATA clients, this financial counseling was not primarily money management of current funds, but planning for managing of projected funds to be acquired while working. Because of the difficulties at regaining medical and other benefits once they are lost, many people were reluctant to risk losing benefits by seeking any jobs that were not both permanent and well-paying. These financial disincentives for taking temporary positions interfered with opportunities for taking paid trial work positions for at least two clients. Options tended to center first on volunteer trial work positions to demonstrate and practice job skills, then later on acquiring full-time permanent employment, without intervening steps of temporary or part-time employment.

Several clients were entering employment fields in which few entry-level positions paid salaries enough to cover medical and other necessary benefits for that client. Three clients who received this type of training

were still in educational training at the end of the project and their ability to find jobs within their financial restrictions had not yet been tested. Two other clients were seeking professional jobs commensurate with their skills which would be sufficient to cover financial requirements, but before project completion, the only job openings found in their specialties were entry level positions with lower salaries (such as clerk or assistant rather than urban planner or manager positions). In particular, client B received extensive financial counseling from both Access and DVR to address different perception of client abilities and financial need. This client's stated salary range was considerably higher than her current level of benefits and out of possible range for entry level mid-management positions. Additional training such as medical specialization or computer programming which would increase her potential salary range were not acceptable to client, and problems with disincentives were not resolved during the project.

Part III

Discussion and Observations

Discussion

Predictors of Client Success

The most consistent predictor of client success was initial assessment of motivation, and willingness to independently apply technology to career goals. All of the clients who showed demonstrable improvement in employability ranked "satisfactory" or "+" on all items of the behavior/work habits checklist completed at project intake, while seven of the clients who showed some or little improvement had some "-" behavior ratings, which were in essential characteristics for two of these clients. DVR predictions of motivation alone did not correlate 100% with DATA predictions of motivations, since some clients marked as "highly motivated" in initial DVR interviews were among the clients with poor work habits in the DATA project.

Some clients were accepted into the DATA project with questionable motivation ratings or history, in anticipation of changes in motivation due to technological intervention. Two clients accepted under these conditions achieved full-time or trial work, but five others with poor history confirmed expectations of some or no improvement in skills. The primary difference between clients who did and did not change motivational patterns in these cases was a clear plan of how technological intervention could address disabilities, and client initiative to use this plan in improving skills. This initiative seemed to extend beyond technology alone; once one client who had consistently refused technology in the past agreed to implement a plan to compensate for severe speech and writing disabilities, he also sought help in other areas in which intervention had been recommended in the past, such as peer counseling and speech therapy. Thus, the two most critical elements in client success in the DATA project were

client motivation to improve employability, and a clear relationship between technological intervention and anticipated career goals.

Other factors which were common to clients who successfully achieved project goals were realistic career goals commensurate with training, time committed to practice and apply technology independently, and absence of barriers which could not be addressed by intervention. Two clients who wished to be computer programmers and two others who applied for jobs in management did not have sufficient training or job experience for the types of jobs they were applying for, and either would not or financially could not apply for jobs at any lower level. Clients who showed improvement all practiced with technology at home and in educational or work settings, and did not allow logistical difficulties such as transportation problems or equipment problems to interfere with plans for practice and implementation.

Barriers to employment which interfered with progress in project goals included (in order of frequency): inappropriate motivation and goals, minimal application of technology to address needed skills, financial disincentives, and chronic poor health. Problems with motivation and inappropriate technology should optimally be screened out at acceptance into project, unless both project staff and client can agree on a specific plan for implementation of technology which clearly addresses and can reasonably be expected to make a change in client skills. Financial disincentives were not always evident at project intake, and probably cannot be entirely screened out. Attempts to address disincentive problems included discussing changes in career plans, increasing training to raise expected salary level, and combining part-time and volunteer work which does not interfere with benefits. Chronic poor health was also not anticipated at acceptance into the project, and was a major limiting factor

for two project clients. All three of these barriers (motivation, health, and disincentives) are likely to be present and only r' 'nally predictable in all vocational rehabilitation projects. If these factors cannot be screened out, future staff may consider policies for dropping clients who have barriers to improving employability not addressable by project services.

Financial disincentives were a barrier which could be more thoroughly screened at initial client acceptance. For the DATA project, clients varied in their disincentive threshold, defined as the minimum amount of salary acceptable to the client to replace their current benefits and other income. Amounts of disincentive threshold varied fr a number somewhat below current benefit levels (for persons with high incentive for employment) to salaries above their benefit levels (for persons particularly concerned with permanent loss of benefits). Whatever the disincentive threshold salary, each individual's entry level salary had to be higher than the minimum acceptable in order to accept any full-time position. In some cases, the person's chosen area of employment (e.g. clerical work, child care) had entry level salaries dramatically lower than benefits, and in some cases, even experienced salary levels were below the person's disincentive threshold. In other words, regardless of motivation or ability to work, some of the clients could not afford to accept a full-time position in their chosen field of work. Options included changing fields of work, increasing training to raise potential salary (such as learning computer or business skills), or alternating part-time and volunteer work in the chosen field with better paying but less interesting work.

Observations

The integration of project services was crucial to the success of the DATA project. It was surprising, even in a moderate-sized community such as Dane County, how little the rehabilitation agencies knew of the range of possible services available in the area. Some system for planning and monitoring progress in meeting client goals and coordinating necessary services is essential for efficient and effective use of resources.

Utilizing technology to address jobs other than computer programming was also an essential feature of this project. Persons seeking employment in a variety of fields may need access to a computer or other technology without intending to use that computer for programming. Indeed, only a small percentage of all personal computers in the general public are used for programming; most applications are related to word processing, statistical analysis, databases, or other business applications. Concentrating on fitting the technology to the client rather than client to the technology allowed implementation of low-cost or low-tech solutions such as changing an arm rest or providing typing training that directly addressed employment concerns. Any need for specific computer training was easily covered by the associated educational institutions.

The role of the Business Advisory Council in this particular project was limited to some planning and evaluation activities. Initially, the BAC was intended to be a link to the business community for soliciting job opportunities, but although the BAC represented a range of situations in Dane County, they did not play an active role in job development. Part of the reason for this may be the limited base of employment in Dane County; most of the entry level jobs available to persons with severe disabilities were through the state or university, rather than the general business community. Future BAC selection should be based on relative proportions of

the job market available to potential clients.

Tracking of client progress during the project was essential both for documenting and maintaining activity toward reaching client goals. With 15 clients and only four service personnel on the steering committee, it could have been easy to forget to establish and meet project milestones for the "hard" cases. With specific service timelines constructed and checked at every meeting, goals and progress for each client was reviewed monthly and changed when necessary.

Measurement of project success depended heavily on tracking progress in client skills from initial to final assessments. In order to track necessary information from the initial assessment, it is crucial to establish which skills are being addressed and by what means. Future projects should consider options of formal test or screening protocols for each type of technological intervention (such as writing, typing, conversation) based on quantitative rather than qualititative improvement. Most of the assessments of success in this study were based on qualitative improvement such as gaining a new skill (e.g. answering the telephone), since many of the quantitative measures were not gathered until intervention was already in progress. More specific associations could be drawn between type of technology or services provided and resulting changes in employability if quantitative measures were systematically applied across clients.

Suggested Changes in Project

While this project was funded as a demonstration project to demonstrate that application of technology can increase employability of clients, the optimum means to demonstrate employability change is by achieving full-time employment. A similar project would have to be

associated with a full-time job development specialist to be effective at soliciting employment opportunities for clients. Job development in this project was provided by the project coordinator and DVR representative, but since both already had more than full-time responsibilities for other project tasks, job development was sporadic, and generally limited to discovering rather than creating job opportunities. Clients with greatest success under the present system actively sought and gained job opportunities themselves. For clients with less experience or ability to solicit job situations, a job development team is essential

Other services which should be considered in future projects are formal motivation or personal goal counseling for clients. Some clients had little experience of success in competitive education or employment, and were reluctant to try their skills in new situations. Others expressed high motivation verbally, but did not follow through on these intentions in actions such as keeping meetings, completing tests or applications, or following specific instructions of project staff. This project was not designed to shape client behavior or work habits if they did not meet employment standards, but it is possible to design tasks similar to trial work situations which gradually increase expectations and responsibility of client for their own behavior from highly supervised to more independent activities.

Additional selection criteria which should be considered in future projects are financial disincentives, and motivation to utilize planned project activities to address vocational needs. If clients projected salaries in their chosen field of work are insufficient to cover their disincentive threshold, then in order to remain in the project, they should be willing to try one of the options for overcoming these disincentives,

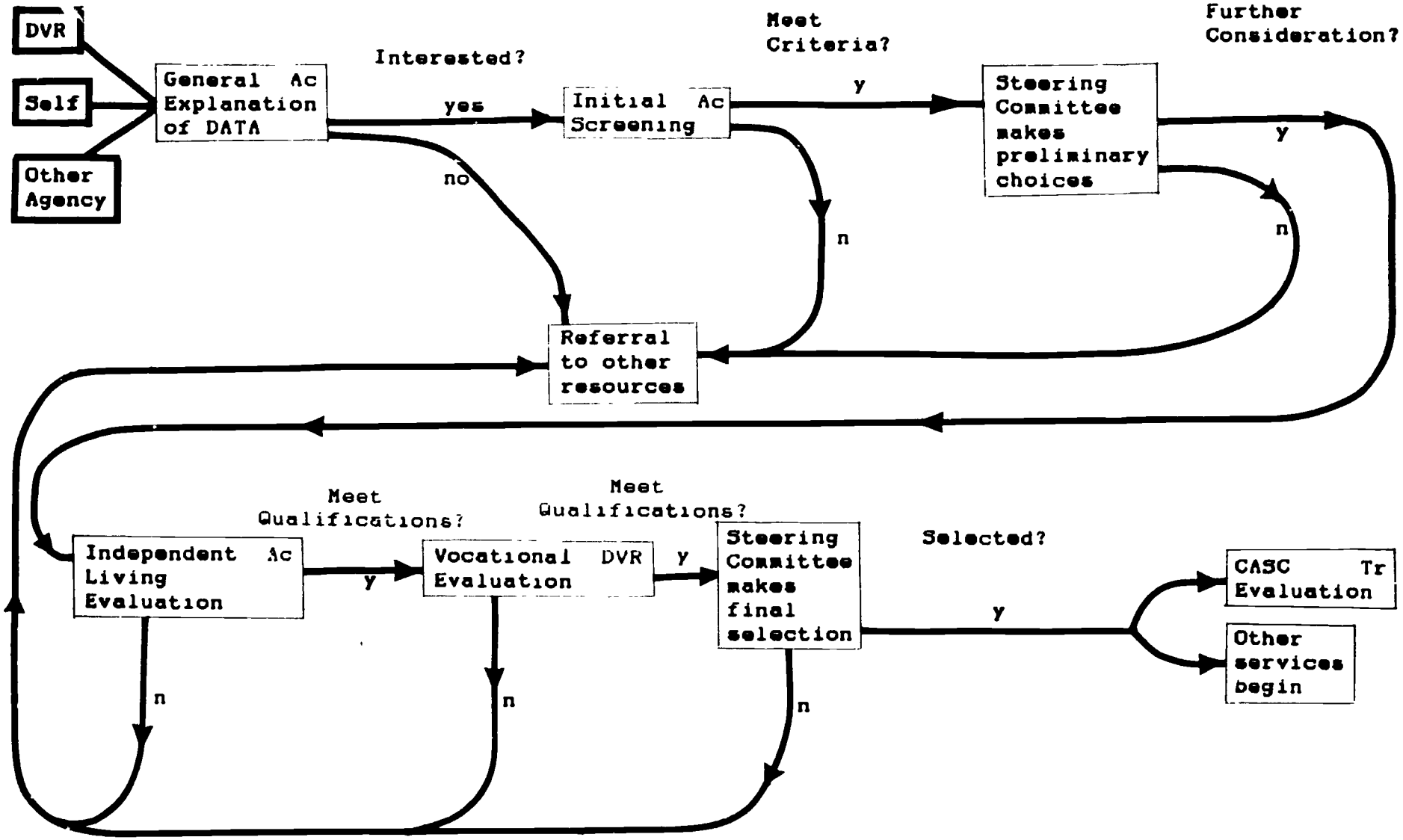
such as changing fields, increasing training, combining job opportunities, etc. Intervention such as that offerred by the DATA project will make no change in employment status of a client, regardless of any other factors, unless the client is able and willing to accept a job commensurate with their financial needs, career goals, and skill level. Assessment of these financial and motivational factors may be most appropriate after the official plan of action has been established, to determine if project intervention can change apparent motivational or disincentive barriers.

Finally, since this project is intended to be a demonstration for other projects, it is essential to also plan the means for information dissemination once the project is complete. One conference presentation was made of project results, and several of project plans, but formal results need to be passed on to a central information organization with contacts to similar projects, and/or sent to a range of vocational and rehabilitation service agencies. For this project, results will be disseminated through the Trace reprint services, the NARIC sponsored Rehab Data database, and through any requests for information directed to Access to Information, and the videotape will continue to be shown and distributed to interested parties. The degree of effectiveness of a demonstration is not fully evident until it begins to affect plans and results of other projects with similar goals.

Figures and Tables

DISABLED ACCESS TO TECHNOLOGICAL ADVANCES (DATA)

Selection Process
First Year



Ac = Access to Indepaendence
DVR = Division of Vocational Rehabilitation
Tr = Trace Research and Development Center
CASC = Communication Aids and Systems Clinic

FIGURE 1: Selection Process

Chart A: SERVICES PROCESS

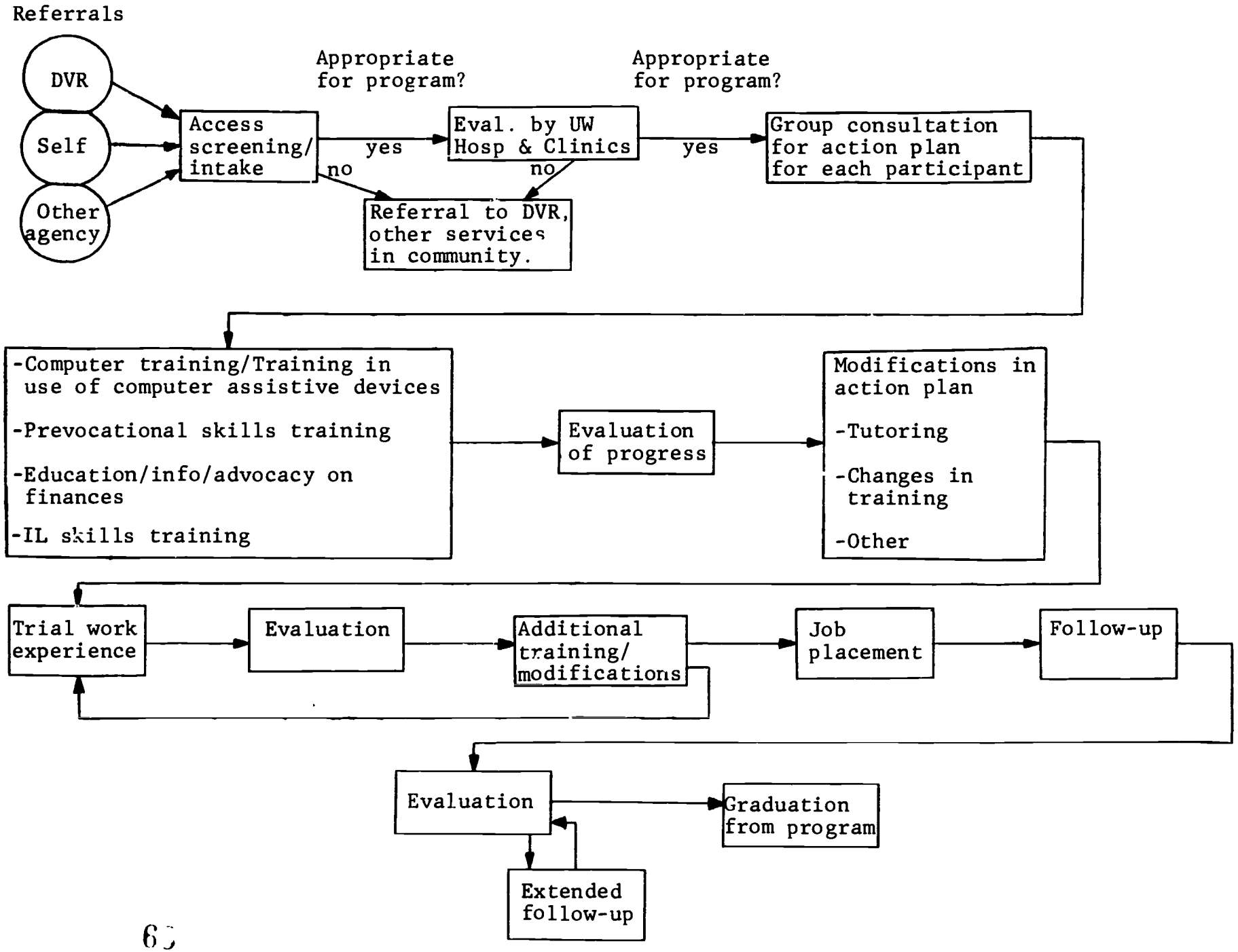


FIGURE 2: Service Process

Table 1

Number of People Referred to and Accepted in the DATA Project

Referrals Received:	72
Initial Interviews Held:	43
Persons Accepted into Project at Any Point:	19
Ongoing DATA Clients:	14
Persons Dropped/Withdrew from DATA after Acceptance	5

Table 2

Reasons for Rejecting Applicants to DATA

Motivation	16
Technology Did Not Significantly Alter Capabilities	13
Financial Disincentives	12
Cognitive Disability Not Addressed By Project Services	8
Not Job Ready By End of Project	6
Accepted But Refused Project Services	4
Other Alternatives Were More Applicable	2
Other: (Clients moved, did not perceive deficit, had addictive habits)	3

Note: That numbers exceed total applicants rejected because some persons were rejected for more than one reason.

Table 3

Client Demographics And Education Status (at end of 3rd Year)

Code	Age	Sex	Disability	Education Level	Date Accepted
A	16	M	Muscular Dystrophy	Graduated from High School	June 1985
B	47	F	Spinal Cord Injury	Associate Degree	March 1985
C	22	F	Arthrogryposis	In College	Sept 1984
D	36	M	Cerebral Palsy	Master's Degree	Aug 1984
E	32	F	Cerebral Palsy	Some College Training	Sept 1984
F	30	F	Cerebral Palsy	Some College Training	March 1985
*G	18	M	Spinal Muscular Atrophy	High School Diploma	May 1985
H	19	M	Cerebral Palsy	Some College Training	Aug 1985
I	27	M	Cerebral Palsy	B.A.	Nov 1984
J	29	F	Multiple Sclerosis	B.A.	May 1985
K	31	M	Cerebral Palsy	BA, in Law School	March 1985
L	24	F	Cerebral Palsy	High School Diploma	Sept 1984
M	34	F	Multiple Sclerosis	Master's Degree	June 1985
N	33	M	Spinal Cord Injury	Completing M.A.	Dec 1984
O	37	M	Spinal Cord Injury	In Graduate School	April 1985

*Client dropped in final stages of project

Table 4

Vocational Goals By Number of Clients

Clerical/Office Work (receptionist, customer service, secretary)	3
Management and Administration (information management, medical coordination)	2
Computer Programming	2
Social Services - Entry Level (child care peer support)	2
Social Services - Advanced/Professional (recreation therapy, counseling, social work)	3
Urban and Regional Planning	2
Law	1

Table 5

Types of Adaptive Equipment By Number of Clients

Note: (Numbers of clients in this table exceed total participants because most clients received more than one type of equipment.)

HARDWARE	
Computers	
Standard Computer	5
Portable Lap Computer	3
Peripherals	
Printer	4
Modem	4
Speech Synthesizer	1
Accessories	
Keyboard Emulators	2
Keyguards	3
Other Access/Input Equipment (e.g., headpointer, mouthstick, typing splints, special armrest)	4
SOFTWARE	
Technical/Program Design Software (e.g., Dec-Talk-Trine, One-finger program, Quickey)	8
Wordprocessing/Professional Software (e.g., Word Perfect, Super Calc, statistical packages)	5
Educational/Training Software (spelling checks, SAT training	4
Adaptive Typing Tutors	5
OTHER	
Phone Systems (hands-free phones, amplifiers)	4
Environmental Control Systems	1
Sensory Aids (hearing aids, screen magnifiers)	3

Table 6

Types and Degree of Impairments by Numbers of Clients

5 = Highest Impairment
0 = No Evidence of Impairment

	0	1	2	3	4	5
Physical		1	5	5	2	2
Vocal Communication	6	6		1	1	1
Cognitive	10	2	2	1		
Sensory	11	1	1	2		

Table 7

Service and Training Needs by Numbers of Clients

School/Career Planning	14
Optimal Use of Equipment	10
Software Practice (typing, spelling, etc.)	6
Introduction to Computer Use	7
Test-Taking Skills	4
Financial Counseling	6
Peer Support/Counseling	1
Independent Living Skills (positioning, housing)	5
Other (driving, assessments of memory, speech hearing)	5

TABLE 8:
PREDICTED vs. ACTUAL EMPLOYMENT CHANGE AND RELATIONSHIP TO TECHNOLOGY

Client	Severity of Disability[1]	Initial DVR Ratings of Employability[2]	Status at Project Intake	Status at Project Close	Relationship of Technology to Status Change[3]
A	7	3	in high school	began training	2
B	7	2	job seeking	job seeking	1
C	7	1	education	education, trial work	2
D	7	1	job seeking	temporary work	3
E	4	4	full time work	full time work, promotion and transfer	2
F	6	2	part time work	full time work and t aining	3
G	7	2	job seeking	withdrew	--
H	4	2	job seeking	trial work	2
I	7	3	trial work	full time work	3
J	no information	no information	education	job seeking*	1
K	6	3	education	temporary, full time work	3
L	6	2	job seeking	full time work	1
M	6	2	education	job seeking*	2
0	7	2	education	job seeking*	3

* Three clients were job seeking as they finished final coursework.

[1] DVR Scales: 1-7, where
7 is very severely disabled,
4-5 is severely disabled, and
1 is minimally disabled.

[2] Ratings of employability:
1 = below 50% chance;
2 = 50% chance
3 = 51-75% chance;
4 = 76-100% chance

[3] Relationship of technology to status change:
3 = demonstrable change in job skills due to technology;
2 = some change in skills, possibly associated with technology;
1 = no significant effect of technology on change

Appendix 1:

Monthly Planning Forms

MONTHLY PLANNING SUMMARY

Client Name: _____

Project Phase (e.g. training, trialwork)	Specific task/goal to be completed	Projected Date	Responsible Persons	Others	Actual Date

Appendix 2:

Selection Criteria for Years One, Two, and Three of Project

DISABLED ACCESS TO TECHNOLOGICAL ADVANCES (DATA)

CLIENT SLECTION CRITERIA

FIRST YEAR

I. Persons shall have cerebral palsy.

II. Persons shall be eligible for services from the Division of Vocational Rehabilitation (DVR). Persons who have been denied services in the past due to the severity of their physical disability who feel that new computer technology would enable them to become more employable are enccuraged to inquire about the project.

III. Persons shall be severely disabled as defined by DVR. This may include those who have limitations in two or more of the following areas: mobility, communication, independent living, education and employment.

IV. Priority will be given to those with communication disorders and/or those who are not two-handed typists.

V. Persons shall be ages 16-65. Priority will be given to persons 17-40 years of age.

VI. Because other Access services are not available outside Dane County, persons shall reside in Dane County during their involvement with the project.

VII. Priority will be given to persons receiving SSI, SSDI, or Social Security on their parents' account.

VIII. Persons may be in training, about to begin training, or job-ready. Seniors in high school who are planning to further their education will be considered. Persons interested in positions not requiring any post-secondary education who may benefit from technological assistance will also be considered.

IX. Persons shall be motivated to participate in the project as evidence by personal interviews, school and work history, and/or recommendation of other agencies.

X. The project is designed to provide assistance through adaptive devices; such as word processing systems, environmental controls, and communication aids. In particular, those persons interested in and able to benefit from application of computer technology will be considered.

XI. Every attempt will be made to include traditionally under-represented groups such as racial or ethnic minorities and groups traditionally under-represented in particular fields such as women interested in the sciences and professions and men interested in clerical, secretarial or human service careers.

DISABLED ACCESS TO TECHNOLOGICAL ADVANCES (DATA)

CLIENT SELECTION CRITERIA

SECOND YEAR

I. Persons shall have cerebral palsy or a disability with effects similar to cerebral palsy such as muscular dystrophy, multiple sclerosis, spinal cord injury, etc. An accepted applicant must meet all other requirements. Priority will be given to those with cerebral palsy.

II. Persons shall be eligible for services from the Division of Vocational Rehabilitation (DVR). Persons who have been denied services in the past due to the severity of their physical disability who feel that new computer technology would enable them to become more employable are encouraged to inquire about the project.

III. Persons shall be severely disabled as defined by DVR. This may include those who have limitations in three or more of the following areas: mobility, communication, independent living, education and employment.

IV. Persons shall have vocal communication impairments and/or difficulty accessing a standard keyboard.

V. Persons shall be ages 16-65. Priority will be given to persons 17-40 years of age.

VI. Because other Access services are not available outside Dane County, persons shall reside in Dane County during their involvement with the project.

VII. Priority will be given to persons receiving SSI, SSDI, or Social Security on their parents' account.

VIII. Persons may be in training, about to begin training, or job-ready. Seniors in high school who are planning to further their education will considered. Persons interested in positions not requiring any post-secondary education who may benefit from computer technology will also be considered.

IX. Persons shall be motivated to participate in the project as evidenced by personal interviews, school and work history, and/or recommendation of other agencies.

X. The project is designed to provide assistance through adaptive devices such as word processing systems, environmental controls, and communication aids. In particular, those persons interested in and able to benefit from application of computer technology will be considered.

XI. Every attempt will be made to include traditionally underrepresented groups such as racial or ethnic minorities and groups traditionally under-represented in particular fields such as women interested in the sciences and professions and men interested in clerical, secretarial or human service careers.

DISABLED ACCESS TO TECHNOLOGICAL ADVANCES (DATA)

CLIENT SELECTION CRITERIA

THIRD YEAR

I. Persons shall have cerebral palsy or a disability with effects similar to cerebral palsy such as muscular dystrophy, multiple sclerosis, spinal cord injury, tc. An accepted applicant must meet all other requirements. Priority will be given to those with cerebral palsy.

II. Persons shall be eligible for services from the Division of Vocational Rehabilitation (DVR). Persons who have been denied services in the past due to the severity of their physical disability who feel that new computer technology would enable them to become more employable are encouraged to inquire about the project.

III. Persons shall be severely disabled as defined by DVR. This may include those who have limitations in three or more of the following areas: mobility, communication, independent living, education and employment.

IV. Persons shall have vocal communication impairments and/or difficulty accessing a standard keyboard.

V. Persons shall be ages 16-65. Priority will be given to persons 17-40 years of age.

VI. Because other Access services are not available outside Dane County, persons shall reside in Dane County during their involvement with the project.

VII. Priority will be given to persons receiving SSI, SSDI, or Social Security on their parents' account.

VIII. Persons may be in training, about to begin training, or job-ready. Priority will be given to those for whom vocational training will be completed by June 1986. Seniors in high school who are planning to further their education may be considered. Persons interested in positions not requiring any post-secondary education who may benefit from computer technology will also be considered.

IX. Persons shall be motivated to participate in the project as evidenced by personal interviews, school and work history, and/or recommendation of other agencies.

X. The project is designed to provide assistance through adaptive devices such as word processing systems, environmental controls, and communication aids. In particular, those persons interested in and able to benefit from application of computer technology will be considered.

XI. Every attempt will be made to include traditionally underrepresented groups such as racial or ethnic minorities and groups traditionally under-represented in particular fields such as women interested in the sciences and professions and men interested in clerical, secretarial or human service careers.

Appendix C:

Client Profile Form

Client Profile

A. Biographical Information.

1. Age and date of birth_____

2. Gender and marital status_____

3. Highest educational level achieved (years of skill training, schooling, vocational preparation, college, or highest degree achieved)_____
_____

4. Area of educational/vocational specialization, if applicable._____
_____

5. Years of residence in Dane County_____

B. Technical Skills and Capabilities.

1. Type of disability (C.P., spinal cord, M.S., etc.)_____ _____
_____

2. Onset of injury/disability (age/date)_____
_____

3. Areas and degree of impairment (0-5 scale, 5 highest impairment):

a. physical:_____
number of limbs affected_____
ambulation_____
use of hands_____
sitting_____
other_____
_____

b. sensory:_____ (acuity, perception)
visual_____
hearing_____
other_____

c. cognitive:_____
nature and evidence of impairment_____
_____
_____

d. communication:_____
primary communicative mode_____
other functional modes_____

3. Capabilities addressable by current technology

scale (ranked for each of 5 areas of capabilities):

0 = not functional/applicable
1 = severely restricted or not improved by available computer technology
2 = signif. deficit in one or more areas with limited or no functional improvement potential through application of technology
3 = signif. deficit in one or more area of disability which can become more functional with technology
4 = adequate and functional skill but somewhat below expected level in one or more dimension for chosen employment
5 = functionally equivalent to non-disabled individual

-potential clients should rank a /3/ in at least one area, with possible technological application to other areas ranking /2/ or /4/

a. areas: communication_____
typing_____
writing_____
computer access_____
information processing (e.g. organizing thoughts/info)
_____

b. dimensions of capabilities (measure levels of functioning along these dimensions for areas of intervention at each evaluation stage of project, beginning and end of project) NC=no concern

area 1:_____

rate_____
quantity/fatigue_____
independence_____
quality_____
presence/absence of skill (eg. take notes, telephone, access keybd)
_____
_____

area 2:_____

rate_____
quantity/fatigue_____
independence_____
quality_____
presence/absence of skill (eg. take notes, telephone, access keybd)
_____
_____

area 3:_____

rate_____
quantity/fatigue_____
independence_____
quality_____
presence/absence of skill (eg. take notes, telephone, access keybd)
_____
_____

Summary: functional limitations of skills_____
_____
_____

4. Technology recommended
   a. skills addressed by technology_____
   _____
   _____

   b. technology tested and final recommended system_____
   _____
   _____
   _____

   c. amount/type of training required_____
   _____
   _____

   d. evaluation of change in skills and effectiveness_____
   _____
   _____
   _____

C. Independent Living Skills
   1. Type of living situation and length of time_____
   _____

   2. Mode of transportation/availability_____
   _____

   3. Rank self-sufficiency at beginning/end program (scale 0-5, 5 best)
      circle if based on: IL skill evaluation or
      evidence of independent living
      rank:_____
      areas of concern:_____
      _____

4. Financial status:
   a. amount and type of financial aid/resources currently receiving
   _____
   _____
   _____

   b. amount of salary necessary to cover expenses [see worksheet]
   _____

   c. post-employment assessed need for financial aid_____
   _____

5. Workshops:
   a. number attended:_____

   b. type attended:_____
   _____
   _____
   _____

   c. other IL services provided:_____
   _____
   _____

6. Measured changes in IL skills:_____
   _____
   _____
   _____

D. Preferences/Attitudes.
   1. motivation scale summary (areas + and -)_____
   _____
   _____

   2. reason for seeking employment_____
   _____

   3. preferred area of employment_____
   _____

   4. satisfaction with Data project before employment_____
   _____

   after completion of project_____
   _____

E. Vocational skills

1. employment experience/years_____

2. areas of previous training/skill_____

3. general evidence of cognitive/linguistic skills:_____

4. evidence of job-related skills/limitations:

   social/interpersonal skills_____

   mobility_____

   use of hands_____

   verbal skills_____

   reading/writing skills_____

   computer literacy_____

   other marketable skills_____

   knowledge of chosen field and related disciplines_____

5. anticipated type of employment and extent of work (full/part-time)

6. employment achieved_____

E. Summary

1. Acceptance in project (date)_____
   a. reasons for acceptance_____
   b. anticipated employment status at end of project_____

2. Rejection as client in project (date)_____
   a. reasons_____
   b. further actions_____

3. Withdrawal from project (date)_____
   a. reason (if known)_____
   b. further action (if any)_____

G. Other relevant information:_____

Screener:

At any point in the screening process, it may be recommended to cease consideration for participation in the project due to establishment of ongoing and significant problems which are outside of the scope of this project and deemed to interfere with potential employability. Final decisions are made by vote of entire steering committee. Such problems may include:

motivation	techn. not address type of problem
withdraw applic.	(e.g. non-physical disability)
attitude/interest	techn. addresses, but does not signif.
irreparable habits	alter capabilities
financial disincentv.	not job ready in near future

BEHAVIOR/WORK HABITS CHECKLIST

Scale:

+	clear behavioral indication of a given desirable trait
S	behavior assumed satisfactory based on impressions and reports
NI	no information is available concerning this factor
Q	behavior questionable based on impressions and reports
-	clear behavioral indication of failure to display a given trait

Necessary Criteria

___ 1. Attends scheduled meetings and is prompt, unless extenuating circumstances prohibit attendance.
___ 2. Expresses willingness to accept any appropriate job situation.
___ 3. Expresses realistic goals and expected salary given skills and job market.
___ 4. Appears ready and willing to accept responsibility of employment.
___ 5. Is receptive to suggestions for ways to improve skills/employability.
___ 6. No recent history of poor initiative or motivation.
___ 7. Indicates willingness to apply extended efforts to meeting long-term goal, including learning and practicing technological/other skills.
___ 8. Does not appear severely depressed.

Desirable/Preferred Criteria

___ 9. Returns forms and request information promptl
___ 10. Shows interest in vocational services and training.
___ 11. Actively participates in workshops.
___ 12. Expresses willingness to "go out on a limb" financially to accept a job.
___ 13. Demonstrates understanding of nature and limitations of disability, and extent of technological intervention possible.
___ 14. Actively participates in job planning and vocational assessment.

Optional Criteria

___ 15. Expresses opinions clearly and independently.
___ 16. Good feedback from referral sources such as DVR on motivation and past history of responsibility for actions.
___ 17. Has demonstrated other types of long-term commitment tasks, such as hobbies, previous employment or school.
___ 18. Shows interest and willingness to try new things, particularly new technology.
___ 19. Appears confident and/or enthusiastic about employment.

Disabled Access to Technological Advances
Madison, Wisconsin
4/19/85

Appendix D:

Client Screening Checklist

DISABLED ACCESS TO TECHNOLOGICAL ADVANCES

INITIAL SCREENING CHECKLIST

Name _____ Phone # _____

Referral _____ Phone # _____

Career Preference, if known _____

REQUIREMENTS	PRIORITIES	MORE INFORMATION
1. Age ___16-65	___17-40	
2. Disability ___Severely Physically Disabled ___Keyboard/Speech	___Cerebral Palsy	___Ambulation ___Keyboard Access Limit ___Vocal Communication Impairment
3. DVR ___Client/Eligible for Services		
4. Income	___SSI ___SSDI ___SS on parents	
5. Residency ___Willingness to be Dane County	___Current Dane County Resident	
6. Training ___Training for Future Employment	___In training ___Willing to begin	___Job Ready
7. Potential Computer Benefit ___		___Communication Aid ___Word Processor ___Graphics Creation ___Information Access ___Environment Controls ___Career in Computers ___Other: _____

Name_____

8. Motivation
   ___Appears highly motivated
   for emplyment

9. Other

___Minority
___Non-traditional
___field

Appendix E:

Behavior/Work Habits Checklist

Appendix F:

Evaluation Worksheets for Vocational, Independent Living, and Technical/Physical Skills

Health

Present Health Status or Concerns_____

_____

_____

Providers
Name | Specialty | Phne Number

_____

_____

_____

Attendant Status_____

Hours/Day_____

Agency Contacts

Agency Name / Access	Now	Past	Contact	Phone Number
DVR				
Trace/CASC				
CHPI				
VEA				
UCP				
DCDSS				
VNS				
Schools				
Hospital				

Access to Independence
Disabled Access to Technological Advances
Independent Living Evaluation

Date_____

Name_____ Interviewer_____

Address_____ Referring_____

_____ Agency Contact_____

Home Phone _____ Agency Phone_____

Work Phone_____ Employer_____

Date of Birth_____Age_____ Marital Status_____

Social Security Number_____

Family

Name_____Relationship_____

Address _____Zip_____

Phone____( )_____Frequency of Contact_____

DVR

County_____ Residence Code _____

Referral Code_____ Attendant Code_____

Race_____Number of Dependents_____Number in Family_____

Gen. Asst./AFDC No Yes (1 year Yes) 1 year

SSI/SSDI No Yes (1 year Yes) 1 year

Health Care Coverage_____

Communication

Vocal

Manual Commnication Board

Bliss Symbols

Telephone

TDD

Writing

Sign Language

Typing

Reading

Computer

Other_____

Mobility

Independent Ambulation

Braces

Crutches

Electric Wheelchair

Manual Wheelchair

Walker

Other_____

Transportation

No specialized transportation needed

Needs lift vehicle

Has own vehicle

Uses public mass transit

Uses E/D transit

Other_____

Income and Benefits

Monthly Income_____

Competitive Emp._____

SSI_____

SS(parents)_____

Homecare_____

Trusts_____

Medical Assistance_____

Food Stamps_____

Housing Subsidy_____

_____

Primary Source_____

Sheltered Emp._____

SSDI_____

Parents_____

COP_____

DVR_____

Medicare_____

Private Health Insurance_____

Other(specify)_____

_____

Educational Background

Elementary Schools Dates Program

Secondary Schools

Diploma_____ GED_____

Post-Secondary Education Major or General Coursework

Degrees_____

Other

IQ Range

Computer Exposure

Reading Level

Writing

Math

Key: R = Regular Ed
S = Special Ed
I = Institution
H = Home Training
U = College or University
V = VocTech School
J = On-the-job Training

WI Div. of Vocational Rehabilitation
Independent Living Service Report
Referral & Intake

Client No. _____

Center No. ILC

(ALL CODES ON REVERSE SIDE)

City	County	Zip Code	Referral Date Mo. Yr	Residence Code
Social Security No.		Sex ☐M ☐F	Referral Code	Primary Disability Code
Previous Involvement with DVR ☐Yes ☐No ☐Not Known		Attendent Care Status Code		Age

A. Accepted for Services (If no, do not proceed beyond A)
_____ Yes
_____ No
Date: _____

REASONS (For Non-Acceptance)

(Mark all that apply)

_____ 1. Unable to Locate
_____ 2. Severe Handicap or medical complications
_____ 3. Not Interested
_____ 4. Death
_____ 5. Information Only
_____ 6. Referred to another agency
_____ 7. Failure to cooperate
_____ 8. Waiting List
_____ 9. Other

B. Race
_____ 1. White
_____ 2. Black
_____ 3. Hispanic
_____ 4. Native Amer.
_____ 5. Other
_____ 6. Not Available

C. Marital Status
☐ 1. Married
☐ 2. Not Married
☐ 3. Unknown

D. [ ] Number of Dependents (excluding applicant)

E. [ ] Total Number in Family (including applicant, excluding live-in attendant)

F. [ ] Highest Grade Completed (GED=12)

G. Work Status (may indicate more than one)

Past	Present		
___	_____	01.	Competitive Employment
___	_____	02.	Sheltered Workshop
___	_____	03.	Self-Employed
___	_____	04.	Homemaker
___	_____	05.	Unpaid Family Worker
___	_____	06.	Not Working-Student
___	_____	07.	Not Working
___	_____	08.	Other
___	_____	09.	Not Available
___	_____	10.	Working Student

H. Number of Years Receiving:

Gen. Asst./ AFDC	SSDI/SSI	
_____	_____	1. Not Receiving
_____	_____	2. Less than 1 yr.
_____	_____	3. More than 1 yr

I. Health Care Coverage (you can check more than one)

Potentially Eligible For	Recipient Of	
_____	_____	1. (Title 18) Medicare
_____	_____	2. (Title 19) Medicaid
_____	_____	3. Private Health Ins.
_____	_____	4. No Coverage
_____	_____	5. Not Known
_____	_____	6. State High Risk Pool

J. Individual Monthly Income

☐ 0. None
☐ 1. $ 0.01-$199.99
☐ 2. $200.00-$299.99
☐ 3. $300.00-$399.99
☐ 4. $400.00-$499.99
☐ 5. $500.00-$599.99
☐ 6. $600.00 & above
☐ 7. Not Available

K. Source of Income (check all applicable) / Primary Source Of Income (check one)

_____	_____	01	Personal Income (Trust Fund)
_____	_____	02	Family or Friend
_____	_____	03	Private Relief Agency
_____	_____	04	Worker's Compensation
_____	_____	05	SSI
_____	_____	06	SSDI
_____	_____	07	AFDC/General Assistance
_____	_____	08	Other disability, sickness, survivors or age retirement benefits, including private insurance unemployment insurance benefits, annuity for other non-disability insurance benefits
_____	_____	09	Earnings form current employment
_____	_____	10	Other Source
_____	_____	11	Not Known/Not Available

WI Div. of Vocational Rehabilitation
Independent Living Service Report

Client No _____

Center No ILC

Date _____

Needs Assessment/Service Plan

	Need	Purchased with Title VII Funds	Provided by Center Staff Funded by Title VII	Arranged For Through Another Funding Source (Specify)	Unable to Meet Need (Code on Back)	Termination Status (Code on Back)
Intake Counseling/Assessment						
Attendant Care/Counseling						
Advocacy						
Transportation						
Housing						
Peer/Family Counseling						
Education/Training for Community Involvement						
Leisure Activities						
Health Maintenance						
Independent Living Skills Training						
Prevocational/Vocational Service	**					
Other (list)						

**Automatic referral to DVR, unless already a DVR client.

Status of Independent Living Plan at Termination:

_____ Not Written
_____ Written, Not Implemented
_____ Written, Partially Implemented
_____ Written, Completed

Attendant Care Status at Termination (codes on back)

Termination Information:

Termination Date: _____

1 Overall status of individual has: (Please explain when status changed due to circumstances beyond center control)

_____ Improved
_____ Not Improved
_____ Not possible to assess

2 Residence at termination _____
(use codes on back)
City: _____
State _____
Zip Code: _____

3 Referred to DVR:
____Yes ____No

Center for Health Sciences
University of Wisconsin-Madison
University Hospital and Clinics

600 Highland Avenue
Madison, Wisconsin 53792

COMMUNICATION AIDS & SYSTEMS CLINIC
S-120 Waisman Center - 1500 Highland Avenue
Madison, Wisconsin 53705 (608) 263-2522

Preliminary Information Form

Please complete and return to: Donna DePape
Communication Aids & Systems Clinic
Rm S-120 Waisman Center
1500 Highland Avenue
Madison, Wisconsin 53705

1. Name of applicant_____
   Address_____
   (include county/state, zip code)
   Phone_____ Age_____ Date of Birth_____
   (Area Code)
2. Parent/guardian (if applicable)_____
   Address_____
   Phone_____
3. Person making referral_____
   Relation to applicant_____
   Address_____
   Phone_____ Preferred times for phone contact_____
4. Physician_____
   Address_____
5. Reason for referral (Please list specific concerns if possible).
   _____
   _____
   _____
   _____

   Which of the following areas are of most concern to you?

   ___communication skills
   ___language development
   ___positioning and/or seating
   ___switch use
   ___communication aid selection
   ___modification of current aids and/or switch
   ___communication aid use
   ___other_____

6. Are there other problems that affect the communication problems? Yes No
   If yes please list_____
   _____
   _____
   _____

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UWH #655 (4 80)
F-688

6. Medical diagnosis_____
(if cerebral palsy, please indicate type & severity)

Date diagnosis made and by whom_____

_____

Ambulatory_____ Nonambulatory_____ Wheelchair_____

7. Please complete the following chart indicating the services applicant is presently receiving:

Service	daily	weekly	mthly	30 mn	1 hr	day	hfdy	Location-name of service Provider - phone number
Physical Therapy								
Occupational Therapy								
Speech & Lang. Therapy								
Social Work								
Day Program								
School								
Sheltered Workshop								
Other								

3. Please describe applicant's present communicative skills (Give specific examples of how applicant relates ideas to other people)

_____

_____

_____

_____

_____

_____

_____

9. What has been tried in the past to develop/expand communication or overcome the specific problems being experienced?

_____

_____

10. If the applicant or his/her guardians are not making this referral, has the referral been discussed with them?_____ If not, please explain;____

_____

_____

If yes, please indicate their reaction_____

_____

_____

11. Additional comments that may be of assistance:_____

_____

_____

_____

_____

_____

_____

12. Do you have access to videotape equipment? Yes___ No___

13 Are you requesting Wisconsin Medical Assistance coverage for this evaluation?

Yes __ No___

14. If yes, please include Medical Assistance Number_____

Physician Provider Number_____

If applicable, Nursing Home Provider Number_____

15. How did you hear about our clinic?

____Brochure

____Presentation (Where)_____

____Other agency or clinic (Name)_____

____Individual_____

____Other_____

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COMMUNICATION AIDS & SYSTEMS CLINIC
S-120 Waisman Center - 1500 Highland Avenue
Madison, Wisconsin 53705 (608) 263-2522

HISTORY FORM

I. Identification

a) Name_____ Date of Birth_____ Sex___ Age___

Address_____ Phone_____

_____

b) Mother's Name_____ Date of Birth_____
or Wife's Name

Address_____
(if not same as above)

Occupation_____ Phone_____

c) Father's Name_____ Date of Birth_____
or Husband's Name

Address_____
(if not same as above)

Occupation_____ Phone_____

d) Names of brothers and/or sisters_____

_____

_____

e) If person is not living with his/her natural parents or spouse, give name and relationship (adoptive or foster parents, relatives, etc.) of the people with whom he/she lives.

_____

f) Give name and address of legal guardian, if different from above.

_____

_____

_____

II. Description of Problem(s)

a) Describe the communication problem(s):_____

_____

_____

_____

_____

_____

_____

b) List specific limitations of present communication system (include physical, language, social limitations)

a)_____

b)_____

c)_____

d)_____

c) List the specific questions you or the others working with him/her have which you are hoping the Communication Aids & Systems Clinic might help you answer.

_____

_____

_____

_____

_____

_____

_____

d) What specific communication needs (conversational & writing) are there?

a)_____

b)_____

c)_____

d)_____

e)_____

e) Are there particular features that are desired in a communication system?

a)_____

b)_____

c)_____

d)_____

e)_____

f) How well do you expect/hope this client will communicate eventually?

_____

_____

_____

g) Communication Skills

Does client:

Understand what is said to him/her most of the time? Yes___ No___

Make sounds? Yes___ No___ If yes, what sounds?_____

_____

In what situations does he/she make them?_____

_____

How does person tell you yes and no?_____

_____

How does person indicate that he wants to communicate?_____

_____

How does person indicate that he/she wants to eat or go to the bathroom?

_____

_____

	Routinely	Never	Sometimes	Example	Problems
Speech					
a) Speaks in sentences					
b) Uses single words					
Gesture					
a) His own gestures					
b) Hand/arm gestures					
c) Facial expression/ gestures					
Communication Board or Aid* Use					
a) Communicates in sentences					
b) Uses single words/ symbols					
c) Can spell					

*Please describe communication board/aid (send photo if you have one):
(size of board, squares, vocabulary size, symbol system)

h) Describe most recent speech and language evaluation and treatment sequence.

Date_____

Location_____

Therapist_____

Evaluation_____

Treatment_____

What change occurred?_____

What role and/or activities were undertaken at home in conjunction with therapy?

III. We have placed a star beside the reports we will need prior to the evaluation. Please arrange to have these reports sent to us by the date specified in the accompanying letter.

- ☐ Medical Records
- ☐ School Records
- ☐ Therapy Reports
  - ☐ Speech Therapy
  - ☐ Occupational Therapy
  - ☐ Physical Therapy
- ☐ Vocational Counselor Report
- ☐ Day Program Report
- ☐ Audiology Reports
- ☐ Vision Reports
- ☐ Others_____

IV. Medical History

Does the person have seizures? Yes___ No___ Has he/she ever had them? Yes___ No___ If yes, explain:_____

_____

_____

Is he/she on any regular medication? Yes___ No___ If yes, complete this chart.

Medication	Purpose	Effect on person

Is his/her vision normal? Yes___ No___ Not known___

When and where was it tested last?_____

Describe visual problems_____

_____

_____

Is his/her hearing normal? Yes___ No___ Not known___

When and where was it tested last?_____

Describe hearing problems_____

_____

_____

Has he/she had serious illnesses? Yes___ No___ Not known___

If yes, list:_____

_____

_____

_____

Does he/she have any frequent or recurring health problems eg) colds, allergies, etc.:_____

_____

_____

_____

V. Education

1. Present grade and program in school or highest grade/degree completed and date completed.

_____

_____

2. Most recent standardized tests

Test	Date	Score	Where/Who administered
PPVT			
TACL			
Reading			
Spelling			
Other:			

VI. Social Skills

	Yes	No	Not Known
Is person overly active?			
Is person very shy with strangers?			
Is person withdrawn?			
Is person easily excited?			
Does person have friend with whom he interacts regularly?			
Does person participate in activities with friends?			

With whom does person especially enjoy spending time?_____

_____

Additional comments, questions or information that would help us:_____

_____

_____

_____

_____

Name of person(s) filling out application:_____

_____

Relationship to client:_____

Date:_____

Who will be coming with the client? (We would encourage representatives of the Day Program and family to come.)

_____

_____

Please return the history form, film or video tape if requested, as quickly as possible to:

Communication Aids & Systems Clinic
Room S-120 Waisman Center
1500 Highland Avenue
University of Wisconsin
Madison, Wisconsin 53705

Appendix G:

Individualized Action Plan (IAP)

Disabled Access to Community Services
>>> Individualized Plan for Employment <<<

Name _____ Date _____
Vocational Goal _____

Services	Participation HC	DV	CM	LH	Others	Estimated Start Date	Estimate Duration

Steps to Reach Goal	Evaluation Criteria	Evaluation Schedu

This plan will be reviewed at least semi-annually. Any changes mad
in your plan must be discussed with you. If you do not agree wi
the plan or services you receive, you have the right to appeal.

****

I will actively work with DARH to achieve my vocational goal.

Signature of participant _____ Date _____

****

Access Staff signature _____ Date _____

Trace staff signature _____ Date _____

DVR staff signature _____ Date _____

CMDI staff signature _____ Date _____