Accessible notes - staff meeting 2023-01-24

Christian Lawson-Perfect

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Abstract

This document was put together for the MSP all-staff meeting in January 2023. My aim is to explain the reasons handwritten notes can be inaccessible, and to describe the solutions and support available to lecturers.

Video Visit the URL below to view a video:

https://player.vimeo.com/video/792563757

I began by showing some handwritten notes on screen: basically the same text as this document.

I showed a version with a very dark background, so everyone could experience the difficulty of reading low-contrast text.

Next I showed the same notes on a much lighter background, but it was rendered at such low resolution that the text is very hard to read.

Hopefully that gives the gist of the problem: if you have trouble reading handwritten notes, someone has to rewrite them, usually in another format.

1 You use handwritten notes because

- It's easy to write
- Diagrams are easy
- IAT_EX is hard and time-consuming.

2 Students want notes in other formats because

- Low or no vision need more contrast, bigger text, or read aloud.
- Can't hold paper need material displayed on a screen or read aloud.
- Dyslexia need different colours, different font, structure.
- Poor memory or executive function need more structure
- Reasons you haven't thought of.



Figure 1: Handwritten notes on a dark background.



Figure 2: Handwritten notes on a light background.

3 Handwritten notes are inaccessible to many people

There are several reasons for this:

- They can't be scaled up usably.
- It's hard to change colours when a different background or greater contrast is needed.
- Text can't be re-set to fit in a naarower window.
- While AI gets better all the time, it still makes errors so handwritten text can't be reliably searched or converted to speech.
- There's no structural metadata that readers can use to easily navigate.
- Your handwriting might be hard to read, like mine. Students from different backgrounds to yours might not be familiar with the handwriting style you use.

4 PDFs are a bit better

- Text is searchable (sometimes).
- Can be zoomed in (but not re-set, so lots of horizontal scrolling)
- The reader can't change colours or fonts.
- No or little structural metadata for assistive tech.

PDF is fundamentally designed for print media.

5 Accessible mathematical notation

Producing accessible maths notation is really hard!

The current state of the art is to display LATEX in HTML using MathJax, which adds features to help assistive technology.

$$\int e^{-ix} \mathrm{d}x$$

6 There are several tools for producing scientific material in accessible formats

- Bookdown
- PreTeXt
- LaTeXML
- Pandoc

• Chirun - made here

These are all largely fine! Use whatever you get along with, and we can support you.

Chirun was made for two specific reasons:

- Take LATEX without (much) modification.
- Produce accessible output in several formats. (Specifically to a accommodate a student's needs, originally)

It can now take markdown input and integrate videos, live code, Numbas questions, ...

See the documentation at chirun.readthedocs.io. $% \left({{{\rm{A}}_{{\rm{B}}}}} \right)$

7 Process

- Write material in LaTeX or markdown.
- Create a Chirun link in Canvas.
- Upload your source.
- Get on with your life.

8 Accessibility tips

- When lecturing, don't speak to the board (a deaf friend who relies on lip reading told me this)
- Don't use colour as the sole means of conveying information. (Imagine not being able to see colour how else could you annotate or describe the thing you want to draw attention to?)
- Check contrast for example, I can't see red on black.
- Write alt text or captions for all images. Think about what you need to convey how would you describe the picture over the phone? Omit irrelevant details. Make sure you include all important details.
- Simpler structure is better: making text wrap neatly around a floating image looks nice on paper, but is a knacker to do robustly with different layouts and to provide semantic data. Using the right semantics helps tech tools to present useful structure to the reader.
- Instead of saying "as you can see" or "here", describe what you're talking about.
- Plan for accessibility first, instead of making adjustments on demand. Many students will struggle on their own without asking for help. SSPs don't tell you much.
- Ask for help! There's lots to consider and guidance changes as tech & law change.

9 You can get more information and support from

- The digital learning team: Christian Lawson-Perfect, Chris Graham, Aamir Khan, Laura Midgley.
- University of York site on accessible maths: **bit.ly/eaccess-equations2**