

Designing for Accessibility: An Introduction to Universal Design for Learning

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THE UNIVERSITY OF BRITISH COLUMBIA

Faculty of Arts



We hope you will leave this session with:

- Reflections on why accessibility matters
- Reflections on accessibility at UBC and Faculty of Arts
- Rationale for how Universal Design for Learning (UDL) support accessibility
- Accommodating the learning needs of the Deaf or hard-of-hearing community
- Technologies and tools for accessibility at Faculty of Arts

Accessibility and Why it Matters



What is Accessibility?

Accessibility for education gives all students equal opportunities to learn.

Designing your instruction and educational materials for accessibility is good design.



Why Does it Matter?

According to [Statistics Canada](#) an estimated one in five Canadians over 15 years old has a disability. This slices through all sectors of our society and is a significant part of every community in our country.



Accessibility at UBC



AMS 2020 Academic Experience Survey

- One-quarter of undergrads at UBC report having at least one disability
- Most common self-identified: mental illness (19%)
- Only 33% of those have registered with the Center for Accessibility
- Only 47% of students with disabilities report feeling a sense of belonging at UBC



UBC Disability Accommodation Policy



UBC LR7 Policy: Disability Accommodation Policy

UBC has a responsibility to:

- provide an inclusive and welcoming environment for Students with Disabilities;
- ensure that eligible Students are not denied admission on the basis of their Disability;
- make its facilities, courses and programs accessible to Students with Disabilities;
- provide reasonable Accommodation to Students with Disabilities to the point of undue hardship;
- provide advice and guidance for Students with Disabilities about the Accommodation process;
- provide information on its academic calendar and website regarding the Accommodation process;
- and ensure that faculty and staff are provided relevant information about UBC's policies and procedures associated with providing Accommodation to Students with Disabilities and are familiar with broader accessibility issues.

UBC Center for Accessibility

Center for Accessibility: Available Accommodations

- note-taking
- sign language interpreting
- extended time to write exams
- distraction reduced environment to write exams
- alternative formats for course materials
- customized exam formats
- adaptive equipment or assistive technology
- relocation of classes
- audio recording of lectures

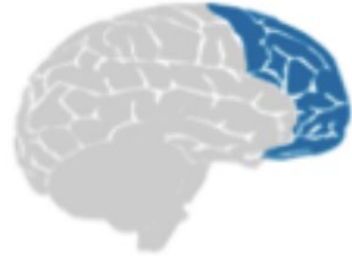


Universal Design for Learning (UDL)



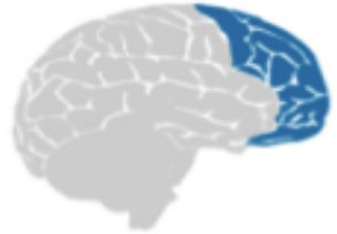
What is Universal Design for Learning

- UDL is a set of principles for curriculum development that give all individuals equal opportunities to learn.
- UDL is a research-based set of principles to guide the design of learning environments that are accessible and effective for all.
- The framework was first defined by Anne Meyer and David H. Rose, Ed.D. of the Harvard Graduate School of Education and the Center for Applied Special Technology (CAST) in the 1990s.



UDL Foundations: Brain-Based Learning Networks

- **Recognition Networks:** The “**What**” of Learning
How we gather facts and categorize what we see, hear, and read. Identifying letters, words, or an author’s style are recognition tasks.
- **Strategic Networks:** The “**how**” of learning
Planning and performing tasks. How we organize and express our ideas. Writing an essay or solving a math problem are strategic tasks.
- **Affective Networks:** The “**why**” of learning
How learners get engaged and stay motivated. How they are challenged, excited or interested. These are affective dimensions.

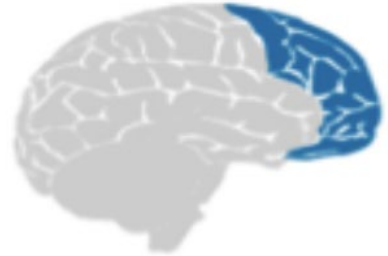


UDL Principles for Inclusive Instruction

- **Provide multiple means of Representation**
For resourceful, knowledgeable learners, present information and content in different ways.
- **Provide multiple means of Action and Expression**
For strategic, goal-directed learners, differentiate the ways that students can express what they know.
- **Provide multiple means of Engagement**
For purposeful, motivated learners, stimulate interest and motivation for learning.



Recognition Networks



Strategic Networks



Affective Networks

Describe Your Visuals



Figure 3-3: This image displays the results of a field test conducted in 1942 to show the ability of phosphate to encourage plant growth. A phosphate deficiency reduces plant production.
Source: The Tennessee Valley Authority

ALT Text:

Figure 3-3: This image displays the results of a field test conducted in 1942 to show the ability of phosphate to encourage plant growth. Two signs designate the experimental treatments.

The sign on the left reads "Starved by lack of plant food". Crops here are stunted or dead. The sign on the right reads "Nourished on phosphate and lime". Crops are healthy and show vigorous growth.

Describe Your Media

A transcript provides students with equivalent information to the audio and video content.



Describe Your Hyperlinks & Use Headings

Paragraph

Heading 1

Heading 2

Heading 3

Heading 4

Heading 5

Heading 6

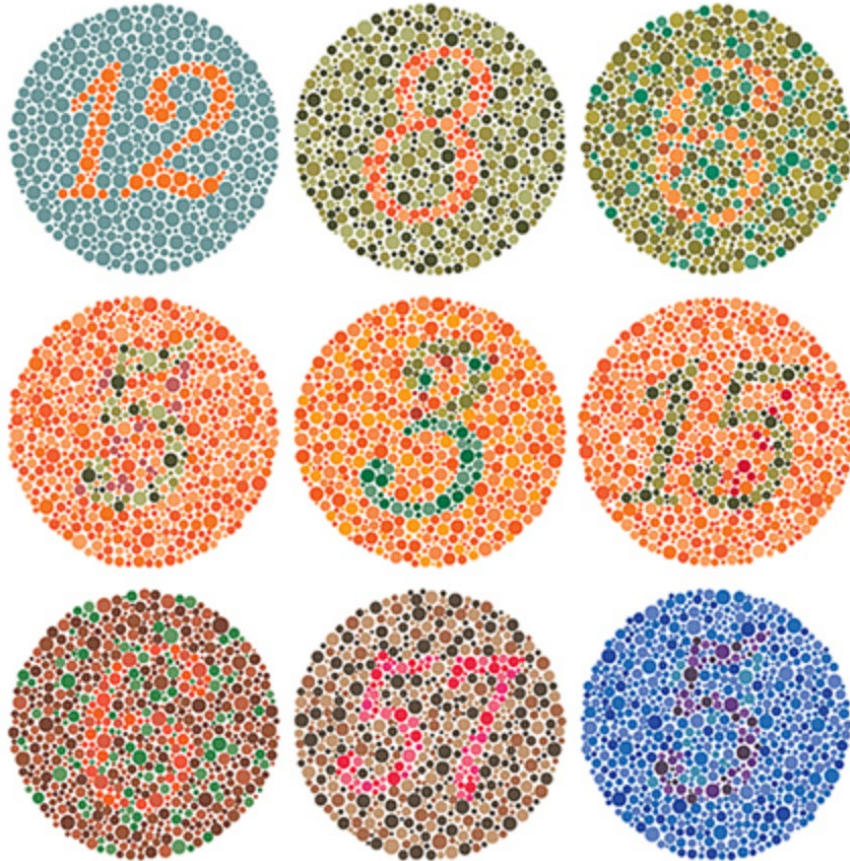
Preformatted

Click [here](#) for more information” has a less clear link than “[Information about Open Education at UBC is available online.](#)”

Accessibility at Faculty of Arts



Make Your Text Readable



Font Size and
Colour Contrast

Accessible PPT slides for Colour Blind Students

- What do your slides look like to colour blind students?
- What problems can arise for colour blind students?
- Quick tips for teachers

‘Green’ color blindness (a.k.a. ‘red-green blindness’)

- Affects 6% of males, 0.45% of females
- Deuteranopia = ‘blind’ to the color green
- Deuteranomaly=low capacity for seeing shades of green

- Red, green, orange --> all look yellowish, brownish



Full spectrum



Languages of India

Red = IE - Green = Dravidian

- Sanskrit
- Malayalam
- Tamil
- Hindi
- Sinhala
- Kannada
- ...

Deuteranopia

(1% of males in your class)



Languages of India

Red = IE - Green = Dravidian

- Sanskrit
- Malayalam
- Tamil
- Hindi
- Sinhala
- Kannada
- ...

Deuteranomaly

(5% of males in your class)



Languages of India

Red = IE - Green = Dravidian

- Sanskrit
- Malayalam
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- Hindi
- Sinhala
- Kannada
- ...

Blue-Yellow color blindness:

- Rare: only affects 0.01%
- Often due to injury, alcoholism, solvents.
- Tritanopia = 'blind' to the color blue
- Tritanomaly = low capacity for seeing some shades of blue

- Blues, Greens --> both look bluish-greyish
- Yellows --> look pinkish





Full spectrum



Languages of India

Blue = IE - Green = Dravidian

- Sanskrit
- Malayalam
- Tamil
- Hindi
- Sinhala
- Kannada
- ...

Tritanopia

(a very few of your students)



Languages of India

Blue = IE - Green = Dravidian

- Sanskrit
- Malayalam
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- ...

Tritanomaly

(a very few of your students)



Languages of India

Blue = IE - Green = Dravidian

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- ...

Total color blindness:

- Very rare, less than 0.003% of people
- Rod monochromacy – no colours, typically have other vision problems
- Cone Monochromacy – no or very limited colours (only one type of cone) but otherwise normal vision

- Everything --> looks greyish



Full spectrum



Languages of India

Blue = IE (Indo-Aryan) -
Green = Dravidian
Red = IE (Other)

- Sanskrit
- Malayalam
- Tamil
- Hindi
- Sinhala
- Indian English

Rod Monochromacy

(a very very few of your students)



Languages of India

Blue = IE (Indo-Aryan) -
Green = Dravidian
Red = IE (Other)

- Sanskrit
- Malayalam
- Tamil
- Hindi
- Sinhala
- Indian English

Blue Cone Monochromacy

(a very very few of your students)



Languages of India

Blue = IE (Indo-Aryan) -
Green = Dravidian
Red = IE (Other)

- Sanskrit
- Malayalam
- Tamil
- Hindi
- Sinhala
- Indian English

Quick tips:

- Never JUST color-code
- Add shape-symbols, textures, font differences, hue differences.
- Avoid certain color combinations:
 - Green + Any other color
 - Blue + Purple, Grey



Full spectrum



Languages of India

IE (Indo-Aryan)

Dravidian

IE (Other)

- **Sanskrit** (IE -IA)
- **Malayalam** (D)
- **Tamil** (D)
- **Hindi** (IE-IA)
- **Indian English** (IE)

Green- Blind/Deuteranopia (5% of your male students)



Languages of India

IE (Indo-Aryan)

Dravidian

IE (Other)

- **Sanskrit** (IE -IA)
- **Malayalam** (D)
- **Tamil** (D)
- **Hindi** (IE-IA)
- **Indian English** (IE)

Blue Cone Monochromacy (a very very few of your students)



Languages of India

IE (Indo-Aryan)

Dravidian

IE (Other)

- **Sanskrit** (IE -IA)
- **Malayalam** (D)
- **Tamil** (D)
- **Hindi** (IE-IA)
- **Indian English** (IE)

Resources for Color Design:

- <https://wearecolorblind.com/>
- <https://evopt.co/expert-tips-on-designing-for-color-blindness-from-a-color-blind-designer-infographic/>
- <https://www.color-blindness.com/coblis-color-blindness-simulator/>

Communicating with members of the Deaf community as a non-signing person

- Practical resources for getting an interpreter
- Strang's one tip

Resources for ASL meetings:

- For live meetings/classes, you need to book a professional interpreter
- UBC supports this, but you need to book well in advance
- To book an ASL interpreter at UBC:
<https://webforms.students.ubc.ca/access/captioning-sign-language>
- Phone meetings are also possible, much easier to book

Strang's One Tip as a non-signing person:

*Look at the person you are having a conversation with
(NOT at the interpreter)*

See Nigel Howard's discussion in the [recent ubc arts news article](#) on making higher education accessible

<https://www.arts.ubc.ca/news/making-higher-education-more-accessible-six-tips-from-arts-faculty-and-staff/>



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Accessibility of Technologies and Tools at Faculty of Arts



Live Demo of:



1. the Accessibility Checker in Canvas
 - a. Helps with readable texts
 - b. Makes sure images and the alt texts are accessible
 - c. Checks the sequential of headings
 - d. Verifies the accessibility of tables

2. live transcript within Zoom
 - a. Adds description to your synchronous content

1. ordering captions for Kaltura videos
 - a. Adds description to your asynchronous media content
 - b. Allows accurate transcript of your audio and video content

1. CLAS
 - a. Collaborative annotation
 - b. Video/audio feedback and comments



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