Assistive Technology

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MOTIVATION
Motivation

• In many countries, students with special needs are being integrated into mainstream classrooms rather than schools that focus solely on students with disabilities
  – Obviously, schools and educators have a great need to understand how accessible technology can benefit the diverse needs of students
Motivation

- Providing accessible technology in the classroom to students with disabilities enables all students to have the same educational opportunities
Motivation

• What is the number of children with special education needs?
Motivation

• Organisation of Economic Co-operation and Development:
  – 35% of school-age students need some kind of special support or have been diagnosed as having special needs

• U.S. Census Bureau
  – 15% of U.S. children aged 6 to 14 are considered to have disabilities
IMPAIRMENT TYPES
Impairment Types

- Disability ≈ Impairment
- Types of impairments and how those impairments impact computer use
Vision Impairments

- Low vision
- Colorblindness
- Blindness
Learning Impairments

• Dyslexia
• Attention deficit disorder
• Retardation
Mobility and Dexterity Impairments

- Cerebral palsy
- Multiple sclerosis
- Loss of limbs or digits
- Spinal cord injuries,
- Repetitive stress injury
Hearing Impairments and Deafness

- Hearing loss and hard-of-hearing
- Deafness
Language Impairments

- Aphasia (loss or impairment of the power to use or comprehend words, often as a result of brain damage)
- Delayed speech (a symptom of cognitive impairment)
- Other conditions resulting in difficulties remembering, solving problems, or perceiving sensory information
ASSISTIVE TECHNOLOGIES
Assistive Technologies

• Assistive technology (AT) products are hardware and software products that provide essential accessibility to computers for those with significant vision, hearing, dexterity and mobility, language and communication, or learning needs
Assistive Technologies

• AT promotes greater independence by enabling people to perform tasks that they were formerly unable to accomplish, or had great difficulty accomplishing, by providing enhancements to or changed methods of interacting with the technology needed to accomplish such tasks.
Assistive Technologies

• Input:
  – Hardware and Software

• Output:
  – Hardware and Software
Input

• Alternative input devices (hardware and software) allow individuals to control their computers through means other than a standard keyboard or pointing device:
  – With an adapted keyboard or mouse
  – With an alternative device
Input

• Keyboard filters:
  – Typing aids such as word prediction utilities and add-on spelling checkers that reduce the required number of keystrokes
  – Keyboard filters enable users to quickly access the letters they need and to avoid inadvertently selecting keys they don't want
Input

• Demo videos
AssistiveWare videos on computer accessibility

Select a video:

A pivotal role in the household
QuickTime 7 | download (40 MB)
mp4 | view (27 MB)
iTunes & iPod | view
YouTube | YouTube

Everything I can't do in the real world I can do with my Mac
QuickTime 7 | download (35 MB)
mp4 | view (19 MB)
iTunes & iPod | view
YouTube & TeacherTube | TeacherTube

Me and my computer
QuickTime 7 | download (53 MB)
mp4 | view (47 MB)
iTunes & iPod | view
YouTube & TeacherTube | TeacherTube

One Thumb to Rule Them All
QuickTime 7 | download (40 MB)
mp4 | view (47 MB)
iTunes & iPod | view
YouTube & TeacherTube | TeacherTube
Input
Input

- Now speaks Japanese and other languages
- Remembers last panel used for each application
- New features for beginning
Input

Now create your own on-screen keyboards

with
Input

- DEMO
  - Microsoft on screen virtual keyboard
Input
Input

(Sip-Puff Switch)

(Grasp Switch)

(Flex Switch)
Input

(Microlight Switch)

(Pillow Switch)

(IR Switch)
Input

- Reduced keyboard
Input

- Large keyboard
Assistive Technologies

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LARGE PRINT KEYBOARD

letters are larger and easier to see than other brands.
Input

- Protected keyboard
Input

• Wand keyboard
Input

• One-handed keyboard
Input

• Special keyboards
Input

• Braille keyboard
Input

• Foot mouse
Input

• Trackball
Input

• Joystick
Input

• Mouth joystick

QuadJoy mouse assembled with hygienic stick
Input

- Head mouse
Input
Input

• Facial recognition system
Input
Input

• Voice control (speech recognition):
  – Allows people to give commands and enter data using their voices
  – Example:
    • IBM ViaVoice
    • Dragon NaturallySpeaking
Output

• Standard:
  – Screen or printer
• Screen enlarger and screen magnifier
• Speech synthesizer
• Braille line
• Combination
Output

• Screen enlarger:
  – For users with poor sight (not for blind users)
  – High resolution display 21” (or bigger)

• Display magnifier:
  • Example: Beam Scope TV Screen Magnifier 12 - 15 inches
  • Duplicates the size of the screen (not the resolution)
Output

• Screen magnifier:
  – By software
  – For users with poor sight (not for blind users)
  – It works like a magnifying glass for the computer by enlarging a portion of the screen
Output

• Example:
  – ZoomText Screen Magnifier/Screen Reader
Output

- DEMO
  - Microsoft Magnifier
Output

• Screen reader:
  – Uses a speech synthesizer or Text-to-Speech (TTS) system
  – Transforms a graphic user interface (GUI) into an audio interface
  – Problems to say acronyms, dates, and numbers
  – Impossibility to say images and graphics
Welcome to JAWS Headquarters

Welcome to your one-stop resource for the world's leading screen reader, JAWS for Windows®. From this page, you can discover more about JAWS, quickly and easily navigate to a number of online resources, download updates, and learn valuable tips and tricks for using JAWS. **Learn more about JAWS screen reading software for the blind**

New JAWS Certification Program

What's New in JAWS 12

**What is JAWS?**

JAWS for Windows is a powerful accessibility solution that reads information on your screen using synthesized speech. JAWS provides many useful commands that make it easier to use.

**RSS Feeds on the Web**

Feeds on the Web allow you to automatically receive updated information from your favorite Web sites. Just subscribe to the feed and then your Internet Explorer or other feed reader shows you when there is updated content.

**New Surf's Up Training**

Surf's Up! - Surfing the Internet with JAWS and MAGic, the Freedom Scientific Web pages that explain how to surf the Web with JAWS screen reading software and MAGic screen magnification.
Welcome to the Home of NVDA

NonVisual Desktop Access (NVDA) is a free and open source screen reader for the Microsoft Windows operating system. Providing feedback via synthetic speech and Braille, it enables blind or vision impaired people to access computers running Windows for no more cost than a sighted person. Major features include support for over 20 languages and the ability to run entirely from a USB drive with no installation. NVDA is developed by NV Access, with contributions from the community.

For more information about NVDA, including features and system requirements, visit the About section.

Check out the Download section if you would like to obtain a copy.

For information about community resources, including email lists, the NVDA IRC chat channel and links to community sites written in other languages, take a look at the Community section.

For documentation about NVDA, visit the Documentation section.

If you are interested in NVDA’s development, including reporting bugs or feature requests, please see the Development section.

If you would like to support the project, please consider making a Donation to NV Access.

Video: NVDA on ABC TV’s New Inventors
Output

- DEMO
  - JAWS
Output

• DEMO
  – Microsoft Narrator
Output

- Refreshable Braille display:
Output
Output

- Refreshable Braille display and Braille keyboard:
  - Combined device
  - Features of the following device:
    - Refreshable Braille display of 40 cells
    - Braille keyboard of 8 keys
Output
Output

• Braille embossers (printer)
  – Transfer computer generated text into embossed Braille output
Output

• Light signaler alerts:
  – Monitor computer sounds and alert the computer user with light signals
  – This is useful when a computer user cannot hear computer sounds
ASSISTIVE TECHNOLOGY DECISION TREE
Assistive Technology Decision Tree

- UnumProvident’s Assistive Technology Decision Tree leads you through questions based on the type of impairment to identify assistive technology products that you might consider
WINDOWS 7 ACCESSIBLE FEATURES
Facilitar el uso del equipo

Acceso rápido a herramientas comunes
Las herramientas de esta sección le pueden ayudar a comenzar.

- Leer siempre esta sección en voz alta
- Detectar siempre esta sección

- Iniciar Lupa
- Iniciar Tocado en pantalla
- Iniciar Narrador
- Configurar Contraste alto

¿No sabe dónde empezar? Obtener recomendaciones para facilitar el uso de este equipo

Explorar toda la configuración
Si selecciona esta configuración, se iniciará automáticamente cada vez que inicie una sesión.

- Usar el equipo sin una pantalla
- Optimizar el equipo en caso de discapacidad visual
- Facilitar el uso del equipo
- Optimize la presentación visual

- Usar el equipo sin un mouse o teclado
- Configure dispositivos de entrada alternativos

- Facilitar el uso del mouse
- Ajuste la configuración del mouse u otros dispositivos señales

- Facilitar el uso del teclado
- Ajuste la configuración del teclado

- Usar texto o alternativas visuales para los sonidos
- Configure alternativas para los sonidos

- Facilitar el trabajo con tareas
- Ajuste la configuración para lectura y escritura en el teclado
Assistive Technologies

Make your computer easier to use

Quick access to common tools
You can use the tools in this section to help you get started.
Windows can read and scan this list automatically. Press the SPACEBAR to select the highlighted tool.

☐ Always read this section aloud
☐ Always scan this section

- Start Magnifier
- Start On-Screen Keyboard
- Start Narrator
- Set up High Contrast

💡 Not sure where to start? Get recommendations to make your computer easier to use

Explore all settings
When you select these settings, they will automatically start each time you log on.

- Use the computer without a display
  - Optimize for blindness
- Make the computer easier to see
  - Optimize visual display
- Use the computer without a mouse or keyboard
  - Set up alternative input devices
- Make the mouse easier to use
  - Adjust settings for the mouse or other pointing devices
- Make the keyboard easier to use
  - Adjust settings for the keyboard
- Use text or visual alternatives for sounds
  - Set up alternatives for sounds
- Make it easier to focus on tasks
  - Adjust settings for reading and typing
MORE INFORMATION
Accessibility:
A guide for educators

Empowering students with accessible technology
that enables personalized learning

www.microsoft.com/education/enable

http://www.microsoft.com/enable/education
Web Accessibility Initiative (WAI)

Highlights

For Review: Evaluation and Report Language (EARD) 1.0 Schema

W3C has published an updated Working Draft of Evaluation and Reporting Language (EARD) 1.0 Schema, which extends the previous format schema of EARD 1.0, a vocabulary to express test results. EARD is a format to exchange, combine, and analyze results from different evaluation tools. See:

- Call for Review: Evaluation and Report Language (EARD) 1.0 Schema e-mail
- Evaluation and Report Language (EARD) Overview
- How WAI Develops Accessibility Guidelines through the W3C Process: Milestones and Opportunities to Contribute

Please send comments by 26 May 2009. (2009-04-28)

How People with Disabilities Use the Web - Draft Introduced

"How People with Disabilities Use the Web" provides detailed examples of people with different disabilities using Web sites, applications, browsers, and authoring tools. It is currently a draft, and will soon be updated to reflect current best practice. For details, see "How People with Disabilities Use the Web".

"The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect."

http://www.w3.org/WAI/
¿Qué es la Accesibilidad Web?

Definición

La accesibilidad web significa que personas con algún tipo de discapacidad van a poder hacer uso de la Web. En concreto, al hablar de accesibilidad Web se está haciendo referencia a un diseño Web que va a permitir que estas personas puedan percibir, entender, navegar e interactuar con la Web, aportando a su vez contenidos. La accesibilidad Web también beneficia a otras personas, incluyendo personas de edad avanzada que han visto mermadas sus habilidades a consecuencia de la edad.

Fuente: Introducción a la Accesibilidad Web, W3C.

La accesibilidad web o de la interfaz, indica la capacidad de acceso a la Web y a sus contenidos por todas las personas, independientemente de la discapacidad (física, intelectual o técnica) que presenten o de las que se deriven del contexto de uso (tecnológicas o ambientales). Esta cualidad está íntimamente relacionada con la usabilidad.

El máximo organismo dentro de la jerarquía de Internet que se encarga de promover la accesibilidad es el W3C.
Accesibilidad en la Web

Todo tipo de información sobre accesibilidad en la Web: noticias, software, hardware, consejos, guías de accesibilidad, WAI, Section 508, etc.

Martes 19 de Mayo de 2009

Video del seminario "Usabilidad e inclusión digital"

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Miércoles 6 de Mayo de 2009

Control mental, a la española

El año pasado escribí la entrada Más sobre control mental donde comentaba el dispositivo Emotiv EPOC que se supone que permite controlar un ordenador con la mente sin la necesidad de implantar electrodos en el cerebro: es un casco que te colcas y a controlar el ordenador con el pensamiento. ¿Y dónde se compra esto? Pues el año pasado el fabricante decía que estaría disponible a finales del 2008, pero ahora dicen que será en 2009.

Datos personales

Sergio
http://www.webaim.org/