Why is DAISY fulltext valuable to print-disabled readers?

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- What's the problem?

- Research into student use

- What now?

What's the problem?

- General access to (printed) information is a democratic issue.

- Equal opportunities to read is the basis for equal opportunities to learn.

- Curriculum and information is often only available in regular print.

- Accessible formats are of limited availability.

What's the problem?

- Information may be available in one accessible format but not others.

- Traditional accessible formats are bulky and slow to navigate
  - Casette-based audio, hard-copy braille, large print.

- Print disabilities: functional definition
  - learning disability, a visual impairment or a physical disability.

Examples

- Printed text:
  - Dyslexia/visual impairments: decoding
  - Motor impairments: holding/turning pages

- Audio: cassettes, CDs
  - Lack structure
  - Lack storage

- E-books: digital text – numerous formats
  - Varying structure and accessibility

What DAISY offers

- Structure: Easy and efficient navigation
  - Key to success, mimics paper book navigation
- Storage: One CD holds up to 50 hr speech

- Differs based on book type.
  - Full-text: Book with all text + audio possibilities (Production took off around 2007)

2004: Early research on usefulness

Bredvedt Centre of Competence, Norway

DAISY audio – not only fulltext.

Evaluate DAISY experience and use for students with moderate to serious reading difficulties.

7 students 6-10th grade. Monitored over 5 months.

6 parents and 5 teachers also informed.

Eklund et.al., Sweden

Experience and use of DAISY audio compared to a printed book.

5 students, 2 with reading- and 1 with concentration difficulties.

2005: Mainly audio-books

Hildén, Sweden

What needs print-disabled students have to audio/digital books.

32 pupils aged 9-13 observed and interviewed over 3 months.

RNIB + the DAISY Project, Scotland

Evaluated DAISY for education.

42 blind, 38 partially sighted + 15 with multiple disabilities including visual impairments, 19 other (dyslexia).

6 month trial. Survey among the 100 students.

Positive conclusions on DAISY

- DAISY effective in a variety of educational settings.

- Much easier to use than audio tapes.

- Students feel empowered and motivated.

- Audio support stimulate and increase reading.

- Self-support and independent learning.

- Want more DAISY books.

- Should be available in every school and college.

Student quotes, Scotland 2005

"I think it is easier to take in the information, like listening to it and reading it at the same time" – 14y

" I think the navigation is good as well because you can jump, like from chapter to chapter" – 17 years

"I like the way you can bookmark things you are listening to" – 15 years

"A greater range of novels on DAISY would be helpful" – 18 years

2006 – Fulltext on it's way.

NLB, Norway

Experience when using synthetic speech in DAISY productions.

Focus on identifying suitable fulltext production methods.

Lundeland, Norway

Use and usefulness of DAISY fulltext.

Pedagogic focus. Interviews.

6 student from 4 lower secondary schools + their 5 teachers.

2007 – Fulltext in focus.

Begnum, Norway

Use and usefulness of DAISY - including fulltext.

System functionality focus.

Survey to schools using DAISY, 130 students and 67 teachers.

Expert evaluation of DAISY fulltext readers. Feature analyses.

Humanware, USA

Business testing their DAISY reader.

29 students grades 9-12 with severe learning disabilities/ADHD.

36 week usage (an academic year). Classroom observation.

Dyslexia guidelines, Netherlands

Evaluation of DAISY fulltext by 200 dyslexic students. Survey.

Fulltext research results

- **Fulltext preferred over audio-only by visual users.**

- **In Norwegian primary and secondary education, DAISY is typically used by students 13-16 years, 2/3 male. Around 90% non-visual print disabilities.**

- **95 % of dyslexic Dutch students found it to be a useful and more effective way of reading.**

- **DAISY is perceived as useful even without user training.**

Student survey replies, Begnum 2007
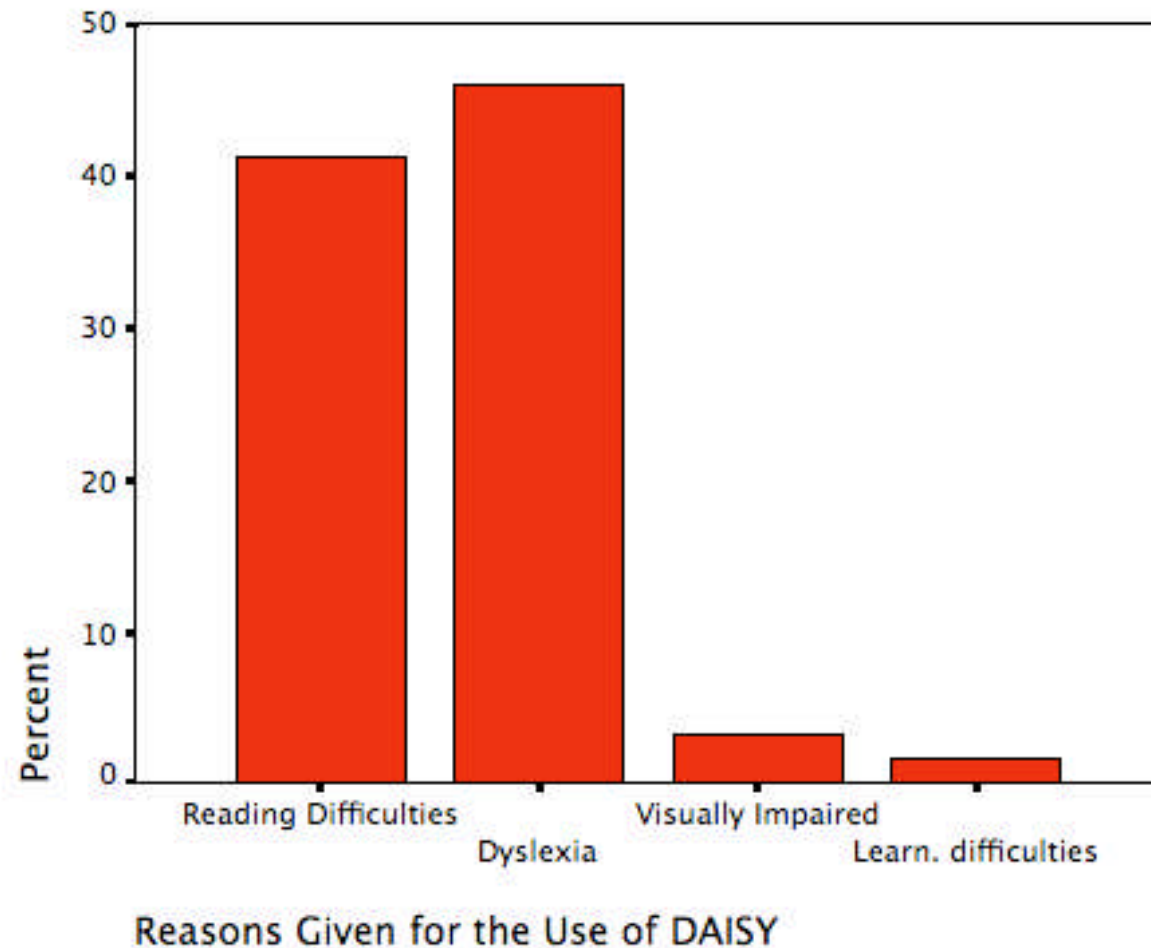
Results suggests DAISY fulltext:

- **Makes reading easier.**

- **Improves understanding.**

- **More focus on the text *content*.**

- **Helps students remember more.**

- **Facilitates more efficient learning.**

- **Significantly increases phonetic skills, comprehension and fluency.**

Research suggests the cause is:

- **While listening to audio, students track the words with their eyes.**

- **Normally, focus is on decoding – not processing the meaning of the textual content.**

- **Now: More working memory focus on higher order comprehension skills**

- **Essential to see text while hearing: Improves focus and understanding.**

- **Leads to increased decoding and comprehension skills** (student score comparisons, HumanWare 2007).

Student quote, HumanWare 2007

"Now I know why people read books; it's like a movie but the pictures are in your head. If I have ClassMate Reader I can do my homework without help."

2008/2009 – Fulltext in use

DAISY Textbook Pilot project, New Zealand

Investigate feasibility of providing curriculum in full-text DAISY.

Focus on production methods and education sector training.

Synthetic speech in fulltext curriculum supplied.

12 students, age 7-10 years, during a school year.

Students were all visually impaired, large print/braille users.

Much needed technology improvements

Research revealed technical frustration with DAISY readers.

Norway: Unstable freeware readers is no longer recommended.

Attention to visual users – EaseReader interface more improved.

Textbook Pilot feasibility results

- Positive student feedback:

- Liked following text on screen while listening

- Could switch between audio/visual when eyes tired.

- Liked skipping around and searching for page/word

- Portable compared to large print and braille.

- Synthetic speech audio quick and easy to produce.

- Students needed very little training.

Textbook Pilot Student Quote

"It meant I could keep up with the class when they were studying our novel, our English novel. And it's actually quite good, because it combines the ways I like to do pleasure reading, because it reads and shows you the words. I think I read my English novel about 4 times."

- Large print reader

What next?

E-books: *"an electronic version of a printed book which can be read on a personal computer or hand-held device designed specifically for this purpose"*
- Oxford Dictionary of English

- DAISY vs. Kindle vs. iPad?

www.wired.com

www.shutterstock.com · 14582704

Accessibility issues

- Weak accessibility in most eReaders.
- DRM issues: locks out braille- and screen readers.
- Kindle and iPad a lot better than many other.
- Lawsuit against schools: Regulates non-accessible e-book services and eReaders in classroom use:

"Requiring the use of an emerging technology in a classroom environment when the technology is inaccessible to an entire population of individuals with disabilities (…) is discrimination prohibited by the Americans with Disabilities Act of 1990 (ADA) and Section 504 of the Rehabilitation Act of 1973 (504)."

- T. Perez and R. Ali, US D.O. Justice & D.O. Education in letter to universities

Kindle accessibility

- eInk: <u>very</u> easy on the eye, but greyscale only.
- No smart navigation in large texts.
- Excellent storage and distribution (Amazon).
- TTS: text-to-speech, synthetic text reading.
- **TTS copyright issues on commercial books.**
- No linking of text and audio (highlighting).
- May enlarge text: 6 font sizes.
- August: accessible voice-guided menu navigation. TTS improvements. NB: User tests needed.
- NB: Amazon store accessibility testing lacking.

Kindle

arstechnica.com

iPad accessibility

- LCD screen: tiring on the eye.
- Colors (pictures), white-on-black display.
- No smart navigation in large texts.
- Excellent storage and distribution (iBook store, Kindle app).
- VoiceOver "screen reader" (NB: DRM issues)
- Reads as you type, as well as spelling suggestions.
- No linking of text and audio (highlighting).
- Full-screen magnification. Zoom up to 5 times.
- Support for playback of closed-captioned content.
- Mono audio possibility.

iPad
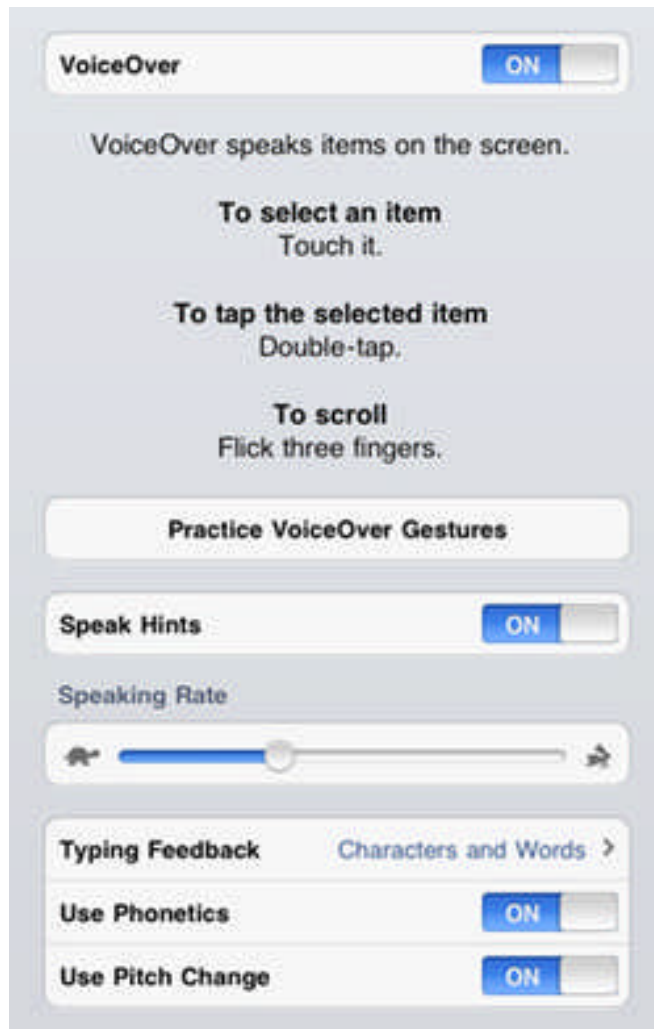
iPad review: **From a Blindness Perspective**

"The Apple iPad is one hundred percent accessible straight out of the box (...) Blind individuals can glide a finger over the screen, and as they glide their fingers, the options will be spoken aloud. When the users hear an option that they want to select, they can tap their fingers on that option twice, and the option will then be selected. There is no barrier to us blind folks using the Apple iPads touch screen."

- "Waldorf PC", posted on associatedcontent.com 04.04. 2010

Last comment: accessible e-books

- IFLA/LBS & DAISY Consortium: Global Accessible Library project (2004 - ongoing).

- Project Gutenberg takes out-of-copyright texts and turn them into free e-books: plain text or epub.

- VitalSource accessible Bookshelf e-textbook software.

- Amazon is working with Pearson, Cangage Learning, Wiley and 75 University Press Publishers to make educational material accessible in the Kindle store.

Thank you for your time!

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