Adaptech Project ![DAWSON COLLEGE]

COMPUTER TECHNOLOGIES FOR POSTSECONDARY STUDENTS WITH DISABILITIES

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Objectives

The Adaptech Project conducts research and makes recommendations to ensure that new policies, software and hardware reflect the needs and concerns of postsecondary students with disabilities as well as those of college and university personnel who make technological, adaptive, and other supports available to the higher education community.

It was in this context that in 1999 we surveyed almost 800 college and university students with different disabilities across canada. We asked a variety of questions, including: what equipment students used and wanted, how they financed their computer technologies, and why they failed to take advantage of government subsidy programs.

We found that many students did not know about the types of computer technologies that could be helpful for them. Nor were they well informed about available subsidy programs to help them obtain needed equipment. Our goal in this guide, which is based on what the students themselves told us, is to "get the ball rolling" by providing information about the types of computer technologies and financial aid that exist. Please note that our list is by no means complete; it is intended as a starting point for students and for personnel who provide services to students with disabilities in their search for products and financial aid.

Computer Technologies for Students with Disabilities

Students in our studies indicated the types of computer technologies that could be useful in getting their work done. They frequently mentioned sophisticated features already available in popular mainstream software or equipment. For example, the most valued technology was spelling and grammar checking, followed by a scanner and a portable note-taking device that could be taken to class. Dictation software (voice recognition) and the availability of materials in electronic format (e.g., textbooks, course handouts) were also seen as especially helpful. While these are likely to be useful for all students, for many students with disabilities such technologies are a necessity.

Forty-one percent (41%) of students indicated that they needed special adaptations to use a computer effectively, but only a little more than half of them actually used these. When we asked why they did not use needed adaptations, the overwhelming response was that these cost too much. Students also told us that these technologies are unavailable to them and they expressed uncertainty about where to buy them.

Funding

The most common problem noted by students is that computer technologies cost too much to buy and maintain. Yet, by far the most common way for students to obtain computer technologies was to buy it for themselves (34%) or to have their families buy it for them (30%). Only one quarter of our sample took advantage of provincial government subsidy programs. Students also borrowed equipment from family and friends (14%). Small numbers of students benefited from equipment donated by a foundation or provided by their college or university.

In general, students who took advantage of a government computer technology subsidy program were pleased with the equipment provided: the equipment they received was up-to-date and met their needs, the program was flexible in accommodating their requirements, and contacting the necessary people was generally easy. There were some complaints as well: many restrictive rules and regulations, long waiting periods, a complicated process for submitting applications, as well as a lack of good training on the technology.

Most students did not take advantage of available government programs designed to help offset the high costs of adaptive equipment. When asked why, the majority of these students told us that they were simply unaware that there were any programs out there. Others chose not to apply because there were too many restrictions or because their family income or the nature of their disability excluded them from existing programs. But these reasons were far less common than lack of information. In fact, many students spontaneously commented that now that they knew that there were programs where they could apply, they would be sure to investigate their options.

What are Funding Sources for Adaptive, Computer and Information Technologies?

Provincial and federal programs and eligibility criteria are always changing. By the time you read this, much of our information will already be out of date. So we cannot provide a definitive listing to use as a reliable resource. Here, we simply provide information to direct students on the right path to finding out about what financial assistance is available to them. More detailed information is available on the NEADS web site: http://www.neads.ca. Some popular sources include:

- Federal government plans such as the Canada Study Grant, Canada Student Loan
- Provincial government programs such as the Programme d'Aide Visuelle (Quebec), Adult Services Program (British Columbia), Ontario Student Assistance Program (OSAP) Special Needs Bursary (Ontario), Employability Assistance for Persons with Disabilities (EAPD) (available in most provinces)
- Institutions and agencies that provide and/or administer subsidy programs such as the Centre Louis Hébert (Quebec), Montreal Association for the Blind (Quebec)
- Foundations and organizations such as the Kiwanis Club, Lions Club, Rotary Club, War Amps

Free or Inexpensive

If you want to try some adaptive computer technologies before buying, many products have downloadable "demos" which you can usually find at a company's web site. You can also try some of the readily available free or inexpensive products available - check out the Free or Inexpensive section on the Resource Page of the Adaptech web site: http://www.omega.dawsoncollege.qc.ca/adaptech

Adaptive Computer Technology

On the pages that follow we list and describe the types of computer technologies which students with different disabilities found helpful. We provide some brand names - this is not necessarily because these are the "best" products but because these are the products the students in our sample indicated they used. Also, we have no listing of Macintosh products because most of the students in our study used PCs rather than Macs. For the most part, English-only products will be listed in the English version and French-only products in the French version of this booklet.

Computer Technologies for Students Who Are Blind

Adaptation	Description	Brand Name	Free or Inexpensive
Screen reader	Sophisticated text-to-speech software that uses synthesized speech to read text, menus, buttons, dialogue boxes, etc.	• Jaws • Artic • Windows Bridge	Downloadable demos: • Http://www.hj.com/
Document reader	Text-to-speech software that uses synthesized speech to read what is on the screen or on the clipboard (but lacks many of the powerful features that a screen reader has)	• ZoomText (Level 2)	• ReadToMe • Clip&Talk
Voice synthesizer	Hardware - produces speech output for text-to-speech programs	• DECTalk	Contemporary screen readers do not need this because they use standard sound cards (e.g., Sound Blaster)
Reading machine	Standalone equipment that scans pages and reads content using synthesized speech	• Kurzweil	
Optical character recognition (OCR) software (used with a scanner)	Software - converts a printed page that has been scanned into electronic format (a text file) for speech output or storage	• OpenBook • Arkenstone Unbound	Mainstream products • OmniPage • PagisPro (Textbridge)
Text based browser, web and e-mail	Software		• Lynx • Opera (screen reader friendly) • Pine e-mail
Portable Braille note taking device	Hardware – portable note taking device with a Braille keyboard and speech output	• Braille'nSpeak • Braillemate	
Portable QWERTY keyboard note taking device	Hardware - portable note taking device with a QWERTY keyboard and speech output	• Type'nSpeak • Magnum	
Braille translation software	Software - converts electronic text into Braille code and formats text for printing in Braille	• Duxbury • HotDots	
Braille printer	Hardware	• VersaPoint • Romeo • BrailleBlazer	
Refreshable Braille display	Hardware - add-on to computer that gives a one line Braille display of what is on the screen	• Navigator • PowerBraille	

Computer Technologies for Students Who Have Low Vision

Adaptation	Description	Brand Name	Free orInexpensive
Document reader	Text-to-speech software that uses synthesized speech to read what is on the screen or on the clipboard (but lacks many of the powerful features that a screen reader has)	• ZoomText (Level 2)	• ReadToMe • Clip&Talk
Screen reader	Sophisticated text-to-speech software that uses synthesized speech to read text, menus, buttons, dialogue boxes, etc.	• Jaws • Artic • Windows Bridge	Downloadable demos: • Http://www.hj.com/
Reading machine	Standalone equipment that scans pages and reads content using synthesized speech	• Kurzweil	
Optical character recognition (OCR) software (used with a scanner)	Software - converts a printed page that has been scanned into electronic format (a text file) for speech output or storage	• OpenBook • Arkenstone Unbound	Mainstream products • OmniPage • PagisPro (TextBridge)
Document manager program	Software	• PagisPro	
Large monitor	Hardware	• 17-21 inch monitor • CCTV screen	
Screen magnification	Software - enlarges what is on the screen	• ZoomText (Level 1) • LPWin/DOS	• The Magnifier • Loupe • Microsoft Magnifier
Portable QWERTY keyboard note taking device	Hardware - portable note taking device with a QWERTY keyboard and speech output	• Type'nSpeak • Magnum	
Voice control of menus and toolbars	Software - allows voice commands such as "file," "open," "save"	• Dragon Dictate Classic Edition • Kurzweil VoicePad for Windows • Voice Direct • Aptiva computer	

Computer Technologies for Students Who Have A Hearing Impairment

Adaptation	Description	Brand Name	Free or Inexpensive
Spell checkers/ grammar checkers	Software - built into many word processors	• Franklin Language Master • Hugo 8+ • Keyspell	• Most word processing programs
Word prediction	Software - a menu box pops up as you type to give you several possible ways to complete a word that you have begun to type	• TextHelp! • Co-Writer	
Visual flash	Accessibility software usually built into the operating system - screen flashes (instead of sounds) to indicate changes such as error messages		• Windows built-in accessibility feature
Electronic encyclopedias and dictionaries	Software - CD-ROM or web based encyclopedias and dictionaries	• Encyclopedia Britannica • Encarta • WordView	• Web based
Subtitles/ captions	Some computer "multimedia players" allow you to turn closed captioning on and off		• RealPlayer
E-mail and chat programs	Software - instead of the telephone		• ICQ • AOL's AIM
Computer-based note taking systems	Note taking system involving 2 joined laptops - assistant types what the professor says. The information appears on the student's laptop – student can type questions or comments that are visible on the assistant's screen	• C-Note System (CNS)	
"Shorthand" (macros) for frequently used words	Software - that quickly "pastes" text		• HotKeyboard • Word "AutoText" feature

Computer Technologies for Students With Learning Disabilities

Adaptation	Description	Brand Name	Free or Inexpensive
Document reader	Text-to-speech software that uses synthesized speech to read what is on the screen or on the clipboard (but lacks many of the powerful features that a screen reader has)	• ZoomText (Level 2)	• ReadToMe • Clip&Talk
Screen reader	Sophisticated text-to-speech software that uses synthesized speech to read text, menus, buttons, dialogue boxes, etc.	• Jaws • Artic • Windows Bridge	Downloadable demos: • Http://www.hj.com/
Voice recognition	Software - allows you to dictate (into a microphone) instead of typing on a keyboard	• Dragon • ViaVoice	
Spell checkers/grammar checkers	Software - usually built into word processors	• Franklin Language Master • Hugo 8+ • Keyspell	• Most word processing programs
Word prediction	Software - a menu box pops up as you type to give you several possible ways to complete a word that you have begun to type	• TextHelp! • Co-Writer	
Literacy software and tutorials	Software - helps improve grammar, math, and typing	• Plato	
Flow charting and concept mapping	Software	• Inspiration	
Portable note taking device	Hardware	• AlphaSmart • Palm Pilot	
"Shorthand" (macros) for frequently used words	Software - quickly "pastes" text		• HotKeyboard • Word "Autotext" feature

Computer Technologies for Students Who Have Mobility Impairments/Difficulty Using Their Hands or Arms

Adaptation	Description	Brand Name	Free or Inexpensive
Ergonomic adjustments	Adjustable work station (manual and electronic), desk and chair height and angles, accessible study carrel, ergonomic chair, keyboard location and angle, monitor and PC can be raised, rotated or lowered, document stand (to hold documents to be typed)		
Keyboard adaptations	Accessibility software usually built into the operating system: allow one keystroke use of keys that require Shift, Control, CapsLock, control the repeat rate, reconfigures the keyboard to allow for one-handed typing. Specialized "augmentative communication" systems that place a "keyboard" on the screen. Keyguards to prevent hitting 2 keys at the same time. Splints and wrist rests.	• Keyguard	Windows : • Sticky keys (to use Shift, Control, or Alt key by using one key at a time) • Filter keys (to ignore brief or repeated keystrokes or slow the repeat rate) • Mousekeys (allow mouse movements using only the keyboard)
Mouse adaptations	Joystick type, trackball, foot mouse, touch pad, ergonomic, head mouse	• Kensington	

Computer Technologies for Students Who Have Mobility Impairments/Difficulty Using Their Hands or Arms (continued)

Adaptation	Description	Brand Name	Free or Inexpensive
Voice control of menus and toolbars	Software - allows using one's voice rather than the keyboard and mouse to control menus and toolbars (such as "file," "open," "save")	• Dragon Dictate Classic Edition • Voice Direct • Aptiva computer • Kurzweil VoicePad for Windows	
"Shorthand" (macros) for frequently used words	Software - quickly "pastes" text		• HotKeyboard • Word "AutoText" feature
Voice recognition	Software - allows you to dictate (into a microphone) instead of typing on a keyboard	• Dragon • ViaVoice	
Sip and puff input device	Hardware and software - system to give computer commands by blowing or sucking through a straw - like device		
Mouth wand input device	Chop-stick like rod with rubberized tip for typing using one's mouth		
Morse input device	Hardware and software - allows typing and control of the computer using Morse code		
Optical character recognition (OCR) software (used with a scanner)	Software - converts a printed page that has been scanned into electronic format (a text file) for speech output or storage	• OpenBook • Arkenstone Unbound	Mainstream products • OmniPage • PagisPro (TextBridge)
Monitor and image	Hardware - multimedia projector connected to a computer allows a student to make presentations without handling overheads	• Proxima	
Word prediction	Software - a menu box pops up as you type to give you several possible ways to complete a word that you have begun to type	• TextHelp! • Co-Writer	
Portable note taking device	Hardware	• AlphaSmart • Palm Pilot	

Computer Equipment for Students with Other Disabilities Who Could Benefit From Adaptive Computer Technologies

Equipment that is of use to students with one type of disability can also be useful to other groups of students. In fact, the tendency to "cross-use" equipment and to use mainstream equipment in unusual and innovative ways is one of the many findings of our research.

Caveat Emptor - Let the Buyer Beware!

Some students reported compatibility problems when using certain combinations of adaptive hardware or software. Check out potential compatibility problems with the manufacturer or someone else knowledgeable before buying.

In Conclusion

We hope you find this information helpful. If you have any feedback for us or have an interesting application or piece of software or hardware to share, please communicate with one of us.

Other Resources

If you have difficulty obtaining information locally, you can contact the following student organizations for suggestions:

National Educational Association of Disabled Students (NEADS)
Webpage: http://www.neads.ca/
Address: Rm. 426, Unicentre
Carleton University
Ottawa, Ontario K1S 5B6
Voice / TTY: (613) 526-8008
Email: info@neads.ca

Association québécoise des étudiants ayant des incapacités au postsecondaire (AQEIPS)
Address: Université de Montréal
5255 Ave. Decelles #404
Montréal, Québec H3T 1V6
Tel: (514) 340-7136
Email: aqehps@cedep.net

Contact Information

For additional information or to provide feedback contact:

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Adaptech Project Web Site
http://omega.dawsoncollege.qc.ca/adaptech

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