BUILD IT AND THEY WILL COME: ADAPTIVE TECHNOLOGY

Dr. Dennis L. Kramer
University Computing Services
Ball State University
Muncie, In 47306
(317)-285-1806
DKRAMER@BSU.EDU

Ms. Leah Boyle
University Computing Services
Ball State University
Muncie, In 47306
(317) 285-2286
LBOYLE@BSU.EDU

Dr. Casey Tucker
University Computing Services
Ball State University
Muncie, In 47306
(317) 285-1817

GAINING CAMPUS SUPPORT

Ball State University has a definite history of welcoming people with disabilities, and has always had students, staff and faculty with disabilities. Since the early 70's a full-time coordinator and an office of Disabled Student Development has overseen efforts to remove architectural barriers and provide an opportunity for all persons on campus. During this time, the University has expanded efforts to attract persons with disabilities and has even gained some state and national recognition for these initiatives.

Due to this tradition of providing access and opportunity to students and employees with disabilities, combined with a strong computer competency program for faculty and students begun in the mid 80's, it became apparent several years ago that opportunity and access could be significantly enhanced with computing technologies. Further opportunities for grants and other funding, affirmative action for potential employees with disabilities, possible teaching enhancements regarding disabilities, as well as legal developments made it apparent that a full-time coordinator for adaptive technology would return large dividends to the University. However, the 90's were not years in which higher education was receiving funding from state legislators, and our President was not excited about adding professional staff. How did we fund a full-time position and launch a new program?

"Let the shameful wall of exclusion finally come tumbling down," spoke President George Bush as he signed the Americans with Disabilities Act [1]. This legislation took effect Jan. 26, 1992 and was our opportunity to focus campus attention onto the issue of providing proper support for introducing adaptive technology for the disabled. Since Ball State had a long history of providing accessibility to disabled students, faculty and staff, we weren't particularly concerned about many of the architectural issues others have had to grapple with. But a small coalition including the directors of computing, disabled student development and affirmative action decided to attempt to leverage the interest and campus-wide focus on this issue into enhanced services and technological infrastructure.

First, a history of the legislation related to this issue. The Rehabilitation Act of 1973 prohibits discrimination against the handicapped within any institution that receives or benefits from federal funds. A handicapped person was defined as "one who has a physical or mental impairment which substantially limits one or more major life activities, has a record of such impairment, or is regarded as having such impairment. Major life activities include: self-care, social life, education, transportation, housing and employment.[2] With regard to higher education, a qualified handicapped person is defined as one "who meets the academic and technical standards requisite to admission or participation in the recipient's program or activity."[3] An institution of higher education receiving such funds "shall take such steps as are necessary to ensure that no handicapped student is denied the benefits of, excluded from participation in, or otherwise subjected to discrimination under the education program or activity operated by the recipient because of the absence of auxiliary aids for students with impaired sensory, manual, or speaking skills."[4]

Title II of the Americans with Disability Act requires that each service, program or activity conducted by a public entity "when viewed in its entirety" be readily accessible and usable by disabled individuals.[5] Specifically, this provision means that print, whether a syllabus, supplementary reading and particularly tests must be made available to students with disabilities in a format that is most usable to them. In order for instruction and evaluation to be fair (and legal) students must be able to display their ability, not disability. Braille and electronic reproduction is a foremost consideration.

Today there are 43 million Americans with a variety of physical and mental disabilities, including 4.5 million in our school system. EDUCOM has estimated that over 10 per cent of all college students have some disability, 40% of these with some sort of visual impairment and 26% deaf or hard of hearing.[6] Some say that even more people with handicaps will enter higher education in the future because of improved employment opportunities.

Taken together, the growing legal bases, the increasing student, faculty and staff populations, the advances in adaptive technologies, and the refocusing of the issues brought about by ADA gave the University an opportunity to formalize a program that had heretofore been run by "volunteers". Through this synergy, budgeting was established by combining funds from the areas of the President, Provost, and VP for Student Affairs to hire a full-time

coordinator of adaptive computer technology. Within the budget of computing services funds were found for hardware, software and supplies to launch the Adaptive Computer Program (ACT) program, which in turn has generated grants and gifts significantly leveraging the initial investments.

BUDGETING AND DISTRIBUTION OF RESOURCES

From the inception of the program the fiscal responsibilities have been shared between a number of University offices. The selection of hardware and software to be used in the Adaptive Technology laboratory was made based on the recommendation of the newly appointed coordinator. This was to be in addition to several items previously purchased by the department of Computer Science and University Computing Services. The coordinator provides a yearly request for hardware and software which is prioritized by areas of need. The bulk of these purchases are processed against the budget provided by University Computing Services but it is not uncommon for special needs to arise during the year which are unanticipated and which are supported by other university departments.

The University has taken the attitude that providing access to technology is a University function and as such should be funded cooperatively by the areas affected. This willingness to share resources among departments or areas is not common and is one of the things that may set Ball State University apart from the norm. The ADA act specifies that certain accesses shall be provided by the university and funds certain of these through the central administration. Certain other requirements which may be made during the academic year might be funded by a department or through a cooperative sharing of resources to provide the services without the need to "own" the service or the technology provided. It is this willingness to provide rather than own that has made our program as successful as it has been for the past three years.

While it is normally the purview of the Purchasing Department to secure pricing and to negotiate with vendors this is another area in which flexibility has been exhibited in order to provide the lab with the greatest economies of purchase. By virtue of having an extensive technical background the Coordinator has been able to request certain configurations of hardware and software which have been particularly successful in solving problems in providing access to University technology. In some cases vendors have willingly given us some discounts on items which were being used in special applications with the idea that it works out to be a win-win situation for both the vendor and the University.

Ball State University continues to do Beta testing for both hardware and software vendors. As a result of this cooperation a number of software and hardware configurations have surfaced which are currently being used and further modified which have proven very helpful in solving problems in the area of accessibility. The main recipients of this cooperative venture have been the students which have gained access to special resources that might not otherwise have been available to them.

All of the comments which reflect the attitude of the University in responding to the students needs reflect one theme, that being one of full cooperation. Money and Space are two items which are normally held sacred to a budgetary unit within a University. Ball State has succeeded in breaking down this tradition with an attitude of sharing and cooperation which has allowed us to not only follow the letter of the law but to exceed its expectation to the benefit of the students and faculty.

ACT PROGRAM SPECIFICS

The pervasiveness of computers and electronic information systems which has developed within the last few years has been met with apprehensiveness by many 'technophobes' within the general population. A large part of the disabled population, however, has embraced the new technology as a means for increasing independence and functionality. Integration of hardware and software systems designed to meet the needs of individuals with disabilities is the crux of the adaptive computer technology program at Ball State University. Screen reading and optical character recognition software combined with a voice synthesizer and scanner allow a visually impaired individual freedom of access to textbooks, journals, and other documents that permeate the universe of the typical college student. Specially designed keyboards, voice recognition technology, and artificially intelligent word processing software help mobility impaired students prepare the class assignments, term papers, and notes required for successfully completing course work. Intelligent communications software enables hearing impaired individuals to converse with others through the telephone without the need for an interpreter. These and other adaptive technologies help reduce time and logistical barriers faced daily by persons with disabilities.

Successful implementation of an adaptive computer technology program requires close cooperation and a clear sense of direction from the campus units involved. At Ball State University, the ACT program is directly involved with fulfilling the goals and mission of not only University Computing Services, but of the University Administration as well. Academic units also work with the ACT Coordinator to ensure that departmental educational objectives are facilitated for students with disabilities within specific major areas of study. Technological resources provided by Media Services, University Libraries, and other non-academic departments are utilized as needed to provide effective access to the information necessary for a successful educational experience.

Ball State's mission statement charges the University to produce graduates who are "able to analyze information, think critically, solve problems, communicate effectively, and demonstrate competency with computers."[7] Students with disabilities are continuously faced with information access barriers. Adaptive technology provided through the ACT Program facilitates access to information, and students play an active role in planning and implementing specific adaptive measures which target individual needs. Training provided by the ACT Program provide students with a foundation in computer literacy, as well as advanced usage techniques. Access to documentation resources allows students to become independent and knowledgeable users. The ACT program provides disabled students with the knowledge and ability to solve information access problems that translates directly to employment situations faced after graduation.

The Adaptive Computer Technology Program is also concerned with fulfilling future goals of the University. "BALL STATE UNIVERSITY 2000" is a list of goals and objectives prepared by Ball State University faculty and administrative staff to launch the University into the twentieth century. The ACT program is actively involved in producing graduates who are sought by employers and graduate and professional schools by providing students with the tools necessary for effective access to information and technology.

Opportunities for work experience are provided through ACT lab assistant and management positions offered by the program. The program Coordinator consults with employers who provide internships to address and resolve accessibility issues. The ACT Coordinator consults with faculty members to devise strategies that ensure access to course materials. Emerging adaptive technology is continually investigated and evaluated in order to provide the most effective access. Students are encouraged to take responsibility for their own education, and to work with adaptive technology as a means to pursue individual educational goals.

The ACT program Coordinator also consults with primary and secondary educational institutions to help design programs that ensure a proper foundation in basic technique is provided for students with disabilities who plan to continue with post- secondary education. Accessibility issues concerning distance learning opportunities provided by the University are also addressed by the ACT Program. Active participation in recruitment, orientation, and preparation of prospective students has made Ball State University the leading provider of accessible educational opportunities to persons with disabilities.

The Adaptive Computer Technology Program is a direct extension of University Computing Services (UCS). UCS is charged with "offering a wide range of computing and systems services to students, faculty, and staff. University Computing Services strives to provide those within Ball State University with the equipment and services required to complete their respective objectives."[8] The ACT Program exists to provide access for disabled students to the general services provided by UCS. Adaptive technology allows access to the mainframe system, as well as resources provided by individual department computer labs. Internet services provided by UCS are also facilitated by adaptive technology. UCS provides the services, while the ACT program gives students with disabilities access to the services.

Specifically, the Adaptive Computer Technology program's mission is to provide "equal access to computing services to all persons with disabilities at Ball State University. This is accomplished by direct education of students as well as faculty development efforts aimed towards making course work accessible for disabled students. The program provides reasonable accommodation for students, faculty and staff with a wide array of equipment and supportive services by enhancing existing academic and computing facilities. This is done in accordance with the University mission, Computing Services mission, Public Law 504 and the Americans with Disabilities Act." The mission of The Adaptive Computer Technology Program at Ball State University is, therefore, a synthesis of the University mission and the University Computing Services mission. The University provides the philosophical impetus, while UCS provides the technological base.

An Adaptive Computer Technology committee was established in 1990 to facilitate communication between the various units of campus involved with disability issues as well as faculty, staff and students with disabilities. Membership includes, but is not limited to, the Directors of University Computing Services and Disabled Student Development, Coordinators of University Computer Labs, University College Learning Center and Adaptive Computer Technology, Assistant Dean of University Libraries, Chairperson of the Computer Science Department, Media Services personnel, Indiana Vocational Rehabilitation regional management, and a representative from each of the four predominant disability populations on campus. Members are responsible for long-range planning, unit requests for services, budget proposals, and disseminating information to individual campus units. Although the ACT committee is considered an ad hoc delegation, the University-wide Americans with Disabilities (ADA) committee has been kept apprised of proceedings and developments. The ACT committee schedules six meetings a year with impromptu meetings called as needed to insure continued commitment to the ACT mission.

All aspects of the ACT program are under the direction of the Adaptive Computer Technology Coordinator. The Coordinator is responsible for maintaining the adaptive hardware and software located in various labs throughout Ball State University, and for adaptive technology allocated to faculty and staff personnel. Requests for adaptive services are directed to the Coordinator, and equipment and resource allocation decisions and logistics are supervised by the ACT Coordinator. The Coordinator also is responsible for resolving all information accessibility issues which occur at Ball State University.

Familiarity with advances in the field of adaptive computer technology is another important aspect of the Coordinator's position. The ACT Coordinator anticipates the needs of clientele with disabilities and is responsible for acquiring and implementing new technology, configuring and integrating new technology with existing systems, authoring grant proposals, beta testing products and studying the feasibility of new adaptations. Training sessions and workshops are routinely conducted to ensure the equipment and software is used properly and knowledgeably by the target population.

The primary ACT facility on campus is centrally located adjacent to the twenty-four hour access computer lab. Although the primary ACT lab is staffed only 72 hours per week, the equipment can be utilized at any time. Lab assistants are recruited from the disabled student population. The ACT lab assistants are trained in basic computer use through the University Computer Lab training program and also receive adaptive technology instruction through a peer training program in the lab. Peer training provides the facility with student employees who are familiar with the adaptive equipment located in the lab, and who are also empathetic to disability issues. Lab personnel receive valuable work experience, and often find additional employment opportunities in other computer facilities on campus.

The primary ACT lab also serves as an assessment and training center. Persons with disabilities are encouraged to experiment with various adaptations. Upon request, lab assistants work with individuals wanting to enhance and improve technological skills. With exposure to a range of modifications, from varying price ranges, students are much better prepared to compete in the job market upon graduation. With varied experiences with equipment, students are better able to articulate their individual needs in interviews with prospective employers.

University personnel also visit the primary lab to foster an understanding of what equipment is available and how its use can improve and enhance the teaching experience. Organized workshops are conducted in the lab to assist incoming students in using appropriate adaptations and as preparation for required computer literacy course work.

Statistical data of usage in the primary lab has been compiled since 1991. Approximately 250 usages per semester were logged during the first year of existence. As equipment was obtained, lab hours

and undergraduate staff were extended and a full-time Coordinator position was created, usage of the primary facility has grown to approximately 1,500 usages per semester. With approximately 450 students with disabilities registered for support services, an estimated 85% of the target population is currently served by the ACT program.

Increased demand on the primary ACT facility necessitated distribution of adaptive equipment to other University Computer Labs (UCL) and Departmental computer facilities. The program currently has adaptive resources in five additional UCL computer labs, with equipment available upon request in other UCL facilities. Adaptive equipment is also currently available in three University library locations, the Office of Disabled Student Development, Student Services computer lab, two computer science departmental labs, two English departmental labs and the Business department.

Inservice training is a crucial aspect of the ACT program. Fundamental training for University personnel in facilities with distributed adaptive equipment is provided by the ACT Coordinator. Knowledgeable staff provide a resource for the users, as well as the Coordinator, and serve as contacts in the event of equipment malfunction.

A short-term loan program provides adaptive technology products to individuals with disabilities. The loan program has proven beneficial for students who need a product only for a specific course and occasionally for those who may not have immediate funding available for their own equipment. The individual loaner program also serves as a vehicle for off-campus agencies to determine if a specific adaptation is appropriate for a client before a purchase is made. Adaptive equipment is also loaned to academic departments exhibiting a temporary need. Short term distribution of equipment allows adaptations to be placed in an area of need only for the term of the need. Keeping the equipment in areas of need helps conserve campus resources and keeps a balance of adaptive inventory available.

The ACT program is part of the Academic Support Services group of University Computing Services. The program provides consultation services for all campus units. Recommendations for planning and purchasing are made to the University President's office, Provosts and Department Chairpersons, Americans with Disabilities committee, Employee Relations Office, and the Affirmative Action Office.

Campus units also use the ACT Program to comply with requests for alternative media by individuals with disabilities. Examples include the production of Braille, large print and electronic formats for pre-admissions information, syllabi, course handouts, etc. The ACT Program is also involved in a full-scale effort to provide all University publications in electronic format for easy access via the mainframe computer systems. Course offerings and scheduling, campus phone directories and information, as well as student newspapers and employee publications are included in this effort.
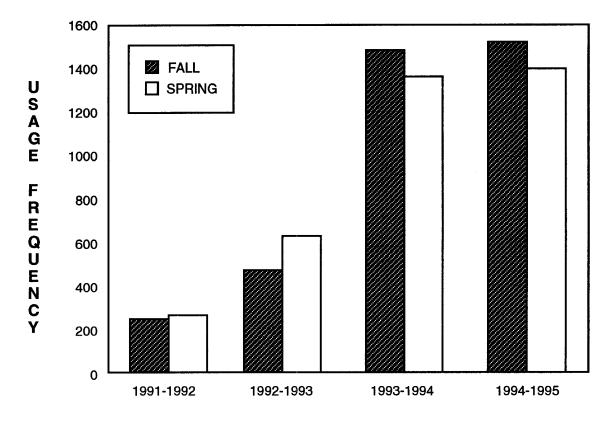
The Coordinator pursues information sharing and problem resolution by participation in various associations concerned with disability issues, i.e. National and State Associations of Higher Education and Disability, Equal Access to Software and Instruction, and the International Committee for Accessible Document Design, to stay abreast of current legal and ethical trends.

Ball State Affirmative Action and Disabled Student Development offices, Americans with Disabilities Act committee, College Deans and Department Chairpersons, University Libraries, University College Learning Center, Media Services, and Facilities Planning personnel consult regularly with the ACT Coordinator to anticipate and correct access limitations. Membership on the ACT, Campus Wide Information System, Indiana Higher Education Television System, Indiana Association on Higher Education and Disability, Vocational Rehabilitation, and Office of Services for the Blind, as well as search and selection committees gives the Coordinator direct participation in establishing and implementing disability policy across campus and the State.

The ACT Coordinator enhances public relations and promotes the program through presentations at state, national and international conferences, publishes articles about the program and adaptive technology, consultations with other educational institutions and governmental agencies, guest lectures to undergraduate and graduate classes, as well as ACT program documentation.

Ball State University is committed to compliance with the Rehabilitation Act of 1973, Section 504, and the Americans with Disabilities Act of 1990. Based on the National Institute of Disability (NID) publication, "The Impact of Exemplary Technology-Support Programs on Students with Disabilities," Ball State developed a checklist of services to be provided. All applicable categories of services are being addressed or implemented by the ACT program. Additional services, not specified by the NID report, are also being provided to individuals with disabilities. The "Checklists for Implementing Accessibility in Computer Laboratories at Colleges and Universities," published by the Trace Research & Development Center, is also followed by the ACT Program Coordinator. Nearly all of the recommendations listed by the Trace Center have been implemented, and the remaining applicable items have been addressed in the new ACT budget. With this leadership and focus, the program assures enhanced electronic accessibility for students with visual, mobility, hearing and learning disabilities at Ball State University.

REFERENCES

[1] Campus Update. Vol. 12, Nbr. 24, p.1.. Feb. 24, 1992.

[2] Section 504, Rehabilitation Act of 1973, Regulation Section 104.3 (j)(1)

[3] Ibid, Section 104.3 (K)(3)

[4] Ibid, Section 104.44 (D)

[5] Americans with Disability Act, Title II, Section 35.151A.

[6] EASI Computer Access Facts, EDUCOM, Washington D.C.

[7] From Ball State University Mission Statement.

[8] From University Computing Services Mission Statement.

APPENDIX: ADAPTIVE COMPUTER TECHNOLOGY LAB