

CSM Signs

We discussed the graphic tools we use for communication on the daily, honing down on signage at CSM due to its commonality and having the most solutions for from our initial brainstorming notes. Wayfinding signage as commonly present graphics within a space, but most of them lack consideration for the visually impaired.

1. Instagram	2. Signs	3. Print Media
<ul style="list-style-type: none"> visual heavy content excludes blind/low-vision image-first (blind rely) on-screen readers auto-generated alt text is too inaccurate or generic no selectable text on text-heavy images no automatic captions on stories/feeds (deaf) voice overs used often sensory overload (neurodivergents) fast scrolling, slash animations (ADHD, Autism) cluttered UI adv. notifications algorithm prioritizes high engagement fast posting gesture-based (motor-impaired users) 	<ul style="list-style-type: none"> blind + visual identity of icons & graphics mental/intellectual can't comprehend meaning of signs deaf: no voice support on digital signs 	<ul style="list-style-type: none"> a lot of images in books with colour/colour-blind people physical disability: not able to interact with something physical cannot distinguish between digital book notes for example

Solutions		
<ul style="list-style-type: none"> blind: custom alt-text for every image test descriptions in captions important text high-contrast (large) diap: auto-caption stickers in stories use video editing tools for captions on reels summary of video in caption neurodiverse: avoid flashing fast-moving visuals labels with warnings "quiet mode" "mute" Anxiety/ADHD: short, structured captions with spacing & emojis schedule posts to reduce pressure Motor-impaired: Web on desktop (Keyboard support) voice control 	<ul style="list-style-type: none"> blind: sign can be touched (braille) or made larger (more contrast) hectic feedback signs (vibrational for direction) AI design for voice interaction code-based audio descriptions 	<ul style="list-style-type: none"> could use multiple images for colour-blind people

Meeting sketches



Existing signs at CSM

GCD Signs

We built on the graphics that existed within GCD studio and redesigned it for wider engagement.



Existing signs in GCD studio

We found that the existing signs in the studio has the following problems:

- The hollow signboard has overlapping parts with flipped text, which affects recognition.
- The font is too small, and the color contrast between some text and the background is too weak.
- They consist entirely of text and lack symbols.
- They are red, which is hard for individuals with colour blindness to detect.

Research on Typography/Typeface for vision impairments

We investigated and analyzed Considerations for Accessible Typography and related fonts, and made the following summary:

Key Considerations for Accessible Typography:

- Fonts for use with persons who have low vision should not have serifs.
- Large x-height: Fonts with taller lowercase letters improve readability.
- Distinct letterforms: Avoid ambiguous characters (e.g., uppercase "l" vs. lowercase "l").
- Non-italic, non-condensed styles: Italic and condensed fonts are harder to read for people with low vision.

Typeface Examples for Accessibility:

- Atkinson Hyperlegible: For people with low vision and color blindness. Features: Unique letterforms to avoid confusion (e.g., "O" and "0" look different). Strong contrast to enhance legibility. Developed by the Braille Institute.
- FS Me: For people with learning disabilities and low vision. Features: Large, open counters. Wide letter spacing for improved readability.

[illegible]

Complete Character Set
335 glyphs per weight

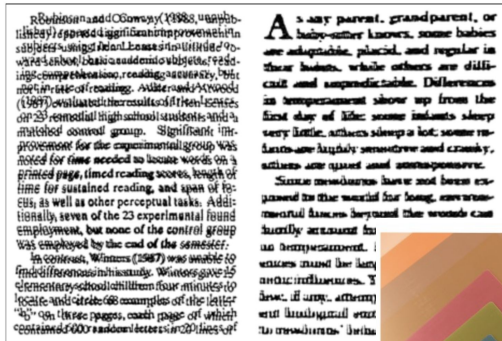
Atkinson
Hyperlegible

Regular / *Italic*
Bold / ***Bold Italic***

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Available weights

Dyslexia



Examples of passages displayed how a child with dyslexia may see



When you think about giraffes, you probably think about their long necks. But did you know that giraffes have long tongues, too? Giraffes' tongues can be up to 50 centimeters long. This is so long, it means giraffes can clean their ears with their tongues!

A passage presented in Dyslexie font. The text in this figure is

We researched dyslexia as a disability due to signage largely being about readability and 15–20% of the population having a language-based disability, of those 80% having dyslexia [International Dyslexia Association 2011b]. Key challenges include:

- Letter confusion: Common mix-ups include "b" and "d," "p", "q", "i" and "l"
- Crowding effect: Too many words close together make reading harder
- Tracking issues: Jumping between lines or skipping words
- Glare sensitivity: White backgrounds with high contrast (e.g., black text on bright white) can cause visual stress

Solutions include:

- Font choice: using sans serif or monospaced fonts without italics. Fonts like OpenDyslexic have been especially designed for dyslexic users
- Increased size for better readability
- Contrast of colours, as well as colour coding with yellow and blue overlays to reduce stress due to visual cortex's being sensitive to certain wavelengths
- Icons to replace text where possible to reduce reading

Testing readability of fonts

ABC Can you see it	ABC Can you see it	ABC Can you see it
*ABC Can you see it	ABC Can you see it	ABC Can you see it
*ABC Can you see it	ABC Can you see it	ABC Can you see it
ABC Can you see it	ABC Can you see it	ABC Can you see it
ABC Can you see it	ABC Can you see it	ABC Can you see it
ABC Can you see it	ABC Can you see it	ABC Can you see it
*ABC Can you see it	*ABC Can you see it	*ABC Can you see it

ABC Can you see it	ABC Can you see it	ABC Can you see it
*ABC Can you see it	ABC Can you see it	ABC Can you see it
ABC Can you see it	*ABC Can you see it	ABC Can you see it
ABC Can you see it	ABC Can you see it	ABC Can you see it
ABC Can you see it	*ABC Can you see it	ABC Can you see it
ABC Can you see it	ABC Can you see it	ABC Can you see it
ABC Can you see it	*ABC Can you see it	*ABC Can you see it

We wanted to determine which font was the most suitable for both dyslexic readers and readers with low vision, so we got subjects to read each font and choose which ones were the clearest. Results indicate that OpenDyslexic font is best.

Arial

Courier

APFont

FS Me

Tiresias

Atkinson Hyperlegible

Open Dyslexic

Arial

Courier

APFont

FS Me

Tiresias

Atkinson Hyperlegible

OpenDyslexic

Gaussian Blur 2px applied

Creating a new typography

We tried three methods to create a new typography.

Firstly, we fully integrated Braille with typography, but emphasized the Braille part. However, we found that this affected readability, which is unfriendly to the target audience.

Then we appropriately reduced the Braille section, significantly improving the readability of the font.

Finally, we attempted to combine standard Braille with glyph forms, but considering the final presentation format, we did not completely overlap Braille with glyph forms.

Aa Bb Cc Dd Ee
Ff Gg Hh Ii Jj
Kk Ll Mm Nn
Oo Pp Qq Rr
Ss Tt Uu Vv
Ww Xx Yy Zz

Aa Bb Cc Dd Ee
Ff Gg Hh Ii Jj
Kk Ll Mm Nn
Oo Pp Qq Rr
Ss Tt Uu Vv
Ww Xx Yy Zz

Aa Bb Cc Dd Ee
Ff Gg Hh Ii Jj
Kk Ll Mm Nn
Oo Pp Qq Rr
Ss Tt Uu Vv
Ww Xx Yy Zz

Testing existing signage

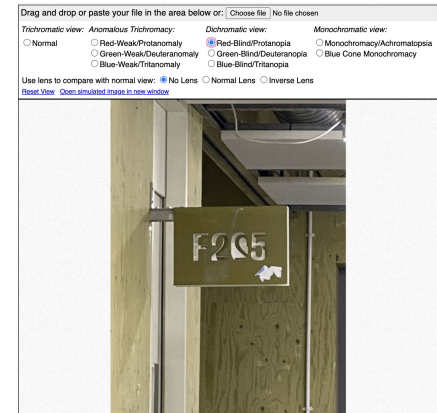
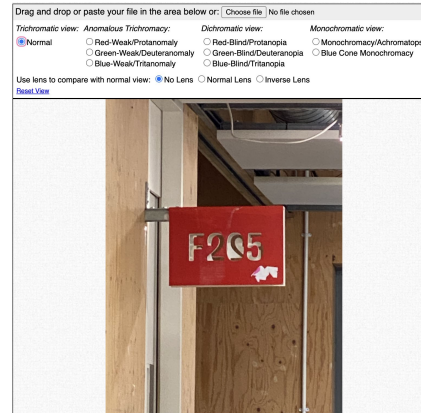
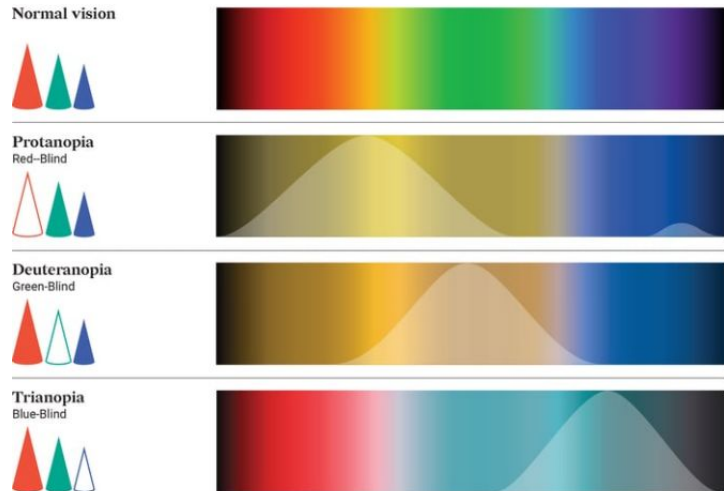
Among color blindness, there are **three common types**:

- Protanopia (red-blind)
- Deuteranopia (green-blind)
- Tritanopia (blue-blind)

There can also be an intermediate state, **color weakness** - when the colors can be distinguished but some of the hue details are lost.

There's also a very rare state is **completely color blind** – it's called complete achromatopsia. In the image on the bottom left, the simulation of what colors can color blind people see is presented.

The image on the bottom right shows how the red color used in the existing signage in the studio can be a hindrance to color blind people.

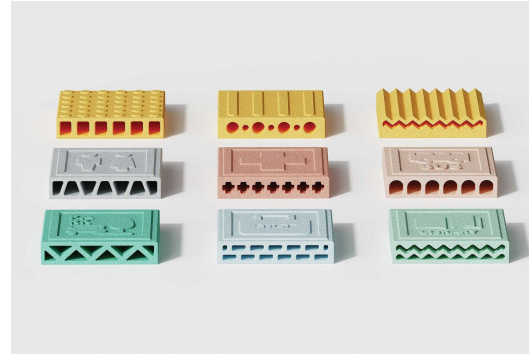


3D signage

For the blind, **touch** and **hearing** are usually used for identification. Therefore, in addition to the changes in color and font, we also considered the 3D part.

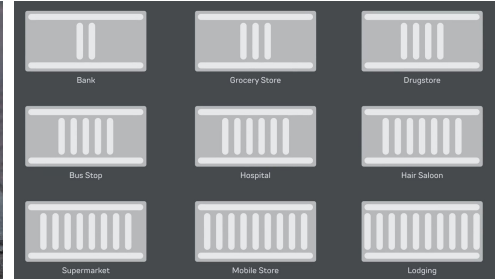
Common 3D signage is generally designed from two aspects:

- **Touchable**-(texture)
- **Audible**-(knock, induction sound device)



Knock-Knock Bricks

The Knock-Knock Bricks have a hollow structure that produces different tones when struck. Blind people can learn about the surrounding public facilities by tapping bricks with their canes, and ordinary people can also obtain visual information from the patterns on the surface.



Sense

Design different textures for different rooms and stick them on the walls to guide the blind to find where they want to go.

Sightwalks

Design specific floor tiles for stores, banks, pharmacies, restaurants, etc. to help blind people identify the type of business or institution they are passing by.

Work Process

During the redesign process, we followed the following standards:

- Use highly contrasting colors
- Use symbols
- Keep our design clean and simple

We chose blue and yellow as the colors of the sign, which have high contrast. The bright yellow is friendly to most color blind people, which improves the sign's recognisability.



#f5b847

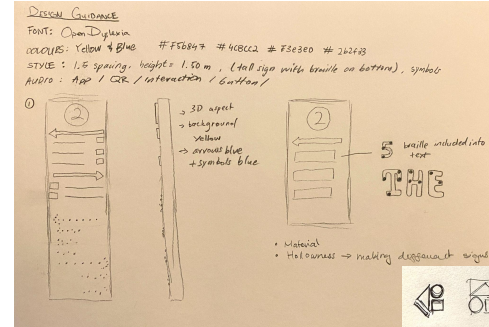


#4c8cc2

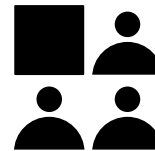
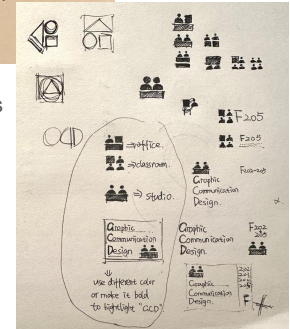
Next, we use simple graphics to create symbols to assist recognition.



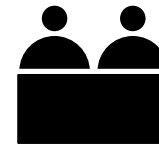
basic graphics



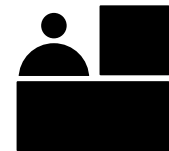
sketches



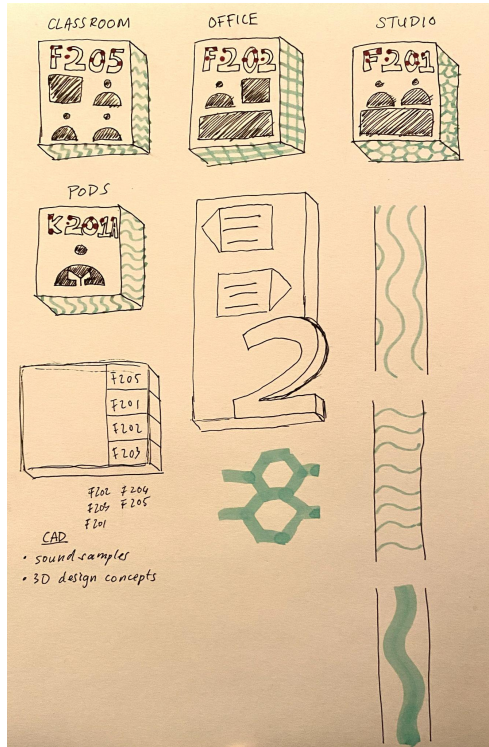
classroom



studio



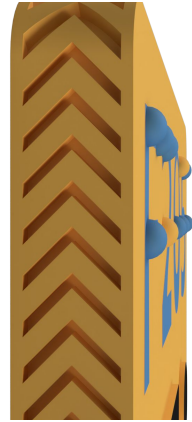
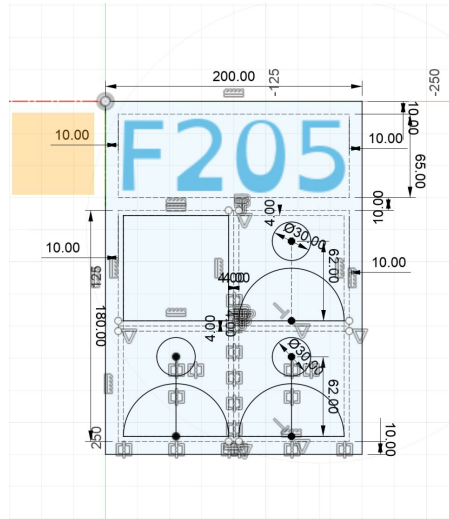
office



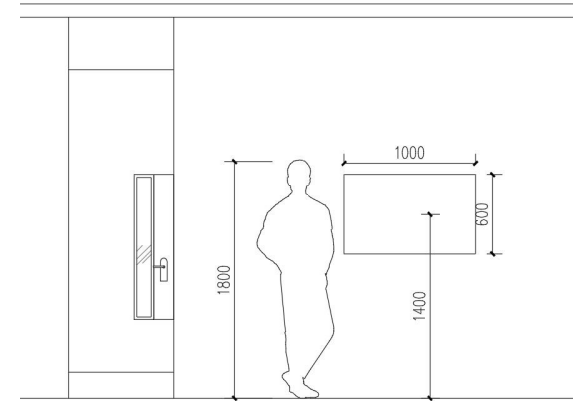
sketch

For a different sign type, the pattern would be placed on the perimeters of the sign, away from the face which would disrupt reading.

- Braille is incorporated in the text, and hidden visually using colour
- Simple and clean design (boarders)
- OpenDyslexic font
- Icon system is used

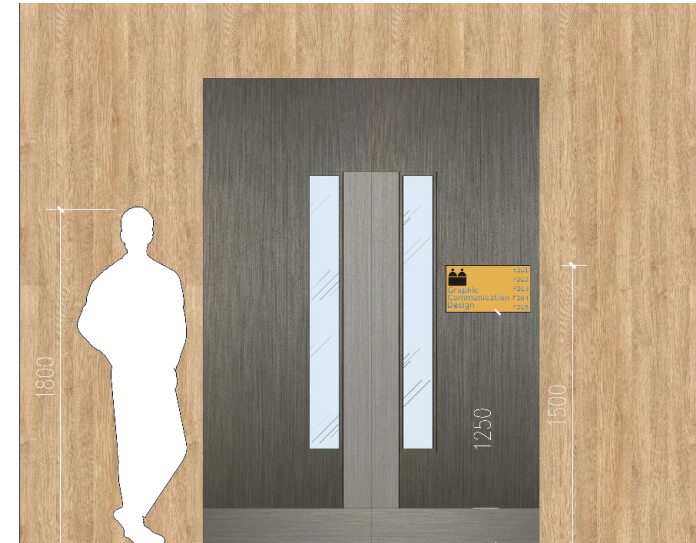


Visual mock-up in GCD spaces



Key considerations when visualising the signs in GCD spaces:

- Placed at a height of 1400mm from the centre of the sign
- Minimum text size of 20pt for small signs and 50pt for large signs
- Icons to stand out
- Depth of 20mm to not obstruct view but provide edge for pattern system



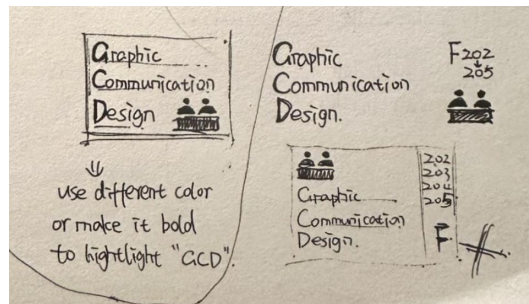
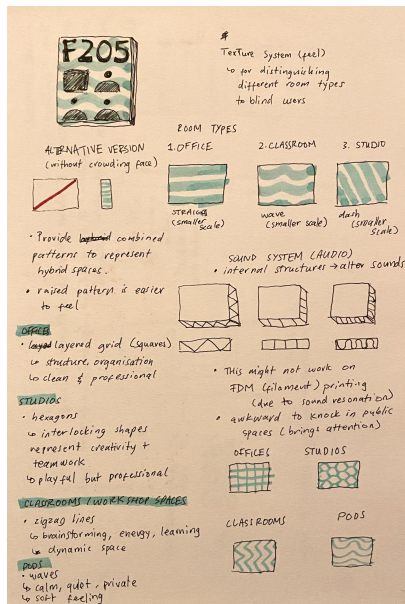
CAD concept design

We designed a texture system for blind individuals to differentiate between room types:

- Office: square grid
- Classroom: hexagon grid
- Studio: chevron
- Pod: waves

Audio (through internal structures) was considered but not chosen because of:

- FDM's limiting sound resonance
- Awkwardness of tapping in public spaces
- Sounds wouldn't be distinguishable enough



sketches

