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COMPUTER AND BLINDNESS:
How Blind People Access Computer
What They Can Do with Computer

Definition of Blindness

- An individual may properly be said to be "blind" or a "blind person" when he has to devise so many alternative techniques - that is, if he is to function efficiently - that his pattern of daily living is substantially altered.
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Alternative Techniques

- Alternative techniques are unique ways (with or without assistive devices) that make use of non-visual senses or any residual vision to do activities that are normally done with vision.
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Alternative Techniques to Access Computer

- Auditory and tactual are the most efficient senses after vision to channel information.
 - Alternative techniques generally make use of auditory and/or tactual senses.
 - Speech technology and refreshable Braille display are alternative techniques to access computer.
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Refreshable Braille Display

- Refreshable Braille display device converts text into Braille characters.
 - This device is connected to CPU and functions as monitor.
 - The device displays 1 line of 18-80 Braille characters successively.
 - Braille Notetaker is a stand-alone Braille reading device.
 - Reading speed of experienced Braille reader is 90-115 WPM compared to 250-300 for a visual reader.
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Braille

- This how Braille looks like.
 - Braille is formed out of a domino pattern of 6 dots.
 - A Braille character consists of a combination of 1-6 dots.
 - A Braille pattern can give up to 63 combinations.
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Speech Technology

- Speech technology enables blind computer users to access the screen by listening.
 - Speech reading software is integrated into the operating system and is designed to access application programmes.
 - The human-like sound is produced through the existing sound card.
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Speech Reading Software

- Consists of 2 main components: speech synthesizer & screen reader.
 - speech synthesizer converts text into speech.
 - Screen reader enables computer users to navigate the screen as needed: to read by word, line, sentence, etc.; to read document control, menus etc.
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Listening Compared to Reading by Touch

- Users have 2 free hands to operate the keyboard.
 - Users can read much faster.
 - Speech technology is much cheaper than Braille display.
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To Produce Hard Copy in Braille

- Braille embosser
 - Braille translation software
 - MBC is designed to translate Indonesian Braille system.
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Access to Print

- Regular scanner with OCR + access software.
 - Special reading machine: processor, scanner & speech synthesizer in one.
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What the Blind Can Do with the Computer

- Word processing, accounting, music composing/editing, Internet browsing, programming, etc.
 - Vision-required jobs have been made possible for the blind.
 - For the blind, computer is not only a work tool but also a means of access to the “sighted world”.
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Problems for Blind People in Indonesia

- Speech screen reading software is still costly.
 - No screen reader with Indonesian TTS.
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Solution

- Joint research by technological institutions and blindness organizations to develop Indonesian screen reader.
 - Make use of Indo-TTS developed by Dr. Arry Arman of ITB.
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Further Information Resources on Access Tech for the Blind

- American Foundation for the Blind: www.afb.org
- Braillo Norway: www.braillo.com
- Enabling Technologies: www.brailler.com
- Freedom Scientific: www.freedomscientific.com
- GW Micro: www.gwmicro.com
- Kurzweil Educational Systems:
www.kurzweiltech.com
- National Federation of the Blind: www.nfb.org
- Telesensory: www.telesensory.com
- Yayasan Mitra Netra: www.mitranetra.or.id