
Dyslexia...

Learning Differently?

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Dyslexia: a distinctive pattern of cognitive abilities

People who are dyslexic may have

- **literacy difficulties**, e.g. spelling, learning new terminology, slow reading speed, slow writing speed;
 - **poorer short-term memory** for language-based information, e.g. sequences of instructions;
 - **difficulties with visual perception of text**;
 - **problems with organisation**, e.g. breaking down a large task into a sequence of small steps;
 - **better than average spatial abilities**, e.g. visualising in three dimensions;
- and may be **better at problem-solving tasks**.



Reading is a complex process...

Pint

Whole

Fass

Most adult readers know

- that ‘pint’ does not rhyme with ‘hint’;
- that the ‘w’ at the start of ‘whole’ is silent;
- how to guess the pronunciation of non-words such as ‘fass’.

Reading is a complex process...

...involving:

- vision control in ‘tracking’ a line of text;
- visual and phonological recognition;
- phonological decoding (of rare and unknown words);
- short term memory;
- retrieval of long-term memory information about exception words.



In fact most of us need very few
letter clues to read...



Can you read this? 55 people out of 100 can. I couldn't believe that I could accurately understand what I was reading. The phenomenal power of the human mind, according to a research at Cambridge University, it doesn't matter in what order the letters in a word are, the only important thing is that the first and last letter are in the right place. The rest can be a total mess and you can still read it without much of a problem. This is because the human mind does not read every letter by itself, but the word as a whole.

Amazing huh? Yeah and I always thought spelling was important!



Reading as an automated process

For many adults, reading feels effortless: it becomes automated, like tying shoelaces.

People with dyslexia find it harder to reach that level of automation, so reading remains a conscious and effortful process.

In our text-based society, this can be disabling...



What is disability?

An **impairment** is ‘located’ in the individual and relates to their physical, cognitive and sensory capacities.

Disability is ‘located’ in the interaction between an individual and the environment in which they are expected to function.

People are disabled by **barriers** they encounter in the physical, social and informational environment.

By making **adjustments** in our practices we can remove or reduce those barriers.



Barriers for people with dyslexia...

- Poor design of printed text, e.g.
 - small font, lots of *italics* or CAPITALS
 - long paragraphs without subtitles or bullet points
 - justified text
- Being asked to read out loud without preparation
- Sequences of instructions provided only orally or not repeated
- Tasks which depend on reading a long text and responding immediately
- Having to take a lot of notes or copy information quickly from slides
- Large, unstructured tasks and projects

A question of confidence...

‘Learning always involves a period of feeling, and being aware of, our incompetence. Not knowing is a necessary part of the learning process. Your capacity to tolerate not knowing and be confident enough to learn has connections with your previous experiences of learning and other people’s responses to you. This is an ongoing process in which we develop beliefs about our own value and competence in many different areas.’

www.shefc.ac.uk/publications/other/dyslexia/content/stress.html



From reaction to anticipation

A common approach = reaction, by providing individual adjustments

- delays for students;
- inefficient and time-consuming for staff;
- divides 'normal' students, who don't need 'adjustments', from those who do.

Instead, we can move towards an inclusive approach which anticipates the needs of all our students and learners.



But how can I anticipate the needs of students I don't (yet) have?

In designing learning activities, consider the demands on the students' capacities:

- Vision and hearing
- Speech and language skills
- Mobility and dexterity
- Concentration and stamina
- Cognition and working memory
- Social skills and awareness

The demands of a lesson

What capacities are students being asked to use in

- a large class, where material is delivered by means of a lecture, and the lecturer takes questions at the end?
- a small computer lab session, where the instructor gives a brief talk and the students then work in groups, producing a presentation at the end?

What barriers might arise for students whose ability to exercise one of these capacities is impaired?

How could these sessions be made more inclusive?



Universal Design

‘Universal Design is the design of products and environments to be useable by all people, to the greatest extent possible, without the need for adaptation or specialized design.’

(Ron Mace)

Principles of Universal Design:

1. Equitable Use

The design is useful and marketable to people with diverse abilities.



Principles of Universal Design (2)

2. Flexibility in Use

The design accommodates a wide range of individual preferences and abilities.

3. Simple and Intuitive Use

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

4. Perceptible Information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.



Principles of Universal Design (3)

5. Tolerance for Error

The design minimizes hazards and the adverse consequences of accidental or unintended actions.

6. Low Physical Effort

The design can be used efficiently and comfortably and with a minimum of fatigue.

7. Size and Space for Approach and Use

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

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The Center for Universal Design



Universal Design for Learning (1)

Applying the UD principles to the design of learning activities (see www.tss.uoguelph.ca/uid/):

1. Equitable use

All students should ideally use the same means to achieve learning outcomes - identical if possible, equivalent when not. Teaching should be designed to be useful and accessible for people with different abilities, respectful of diversity, and with high expectations for all students.



What are you trying to teach?

The emphasis on high expectations is central, because

access to information

is not the same as

access to education



Universal Design for Learning (2)

2. Flexibility in use, participation and presentation

Learning is most effective when it is **multimodal** - when material is presented in multiple forms, and when students have multiple means of accessing and interacting with material and demonstrating their knowledge.

Where the mode of presentation is essential to the learning outcome, this should be made explicit, so that people can make informed choices.



Universal Design for Learning (3)

3. Simple and intuitive use

Teaching and learning materials are designed in a clear and straightforward manner. Tools are intuitive. Unnecessary complexity or distractions that may detract from the learning material or tasks are reduced or eliminated.

This doesn't mean you can't be inventive - but innovation should always serve the goal of learning rather than dominate it!



Universal Design for Learning (4)

4. Perceptible information

- information is explicitly presented and readily perceived;
- expectations are transparent;
- instructions are easy to understand;
- any barriers to receiving or understanding are removed;
- information may be presented in multiple forms.

Universal Design for Learning (5)

5. Tolerance for error

- Teaching staff anticipate that students will make mistakes and create a supportive learning environment
- Design of learning activities provides ‘low-stakes’ opportunities for error, and turns them into opportunities for learning
- Teaching staff recognise that systems and technologies will fail, and prepare back-ups so that learning will not be interrupted

Universal Design for Learning (6)

6. Low physical effort

Learning activities are designed to minimise **non-essential** physical effort (that is, not related to a learning outcome) permitting maximum attention and energy to learning

7. Size and space for approach and use

The learning environment is accessible and the environment supports multiple instruction strategies.



General Principles

- Provide an explicit structure for sessions and activities - and refer to it as you go
- Be explicit about behavioural expectations and classroom conventions
- Use multiple modes of communication and vary methods of presentation
- Take mini-breaks, or change activity type
- Check the effectiveness of your communication by checking student understanding

Try to make available in advance:

- Handouts
- Materials and reading lists
- Lists of new vocabulary, subject-specific terminology or abbreviations
- Any written instructions, for instance, for group discussions or lab work

Keep information in electronic format: this will allow alternative formats (e.g. Braille, large print) to be produced quickly if necessary.



Clear print guidelines

- Use a sans serif font like **Arial**, **Trebuchet** or **Comic Sans**
- Use at least 12pt on printed text and 24pt in powerpoint slides
- Make sure text is left-aligned, not justified
- Break up long passages with sub-headings or bullet points
- Use **bold** for emphasis rather than *italics* or underlining, and avoid use of ALL-CAPS for more than a few words
- Use more space between paragraphs than between lines



Delivery

- Face the students, use microphones when available, and try to limit movement around the room
- Use “signposts” to indicate structure
- Make sure written content in slides or handouts is also spoken aloud
- In small groups, make sure people can see each other when speaking, and speak one at a time
- Repeat questions/comments from students before responding
- Use board/flipchart to write up main issues or reinforce points from discussion

Large group sessions

- Minimise copying from boards and flipcharts
- Make all handouts on light-coloured paper, such as cream
- Write up difficult spellings, or provide a handout of technical or subject-specific terms
- Leave slides up long enough for slow readers/writers
- Permit tape-recording
- Make reading aloud voluntary

Useful resources

- **Access for library users with disabilities**
Linda Robertson/SCONUL (2007) www.sconul.ac.uk
- www.techdis.ac.uk JISC service promoting inclusive technology and inclusion through technology: offers specific guidance for library and learning resources staff
- **SimDis** simulates problems with reading experienced by some dyslexic people
www.techdis.ac.uk/resources/sites/2/simdis/
- www.lexdis.org guidance on developing inclusive e-learning, with lots of contributions from students



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- **Journal of Special Education Technology 15 (1)**
Winter 2000: issue on Universal Design for Learning
 - **www.cast.org** Centre for Applied Special Technology: resources on UDL
 - **www.facultyware.uconn.edu** More resources (they call it Universal Design for Instruction (UDI))
 - **www.tss.uoguelph.ca/uid/** Here, it's Universal Instructional Design (UID)
 - **Singleton Report 'Dyslexia in Higher Education'**
HEFCE/University of Hull (1999)
 - **Dyslexia, the self and higher education**
David Pollak, Trentham Books (2005)

