

The Role of Technology:

Changing the landscape of accessible instructional materials



SPELD NSW/LDA Symposium
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Tim Connell



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General Attitudes to Technology

“Computers have enabled people to make more mistakes faster than almost any invention in history, with the possible exception of tequila and hand guns”

Mitch Ratcliffe

“.....personal computers have become the most empowering tool we've ever created. They're tools of communication, they're tools of creativity, and they can be shaped by their user.”

Bill Gates

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The Role of Technology in Society

- Dec. 2009 Amazon sold more e-books than traditional books on paper for first time.*
- Average teenager in the US spends 7.5 hours per day using electronic media (phone, MP3 player, computer, television, video).**
- The average teenager in the US spends 10 mins per day on recreational reading.**

* Business Week Health Report Jan 20 2010

** American Time Use Survey 2009

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The Role of Technology in Society

One of the biggest challenges for educators today is to be able to imagine the technology landscape of the future.

What are the skills all children need to be able to thrive in the Age of Technology?

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Technology Standards – What Children Need to Know

National Educational Technology Standards - NETS
Profiles for Technology Literate Students

www.iste.org/standards.aspx

Performance indicators for all students.

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Grades PK–2 (Ages 4–8)

Examples of learning activities in which students might engage during PK-Grade 2 (Ages 4-8):

1. Illustrate and communicate original ideas and stories using digital tools and media-rich resources.
2. Identify, research, and collect data on an environmental issue using digital resources and propose a developmentally appropriate solution.
3. Engage in learning activities with learners from multiple cultures through e-mail and other electronic means.
4. In a collaborative work group, use a variety of technologies to produce a digital presentation or product in a curriculum area.
5. Find and evaluate information related to a current or historical person or event using digital resources.
6. Use simulations and graphical organizers to explore and depict patterns of growth such as the life cycles of plants and animals.
7. Demonstrate safe and cooperative use of technology.

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Generational Change

Information delivery in education has to adapt to meet the needs of the *i*Generation* (born from mid-1990's, i = information, individualised, innovation)

- Early introduction to technology in home environment
- Adeptness at multitasking
- Desire for immediacy
- Ability to use technology to create a vast array of content
- Constant connectivity

Ref: *"Understanding the iGeneration and the way they learn"*

Larry Rosen, California State University

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Generational Change

How students learn also depends on.....

- Innate neurological differences
- Different socio-economic backgrounds
- English as a second language
- Sensory impairments
- Physical impairments
- Cognitive impairments
- Cultural differences

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Generational Change

DIVERSITY

Classrooms today are more diverse than at any other time in history.

To provide quality and equitable education to a diverse population of students we need to provide information in a diversity of formats that meet each individuals needs.

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Universal Design for Learning (UDL)

Universal Design for Learning is a framework for designing curricula that enables all individuals to gain knowledge, skills, and enthusiasm for learning.

Centre for Applied Special Technology (CAST)

www.cast.org

UDL – The language needed for lobbying governments and education systems

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Key Principles of UDL:

- To support **recognition learning**, by providing multiple, flexible methods of presentation (present information and content in different ways using WEB, audio, DAISY, Interactive whiteboard etc)
- To support **strategic learning**, by providing multiple, flexible methods of expression (differentiate the ways students can express what they know using a range of tools and formats, such as written, oral, video or drawing).
- To support **affective learning**, providing multiple, flexible options for engagement (stimulate interest and motivation for learning by using tools and strategies based on students experience and preferences).

(Adapted from: Rose, D., Meyer, A., & Hitchcock, C. (2005). The universally designed classroom, Cambridge, MA: Harvard Education Press.)

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Is Australia UDL Ready?

Technical Standards for Digital Education

A program of work to support the Digital Education Revolution

January 2009 to June 2010

<http://www.linkaffiliates.net.au/Activities/techStdsforDigitalEducation.html>

Final Report-21st Century Curriculum Content

Barriers

- **Networks and firewalls**
- **Professional development**
- **Selection of appropriate tools**
- **Security and duty of care**
- **Access and identity management**



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Formats for Learning

Sources of e-formats

- The world of arts and crafts!
- New global electronic sources (Amazon, Google etc)
- Centralised production facilities (DoE, MQASS, Vision Australia, Universities, TAFE's, etc)
- Free or NFP services (Bookshare, Librivox, The Internet Archive etc)
- Individual/localised production using assistive technology

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Formats for Learning

What is needed.

Report of the Dyslexia Working Party – January 2010

Recommendation 13: Accessible Instructional Material Strategy (AIMS)

Recommendation 14: Accessible Instructional Materials Centre (AIMC)

Recommendation 15: Assistive Technology

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Digital Talking Books

DAISY Format

Digital Accessible Information System.

- New generation of Talking Books
- Portable
- Easy to use
- Serves a wide range of people with print disability

www.daisy.org



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Digital Talking Books

DAISY is an electronic format that combines the spoken word with the written word.



DAISY synchronises text and speech. As a word is spoken it is highlighted.

Auditory support for reading.
Bi-modal presentation of information.

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Digital Talking Books

DAISY format enables the reader to navigate through various features of the book, including;

- Headings
- Page numbers
- Paragraphs
- Sentences
- Images
- Search for a word or phrase
- Spelling
- Highlighted text



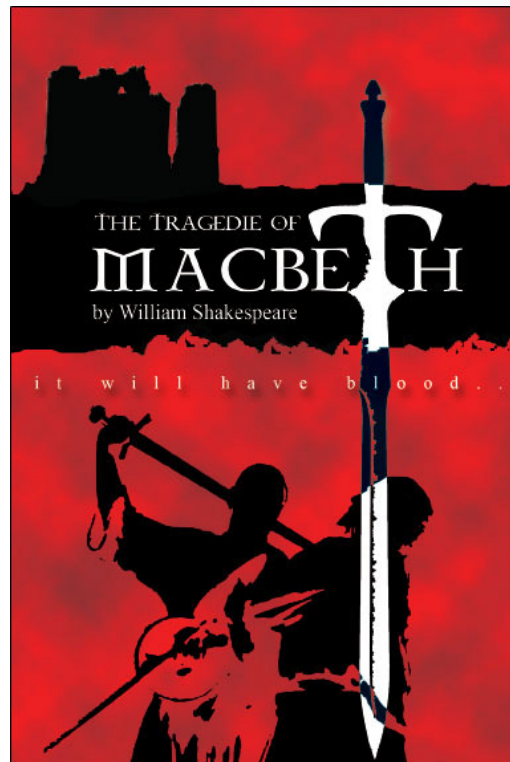
DAISY can use recorded human narration or synthetic speech.

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Digital Talking Books

Let's look at a book



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Making DAISY Books

Options

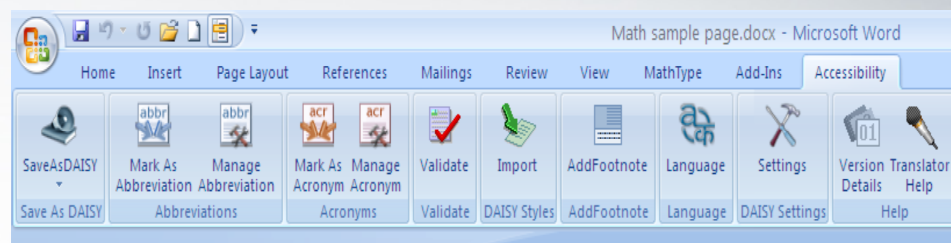
- Human Narration (requiring digital recording hardware and software)
- Synthetic Speech. There are both freeware and commercial options.
 - Save As Daisy
 - Dolphin EasyProducer

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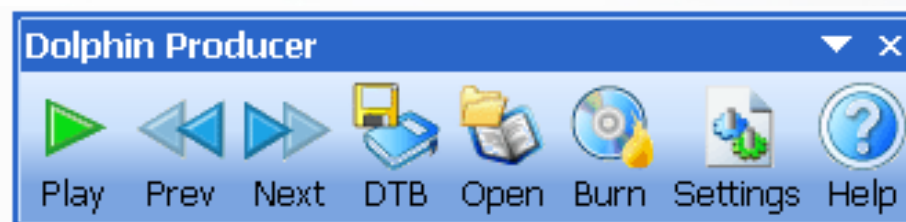


Making DAISY Books

Save As Daisy



EasyProducer



Both work as “Add-In’s” to MS WORD

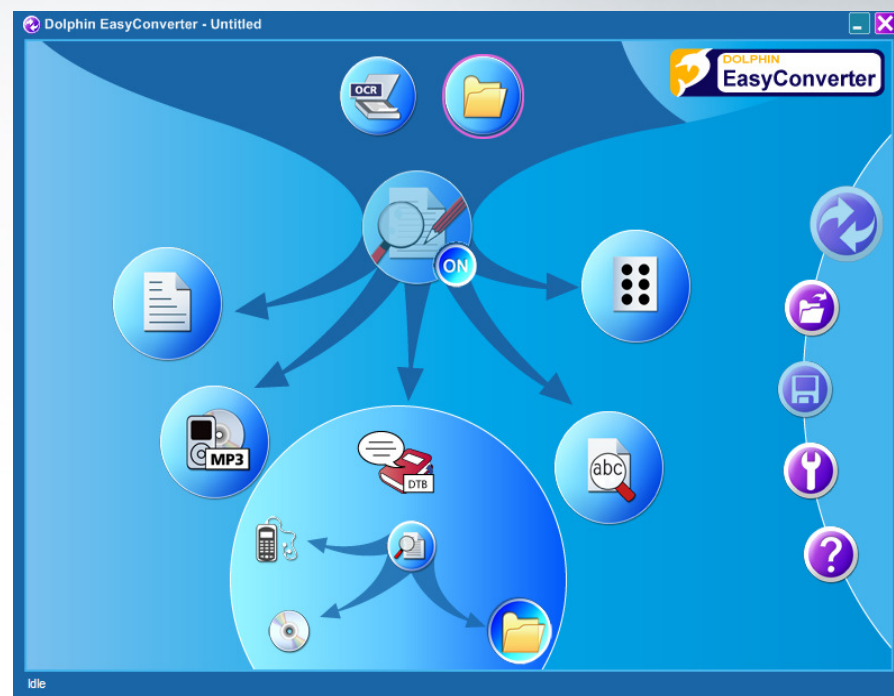
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Making DAISY Books

For organisations that have multiple format needs;

DTB/DAISY
Large Print
MP3 – Audio
Text
Braille



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Reading DAISY Books

Books may also be accessed with a portable player (Speech output only – no text display)



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Tools for Students

- Hardware
 - Voice recorders
 - Digital cameras
 - Play Daisy functionality
 - iPads/Kindles/etc
- Software
 - LD specific software (BDA website – ICT)
 - Modifying the Windows environment
 - Creating an Individualised learning environment
 - Freeware vs BuyWare

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Tools for Students

FreeWare (App's)	BuyWare
Its free!!!	Can be expensive
Download, install and see if it works.	In addition to product you buy services – set-up, configuration, documentation, customisation, consulting, training support.
If used widely, been available for a long time, has a track record, then it is likely the software will work as advertised.	Warranties. Fitness for purpose.
Fewer support services (Red Hat)	More support services.
Less R&D. On-going development depends on enthusiasm of individuals.	Business has to have high R&D to survive, but one of the biggest drivers of cost.
The smaller the community of potential users the greater the risks.	The smaller the community of potential users the higher the cost.

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Research

Current – Ongoing

Exploring the Effects of Digital Note Taking on Student Comprehension of Science

Research funded by the U.S. Department of Education
Office of Special Education Programs (OSEP),
Conducted by the Center for Electronic Studying at the University of Oregon
Under the auspices of Lynne Anderson-Inman from the University of Oregon.

The Intersection Between Cognitive Strategies & Technology Support

Research funded by the U.S. Department of Education
Office of Special Education Programs (OSEP),
Michigan State University – Dr. Cynthia Okolo

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Research

Current – Ongoing

The Intersection Between Cognitive Strategies & Technology Support

Research funded by the U.S. Department of Education
Office of Special Education Programs (OSEP),
Michigan State University – Dr. Cynthia Okolo

Premise – two powerful interventions, research-based cognitive instruction and appropriate technology, will improve literacy, learning and performance

- Cognitive strategy instruction must be specifically taught
- Currently cognitive strategy is divorced from technology use
- Technology should support formalised cognitive instruction
- Today technology is underutilized

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Research

Assistive Technology: Empowering Students with Learning Disabilities

Karen Forgrave

Faculty of Graduate and Undergraduate Studies in Education

University of Ontario

Published: The Clearing House Jan/Feb 2002

Affects of Audio Text on the Acquisition of Secondary-Level Content by Students with Mild Disabilities

Elizabeth Boyle, Research Associate

Professor Michael Rosenberg PhD

Department of Special Education

John Hopkins University 2003

The Use of AudioBooks for Reading Support

Baltimore City Public School System

Connie Dowling M.A.

Recordings for the Blind and Dyslexic 2004-2005

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Research

Australian

Breaking down the barriers: strategies to assist apprentices with a learning disability

Sandra Cotton

Polytechnic West (WA)

Participant in the NCVET Building Researcher

Capacity Community of Practice Scholarship Program 2009

A “WYNN” for the Prison

Debra Hormann

Coordinator, Disability Liaison University of Ballarat

Paper presented at Pathways 2008

MQAS

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Research

Australian

Breaking down the barriers: strategies to assist apprentices with a learning disability

Sandra Cotton

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Capacity Community of Practice Scholarship Program 2009

“Underpinning these broad factors have been specific strategies that accommodate students with a learning disability: additional time, presentation of information in different formats and the use of technology. These strategies have a basis in sound educational philosophy and may be relevant to apprentices in general. “

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Challenges for Educators

Changes in Skill Requirements

- Computer skills
- Information retrieval and manipulation
- Multi-format, multi-media

The need for on-going professional development to keep teachers current and to ensure they can facilitate the technology options their students need.

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Challenges for Educators

Changes in Teaching Models

Teacher as co-learner

Focus on implementation, support and care of
technology instead of “product expertise”

Integrating technology into the curriculum

Change is the law of life. And those who look only to the past or present are certain to miss the future.

John F. Kennedy

Plan for 2025 not 2011!

