Supportive structures and use of Information Technology at the University of Macedonia Library for visually impaired people

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Libraries’ Basic Goal

- To provide services that ensure that everybody has access to information
  - Students, research and academic personnel
  - No discrimination should be made
- Should be capable to support users having difficulties with written speech
  - Users with eye sight disabilities
  - Users with learning disabilities
An attainable goal

- Modern technology provides the means to “capture” the written text via:
  - Touch
    - Through its transformation into Braille,
  - Hearing
    - Through its transformation into speech
  - Vision
    - Through its transformation in a very magnified form
Issues to Deal with

- Funding
  - Software and hardware needed in order to provide access to the information to everybody

- Training
  - Software and hardware alone cannot carry out the task
  - Proper personnel training is essential

- Feasibility Study
  - Is our material accessible with the owned hardware?
Issues to Deal with (cont...)

- **Compatibility Research**
  - Is the software being used (web browsers mostly) capable to support the owned hardware?

- **User Approach**
  - Reach out to the users. The hardest issue
  - It is often considered by users with disabilities that the “Libraries are not for them”
  - Even the perfect accessibility system might stay unused because of that reason
When things ACCELERATEd

- The Library and Information Center of the University of Macedonia was approached by people with eye sight disabilities in 1998
  - A group of the European project TESTLAB
  - The company from Thessaloniki “Polyplano Euroconsultants” was a participant
  - Driven from the need to provide services to all students with no exceptions:
    - The Library took part in a new European project
    - ACCELERATE (Sept. 1999-May 2001)
    - ACCEss to the modern Library sERvices for the blind and pARtially sighTEd people
  - The outcome of which, along with financial support of the European Union, was the fully equipped WorkStation Room for the people with total and partial eye sight loss
Needed Technology

- Software Platform
- Hardware Platform
- Work together to provide proper assistance
- Blind Students
  - Total Loss of sight
  - Partial Loss of sight
WorkStation For the Blind

- Separate room with assistive technology
- Computers equipped with screen readers
  - JAWS v.13 Professional
  - SuperNova v.11
- Braille Display
  - ALVA Satellite 544
- Braille Printing
  - Index Braille Everest
- CCTV
  - Separate Text Enlargement Hardware
- Students use the WorkStation for their everyday academic needs
  - Word processing, e-mailing, Internet, accessing the Library’s resources, etc
Screen Readers

- JAWS v.13 Professional
  - Specialized screen reading software
  - Belongs in the category of assistive and alternative communication intervention systems
  - Developed for both computer users with total and partial loss of sight
  - The software reads and converts into speech anything on the screen
    - Provides quick and dynamic access to the screen “contents”
  - Compatible with many computer applications
    - MS Office, MSN Messenger, Adobe, Acrobat Reader, Internet Explorer, Firefox etc
  - In conjunction with the Braille Display, JAWS can also provide “screen-contents” information in Braille to the end user, with or without speech
Screen Readers (cont...)

- One can work with JAWS using Hotkeys from the keyboard (only)
  - Ins (0) + T = Reads the active window’s title bar
  - Ins (0) + up Arrow (8) = in a text in Office, it reads the current line to the user
  - Ins (0) + Tab = Reads the message displayed from a dialog box and which choice is currently focused (to be pressed)
- When JAWS is running the “Num Lock” of the keypad is off
- Users with partial loss of sight can use a mouse with JAWS
Screen Readers (cont...)

- **SUPERNova Magnification/Screen Reader Software (v. 11)**
  - Designed to provide access to computer applications and usage, to people with partial or total loss of sight
  - Mainly used from people with partial loss of sight
  - Provides:
    - Magnification capabilities of the screen contents up to 50 times
    - Screen reading
    - In conjunction with the Braille Display, can also provide “screen-contents” information in Braille to the end user, with or without speech
Screen Readers (cont...)  

- One can work with SUPERNOVA using Hotkeys from the keyboard  
- When SUPERNOVA is running the “Num Lock” of the keypad is off  
  - Home (7) = Reads the active’s window title bar  
  - Ins (0) = Reads the current point,  
    - the title of an Icon,  
    - the choice of a dialog box (Yes/No, OK/Cancel, etc)
Screen Readers (cont...)

- **Apollo II**
  - An older assistive hardware synthesizer
  - Used in Conjunction with JAWS + SUPERNOVA
  - Used in order to “translate” the input from the screen readers into greek
  - Native Greek support was not enabled in JAWS and Supernova
  - Connected Serially to the computer
Apollo II Hardware Synthesizer
Screen Readers (cont...)

- ALVA Satellite 544 Braille Display
  - Tactual Reading device
  - Connects to any PC
  - Allows tactual access to text (icon titles, button logos, text-written documents in real-time
    - Mechanically lifts small round plastic or metal pins, in order to the Braille letters
    - The user “reads” the Braille letters with her/his fingers and after reading a line can “referesh” the screen and read the next one
  - It does not produce, or print any Braille Documents/Books
- Works with Supernova and JAWS screen readers
Printing

- **Braille Everest Index**
  - Braille printer
  - Electronic Embossing Braille Writing printers.
  - Print in special paper
  - Connect to any PC
  - Must work with a Braille translator
    - WinBraille
      - Intervenes between the non-braille written text and the printer
      - Translates the text into braille and sends it to the printer
      - The transformation is carried out with a few keystrokes
Printing (cont...)

- Braille printer use pin pressure on the paper to produce the printed text
  - The functions of the Braille printer buttons and any critical conditions are announced vocally to the end-user
- Noise reduction cabin
  - The printer is put inside the cabin
  - Produces a lot of noise
  - The use of the cabin is essential in order to maintain the quiet working environment of the Library
The printer inside the noise cabin
The printer also offers several buttons with their functions written on their surface with Braille.
Closed Circuit Television

- **Optelec’s ClearView+**
  - Connects to PC
  - Uses from people with partial sight loss
  - Magnifies from 2.6 to 50 times the displayed text at the screen’s computer
  - Easy to use
  - Buttons on the device enable
    - Text magnification
    - Contrast/brightness
    - Focus, position on screen (in conjunction with the pedal)
  - Using a pedal the user can
    - Alternate between the image produced from the CCTV and the Windows screen
    - Split in half, or in whole
With the buttons on the panel the user can configure a variety of options.
Services – Web Site

- **Website Accessible?**
  - Was one of our first considerations
  - Care was taken to ensure accessibility
  - Proper modifications and adjustments were made
    - W3C WAI-A compatible
    - W3C WAI-AA & W3C WAI-AAA goal is always in the plan
Services – Online periodicals

- As a member of the HEAL-Link consortium
- Access to more than 10,000 scientific online periodicals
- To these another 23 titles can be added for which the Library has its own subscription
- All accessible from within the Library’s Web Site
Services – Study Assistance

- To accommodate the students’ need to access the basic study material taught in the University’s departments
- Separate service was created
- One Librarian and two Information Technology from the Library’s staff is employed

General Idea
- To provide as many textbooks as possible to the visually impaired students
- In an electronic format readable from the screen readers
- PDF, DOC
- The electronic documents are uploaded on the Institution’s Digital Repository – PSEPHEDA (http://dspace.lib.uom.gr)
The procedure

At the start of each semester
Secretaries of each department are contacted
To verify how many visually impaired students have been registered.

- Business Administration
- Applied Informatics
- International and European Studies
- Most often students from the department of Educational & Social Policy and

Until now six undergraduate and one postgraduate students have been fully active in an academic manner through PSEPHEDA.
The next step

These students are contacted in order to get to know each other.
- Students with partial loss of sight
- Students with total loss of sight

We are given the list of the courses the students chose to attend

Then we contact the publishers via:
- Email and letters,
- The electronic version of the books is requested
- The publishers are obliged to send the books by law within 30 days.
- Preferred file format is MS Word or Adobe PDF
- The publishers send the files either by file transfer protocol-ftp, by email, or post office (on a CD).
- The publishers are informed that access to the electronic form of the books will be carried out only through the Digital Library of PSEPHEDA of the University of Macedonia
  - And only with the use of password,
  - Which only authorized eligible students, will have (the registered visually impaired students)
However:
- Sometimes publishers do not send us the electronic format of the books
  - Reasons: (1) old edition and they don’t have the electronic format of the book anymore,
- (2) We are ignored

In that case:
- We proceed with the digitization of a printed copy of the book with a scanner scanning.
- OCR processing is applied to the books via the Software Adobe Photoshop CS2.

The requirements of students regarding their textbooks are:
- Digitization of the books and using OCR processing
- The conversion of the electronic format with OCR processing, or
- The print out in Braille
Services – PSEPHEDA

- Digitization of their personal notes
- Journals’ articles,
- Classroom slides residing in the COMPUS site
  - COMPUS is the University’s asynchronous online course management system
- In that case:
  - The appropriate professors are contacted, in order to get their allowance for the use of their material
- Optical Character Recognition Process
  - The e-text is processed by using optical character recognition software.
  - The PDF document is converted into MS Word
  - OCR Software used: ABBYY FineReader version 9.0
The produced MS Word document is edited according to some guidelines.

Provide easy reading by visually impaired students. Guidelines provide for:

- Use of the right font style and size,
  - Arial, 14pt. for students with partial sight loss
  - For people that read the book in Braille, Font does not matter

- Description of tables and Pictures

- Until now, the collection of digitized books in the Institutional Repository offered to visually impaired students counts 120 books
The collections offering digitized Book material to visually impaired students
Chapters of a scanned book in a collection in PSEPHEDA
Services - Seminars

- Training Program for the visually impaired students on how to use the Library’s services
- Organized on a steady basis, ocne a year
- Seminar Contents:
  - The content and usage of the Library’s web site
  - The research methods followed in three online services of the Library
    - The online Catalog (opac),
    - The Database Access Portal “ΘYPA”, in order to find periodicals, journals and other material covering a specific topic
    - The Institutional Repository “PSEPHEDA”
  - The use of the WorkStation’s hardware in order to access these services
- Main instructor is Mr. Dimos Zaxaros, Computer Scientist, an employee of the Library with total loss of sight
Services – Seminars for the Libraries’ Personnel

- In the time period from 2005-2008
- Seven (7) training seminars were organized by the Library in order to disseminate its experiences to other Libraries
- The training seminars were oriented towards personnel from various Libraries
- Covered issues such as development and organization of services for visually impaired students:
  - Get to know how to be blind
  - Exercises (assisting/guiding a blind person),
  - Service creation in an institutional and Library level
  - Copyright issues
  - Use of assistive technology and hardware,
  - Practical Exercises
- 113 persons attended the seminars from different parts of Greece.
Other Assistive Methods – Tactile Maps

- Tactile Maps
  - Created in 2004
  - Cover many University’s areas, both inside and outside
  - The Information provided in the maps is in Braille
  - This project was developed in the framework of the work package “Special Mapping of the University of Macedonia” of the project “PLOEGIS” (Third EFP/EPEAEK II/Action2.1.3δ)
  - The development of the maps was coordinated by Dr. Konstantinos Papadopoulos, chairman of the Educational and Social Policy department of the University of Macedonia and scientific affiliate at the National map holder.
  - The project was a national project funded by the EU and by national resources
Tactile Maps (cont...)

- In total 15 tactile maps were created for the interior of the University and 1 for the exterior
- In A3 dimension size,
- Printed in special paper with microcells
- For the printing of the maps the digital technology and equipment of the National Map Holder were used
- Was the first in 1995 to produce tactile maps digitally
Tactile Maps (cont...)

- From the 15 maps
  - Two (2):
    - One for the ground floor and one for the mezzanine
    - Present the general layout of the floors
    - Used as assistive guiding tools
  - Twelve (12):
    - Are more detailed, used as assistive tools in the movement of the visually impaired students
    - Contain Information such as various areas with their names (registries, teaching halls), elevator locations, ramps for persons with moving disabilities, dangerous spots, etc
  - One (1):
    - Presents the course that a visually impaired person must follow from the University's entrance to the WorkStation Room for the Blind inside the Library.
- In the one map for the exterior of the university:
  - Contains Information such as building blocks, street names, bus stops, card phones, traffic lights (with or without informational sound), etc
Other Assistive Methods – Technical improvements

- Other assistive methods were also implemented
  - Their scope was also to include students with other forms of disabilities (e.g. in movement)
  - More of technical rather than technological nature, including:
    - A ramp at the University’s Entrance
    - Special motorized ramps for stairs climbing
    - Vocal announcements in the elevators, especially for the floor access
    - Lighting improvement in spots with poor light