Accessible to All

Tammy Clark, Nik Smith-Hunnicutt, Duane Thomas, Jamie Ursiny
MIT 512
University of North Carolina at Wilmington
11/10/2005

INTRODUCTION

The advent of technology education has for a vast majority of students resulted in opportunities to learn that previously has been unobtainable by conventional methods. The usage of technology in classrooms ranging from primary to the collegiate level has revolutionized the learning process. However, for some students with disabilities the marriage between technology and education has been an ill-fated union. One in which the disabled learner has had to be satisfied with the technology meant for all serving a vast majority that do not share physical or mental limitations. Traditionally, the educational needs of students with disabilities have been addressed by isolating them from the mainstream population of learners. The primary proponents of this divided learning system felt that just as in a traditional school setting students of a similar caliber would be best served by being in a learning environment shared by others with similar needs whether they are mental, physical or otherwise. Another reason for separating disabled students from those lacking such challenges is that many of these students required special apparatuses that most classrooms are not equipped with therefore rendering the learner at disadvantage.

With the overwhelming reliance on technology within classrooms some of the barriers that have previously existed are now overcome or virtually nonexistent. Yet as some technological-educational barriers are being alleviated, others must be addressed ironically by using more technology so that the disabled students can take full advantage of all that technological education offers. While attention is being given to accommodating learners with disabilities through the development of devices one of the major hurdles that remains consistent throughout different learning environments is the actual attainment of these items by the facilities that serve these populations.

Increasing accessibility in the area of technology in this proposal is addressed in two different ways. Initially, new technological systems must be in place in order for students to use them. The remaining portion of this document describes a tentative implementation plan which indicates how particular devices could be implemented within an already existing computer lab. Once the documented apparatuses are in place students, especially those who are wheelchair bound must be able to have the measurement specific needs of their wheelchair met by the computer lab door and computer lab desk.

While the needs of every student with one or more disability varies the following proposal has taken on the task of identifying three specific impairments (visual, hearing and motor skill impairment) and from that point suggest several aids that will be ultimately essential in enabling students who visit this lab to partake and benefit from the same information that other students are able to obtain. Detailed within this plan is also a detailed chronological timeline of how the reconfiguration of the computer lab in the Watson School of Education room #111.

Catering to learners with impairments that are visual necessitates an inherent understanding that there are many different levels of this type of impairment. To accommodate for these varying degrees of visual challenges the designers of this plan
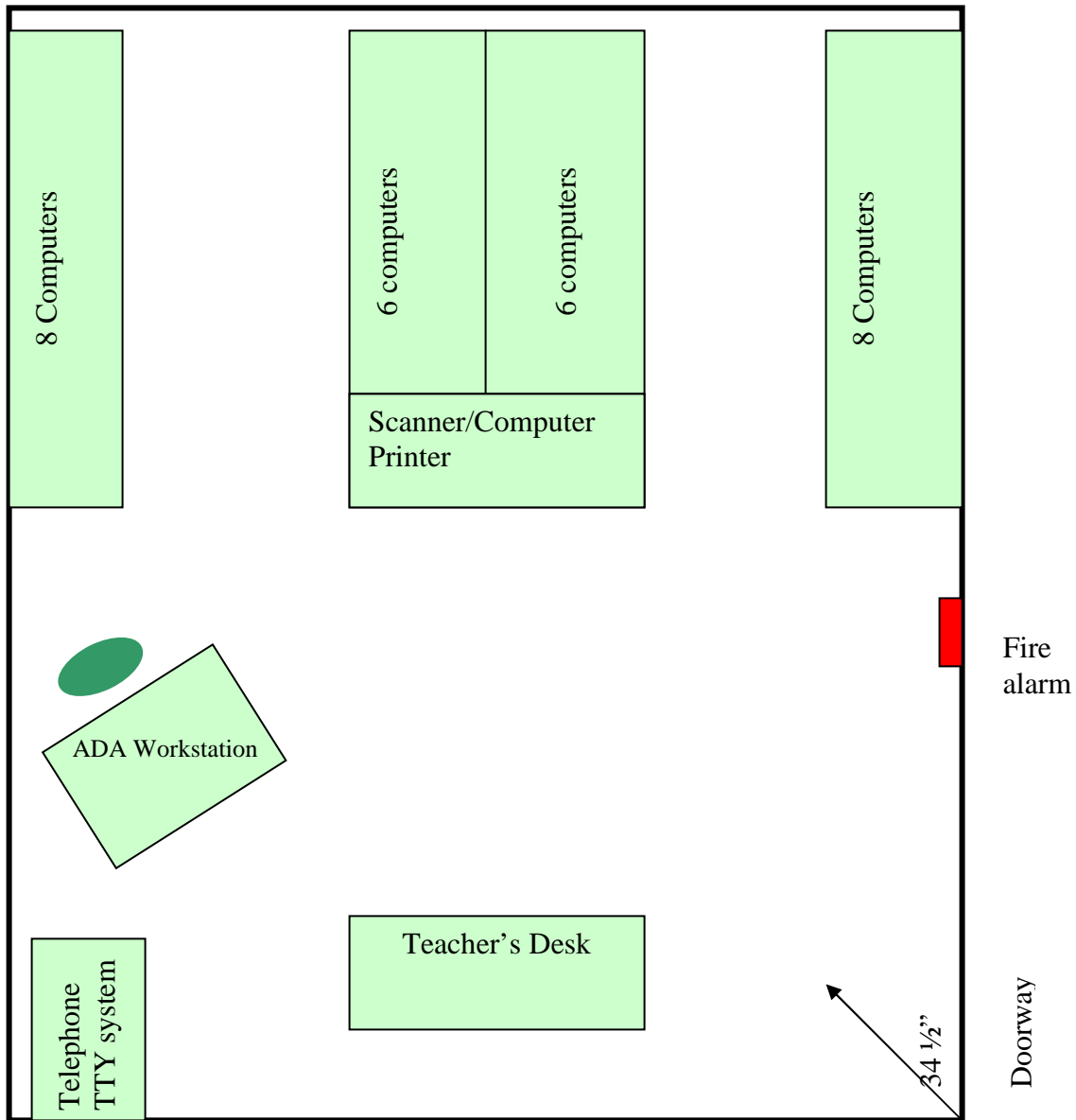
have chosen a computer screen that is larger than the average computer screen within the lab along with an adjustable monitor arm. In addition another notable feature will be a keyboard equipped with Braille letters for blind or severely visually impaired learners. Other products that will be used in this particular workstation include an adjustable arm monitor and a printer that will decode text and print it as Braille. For students who are blind or have close to know vision a software package will be installed on the computer that will occupy this proposed workstation space that will allow for these students to have their verbalizations transformed into typed text.

Hearing deficits much like visual ones also come in gradients that the individuals designing this project felt would be best addressed by several specific pieces of equipment. Equipping this station with headphones and software allowing the learner to speak and receive auditory dictation are essential to addressing hearing impairments. An additional piece of equipment that will allow students to make phone calls by typing messages, which the Ultratec Superprint Pro 80 will translate into auditory messages, will also be a part of this workstation. Possessing a hearing impairment in case of an emergency can prove to be detrimental in some settings so room #111 in the Watson School of Education will be equipped with a fire alarm that is both auditorally and visually alerting to such an emergency.

The issue of mobility within this environment compared to the other two impairment mediums offers a plethora of options. One universal issue dealing with learners in wheelchairs is addressing the needs of varying wheelchair heights, which will be best done by equipping the workstation with an adjustable keyboard and an adjustable chair. A host of items helpful for students who are severely limited in the usage of their arms will also be included within this facility. Among these items will be a trackball one-hand mouse, a sip and puff mouse controller along with software specially designed for individuals with one arm. Two of the less complex but equally useful items to be available for use will be an ergonomic computer table and an adjustable clipboard since many wheel chair bound students may not just have limb movement limitations but may also possess restricted neck movement capabilities. Appendix A documents the changes to the dimensions of the room that have been proposed.

This implementation plan demonstrates the acknowledgement of students who have needs that differ from the general population as well as the existence of items that can create a sense of learning environment parity between these students and those that do not require special assistance. By combining these two elements education can truly be used to open doors of learning.

Technology Room Layout

8 Computers

6 computers

6 computers

8 Computers

Scanner/Computer Printer

Fire alarm

ADA Workstation

Telephone TTY system

Teacher's Desk

34 ½"

Doorway

Doorway meets ADA compliance of 32".
Passing width meets ADA compliance of 36" for continuous passage.
Fire alarm in proper position for hearing and visually impaired.

<center>**Implementation Plan**</center>

This implementation plan is designed in chronological order from the first page until the last page. We have divided it up into sections. Section I should be completed first, section II second and so forth.

I. Develop ADA Compliant Room (November 1-11, 2005)
This task should be completed primarily by the technology facilitator but special education teachers and parents should have input as well. There should be an open forum on Tuesday November 1st at 7:00p.m. in the school's auditorium for parents and written and verbal input should be received from special education teachers. A consultation with the school systems Director of Technology would follow.

II. Order the Hardware, Software, and Furniture (November 14, 2005) Allow at least 2 weeks for delivery.
The second step of purchasing the necessary equipment would be undertaken by the technology director. Below is a list of the equipment which is necessary for this project. Because this isn't standard equipment it is important to give the manufacturers plenty of time to complete the order. Contact information for the vendors are located under each product name.

Key-Visual Impairment **(V),** Hearing Impairment **(H),** Motor Skill Impairment **(M)**

Hardware
1. Dell Ultra Sharp, 20 inch flat panel computer monitor (V)
   www.dell.com 1-877-881-DELL
2. Large print keyboard with Braille letters (V)
   www.hooleon.com
3. Braille printer (V)
   http://www.eabnet.org.uk
4. Ultratec Superprint Pro 80 (H)
   Hello Direct 1-800-435-5634
5. Dell Latitude D510 laptop for hearing assistance typist (H)
   www.dell.com 1-877-881-DELL
6. Dell Precision 480 desktop for student workstation
   www.dell.com 1-877-881-DELL
7. Adjustable keyboard (M)
   atestore.enablemart.com
8. Trackball one hand mouse (M)
   atestore.enablemart.com

Software
1. Zoom It (V), screen magnification and reading software
   www.labcomputers.net
2. Dragon Naturally Speaking (M), voice recognition software
   www.nuance.com
3. C-Print Pro Software (H),for both typist and student workstations
   National Technical Institute for the Deaf. 1-800-435-5634

Peripheral Devices
1. Adjustable monitor arm (V)
   www.ergoindemand.com
2. Amplifier Headphones (H)
   www.radioshack.com
3. PFM 350 personal FM AT-216 system with M-216 FM Transmitter, and PPR-216 Personal FM Receiver (H)
   www.centrumsound.com
4. Mobile ergonomic, adjustable computer table (M)
   atestore.enablemart.com
5. Ergonomic adjustable chair (M)
   atestore.enablemart.com
6. Sip and Puff (M) mouse for quadriplegic students
   atestore.enablemart.com
7. Adjustable clipboard to hang notes (M)
   atestore.enablemart.com

III. Space Modification (November 27, 2005)(if necessary) According to the Brunswick County Director of Technology most elementary schools are up to date on the ADA requirements at this point.

First existing equipment that will no longer be needed should be removed. This should be completed by the technology department staff (according to the Director of Technology, Brunswick County). Next the actual space modification should be completed by outside contractors who have experience installing ADA compliant equipment. The contractors should install the following items.
1. Modify existing door to open automatically when a handicapped button is pushed
2. Install a fire alarm that alerts both visually and hearing impaired students know that there is a fire.

After installation is complete the technology facilitator will review the work with the contractors to ensure the work was done to the proper standards.

IV. Furniture Modification (December 6, 2005) The purpose of starting on this date is because the last couple of weeks before Christmas break tends to be the time when the computers are used less due to extra curricular activities involved with the holidays. The technology facilitator should tell the teachers well in advanced when the lab will be closed.

> To be completed by the technology department staff
> 1. Assemble ergonomically adjustable mobile computer desk
> 2. Assemble adjustable chair

V. Install Computer Hardware and Software (December 7, 2005)

> To be completed by technology facilitator. Technology Facilitator should consider ease of set up for teachers when contemplating hardware configuration as well as most applicable use for a wide variety of disabilities. It is also important to make sure the computer has a reliable network connection.

VI. Write use policy and Equipment Directions (December 8, 2005)

> To be completed by the technology facilitator. Use policy should include all equipment in the lab. All teachers who have a student with disabilities in their class should be required to attend a training session prior to their class using the lab.

VII. Train teachers (2 half day sessions should be offered) (December 20th or January 2$^{nd)}$ Technology facilitator should train all teachers on the proper use of the new computer workstation and assistive technology. Teachers should be given the option of attending one of two sessions. This time of the year is very busy with room clean up and setting up for the new semester and the more options the better. This also would give teachers who have difficulty with computers a chance to review the information a second time if necessary.