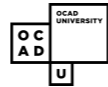
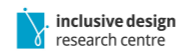


# Designing Inclusive Learning Inclusively

Caren Watkins  
Inclusive Design Research Centre  
SNOW: Inclusive Learning and Education  
OCAD University





Thank you Curriculum Developers Affinity Group for the opportunity to talk about inclusive design. My goal today is to hopefully give you an understanding of inclusive design and how it can can impact education by designing with and for those who are often marginalized and not considered in the design of services, products or systems.

I'd like to acknowledge the people I've worked with and continue to learn from in communities and schools, and at conferences like this, and at the IDRC.

I'm an artist, a designer, an educator, a life long learner, a parent, a researcher, an advocate.

What I'm not is a scientist, computer or otherwise. I value science but today I will be talking about the value of the perspective of those not included.

We plan to have a few minutes for a chat afterward so you may want to remember a couple of things that stick with from my talk. Perhaps something that reminds you of a moment, person, experience, frustration, success you had...

If you need to stand up and stretch, take a break outside, know that I'm cool with that.

Image of small sculpture of a person's head with their tongue sticking out made by Caren.

**Inclusive Design** is design that considers the **full range of human diversity**—ability, language, culture, gender, age and other forms of human difference.

Inclusive Design is design that considers the full range of human diversity—ability, language, culture, gender, age and other forms of human difference.

We are **dynamic** individuals, our contexts and situations are constantly changing—they change within an hour, a day, a month.

I'm not simply a designer and mom. I'm a designer with arthritis, I'm a parent to two kids with varying needs that informs how I need to plan my day: it needs to be flexible so I can be available to support and advocate as the need arises.

We may find ourselves suddenly disabled by a broken arm or being exhausted from caring for an aging parent over the weekend—a disability can be permanent or episodic, visible or invisible, it can be physical, cognitive or sensory.

**Inclusion is “a dynamic approach to responding positively to pupil diversity and of seeing individual differences not as problems, but as opportunities for enriching learning”**

UNESCO’s Guidelines for Inclusion:  
Ensuring Access to Education for All

UNESCO’s (United Nations Educational, Scientific and Cultural Organization) Guidelines for Inclusion: Ensuring Access to Education for All views inclusion as “a dynamic approach to responding positively to pupil diversity and of seeing individual differences not as problems, but as opportunities for enriching learning”

**Dynamic** approach : we are all dynamic and ever-changing therefore we need dynamic and agile approaches

**Individual** differences : we are unique, there is no one else like us

**Opportunities** for enriching learning : it’s the differences that can enrich learning



# Rethinking disability



Inclusive Design rethinks disability and moves away from the medical model which defines disability as a trait; something that is usually permanent and limiting. And often viewed as deficit based. Can't do this or can't do that.

# Rethinking disability

A  
**mismatch**  
between the  
**individual**  
and the  
**environment**

In contrast, an inclusive design approach is one that perceives disability as a **mismatch between our needs and the design features of a product, environment, system or service.**

# Accessibility is...

The **ability of the environment**  
to **meet the needs of the individual**

It shifts our perspective such that we understand the mismatch to be solvable through design.

Accessibility is the ability of the environment to meet the needs of the individual.

The goal is to correct the mismatch through **design with those** not able to use the existing product.

**Design with (and not for)** those not able to use the existing product is practicing the disability community edict: nothing about us without us

# Three dimensions of Inclusive Design

1. Recognize, respect, and design for human uniqueness and variability.

So the three dimensions of Inclusive Design include:

1. Recognize, respect, and design for human uniqueness and variability.

# Three dimensions of Inclusive Design

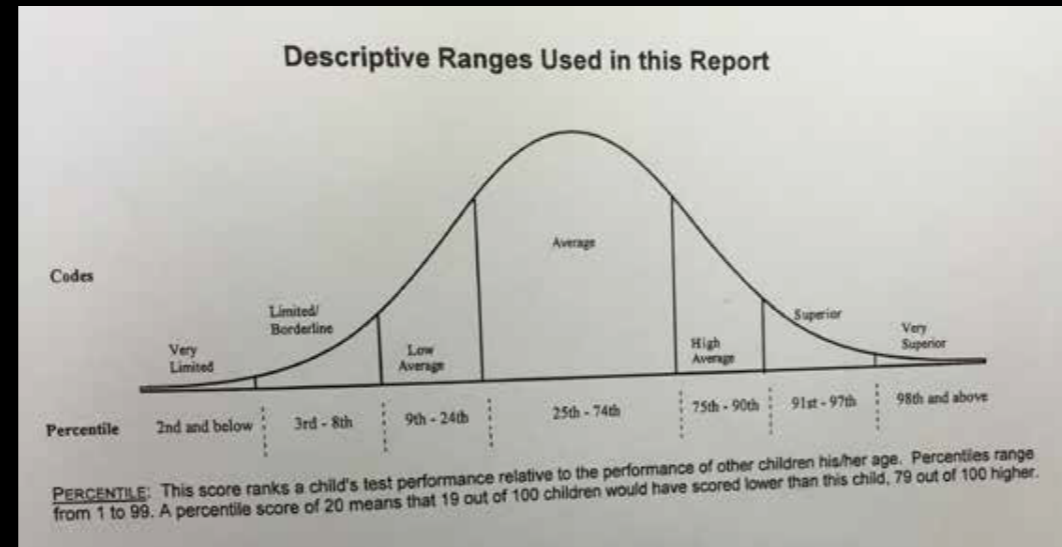
1. Recognize, respect, and design for human uniqueness and variability.
2. Use inclusive, open & transparent processes, and co-design with people who have a diversity of perspectives, including people that can't use or have difficulty using the current designs.

2. Use inclusive, open & transparent processes, and co-design with people who have a diversity of perspectives, including people that can't use or have difficulty using the current designs.

# Three dimensions of Inclusive Design

1. Recognize, respect, and design for human uniqueness and variability.
2. Use inclusive, open & transparent processes, and co-design with people who have a diversity of perspectives, including people that can't use or have difficulty using the current designs.
3. Have broader beneficial impact.

3. Have broader beneficial impact. Sharing designs and having them open to all can trigger a cycle of broader inclusion



I'd like to talk a bit about structures in identifying and evaluating and codifying individuals.

The image here is from one of the items used to evaluate ability in the school system for one of my kids. I believe this may have been used for a cognitive evaluation. Average in the middle, one end is labeled "very superior" and on the other end "very limited". The two ends are relative to the middle. This is from 2014.

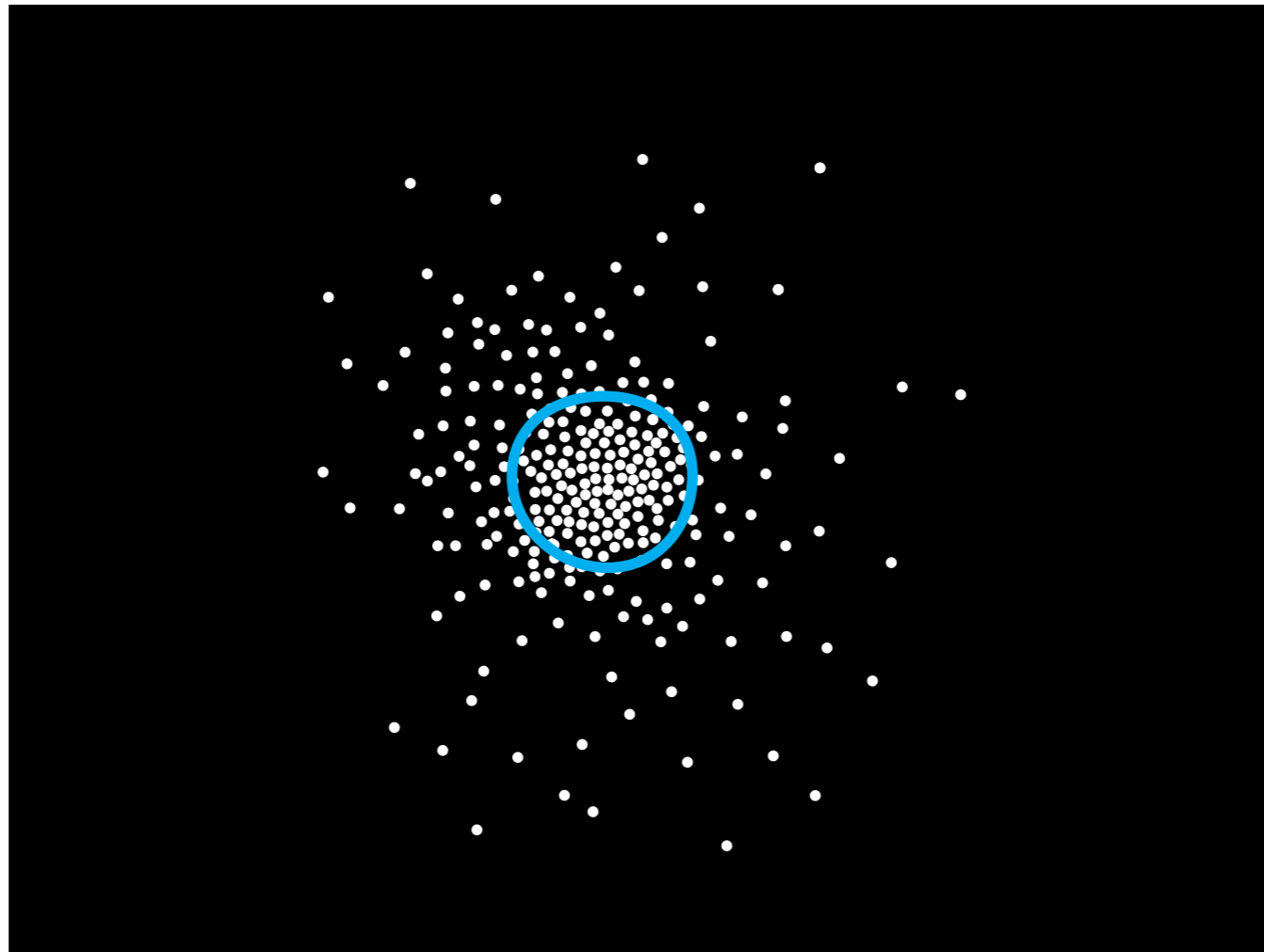
The evaluation plotted a specific function in one extreme end. Another evaluation separate from this one plotted on the other extreme end. And there were other evaluations as well that plotted in various places along this linear evaluation structure. What was most interesting was when I considered all these evaluation results together there was a lovely firework of differences making up a wonderfully unique kiddo.

Yet I was seeing that education design seemed for the most part to be designed for the "average".

My point is that there is a realness to the diversity of individuals. These evaluations are based on an average and happen at a fixed time in someones day, in someones week, in someones life which making the identifications specific to that particular time and place and is, therefore, a static evaluation.

Tod Rose writes in his book *The End of Average* that "our schools and businesses are designed to evaluate and promote talent based upon the mythical notion of the average person" "a one-size-fits-all model that ignores the true nature of our individuality"

What if we take this linear approach and look at it a little differently...maybe from overhead.



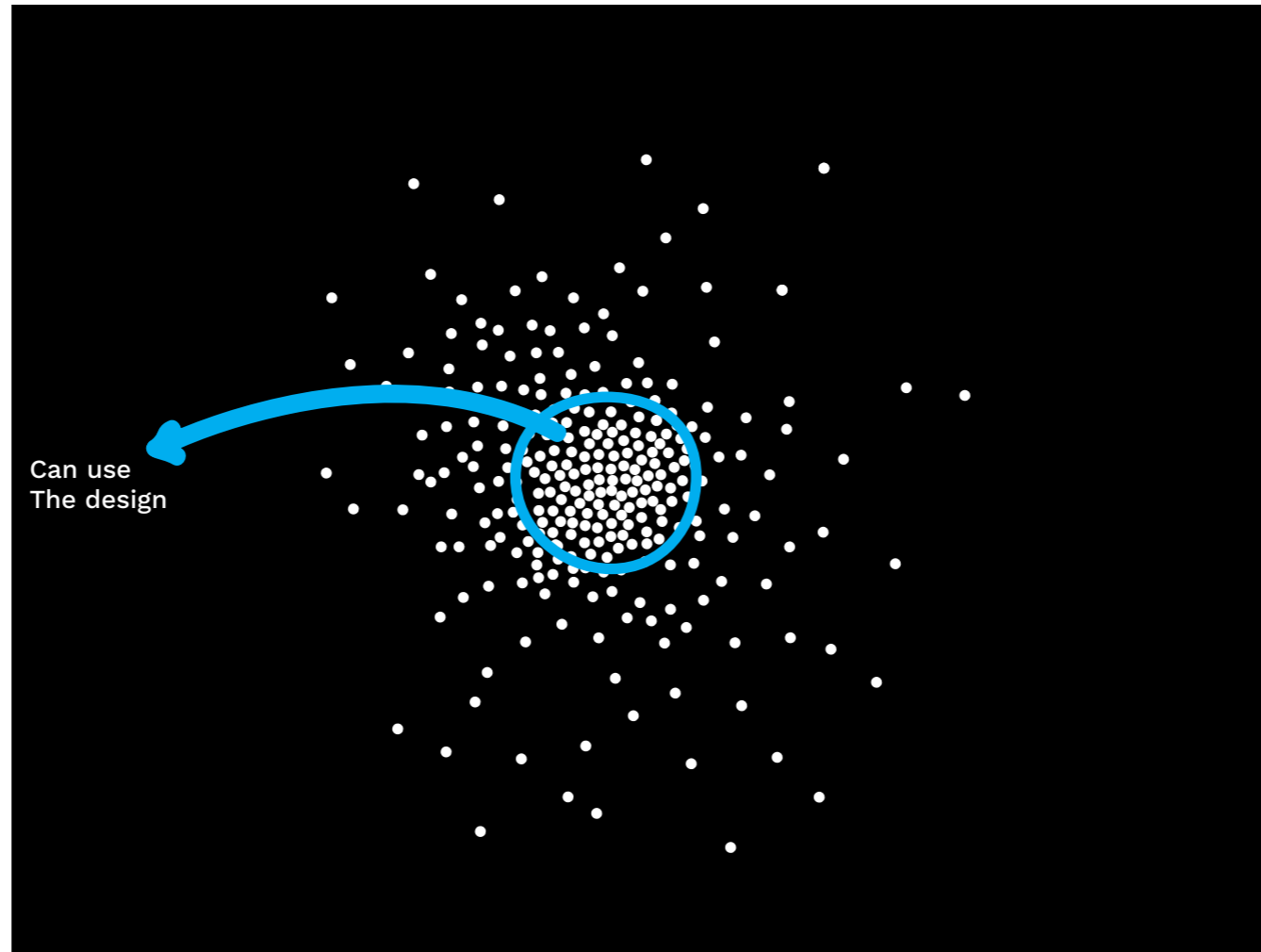
We can look at this as representing one person in a particular context.

With the hypothetical average in the centre showing how most individuals stray from the average in some facet of their needs or goals.

We can also look at this burst as representing a whole bunch of folks and their needs and goals in a particular context. The context could be a science lecture, an online learning module with videos, a timed exam....

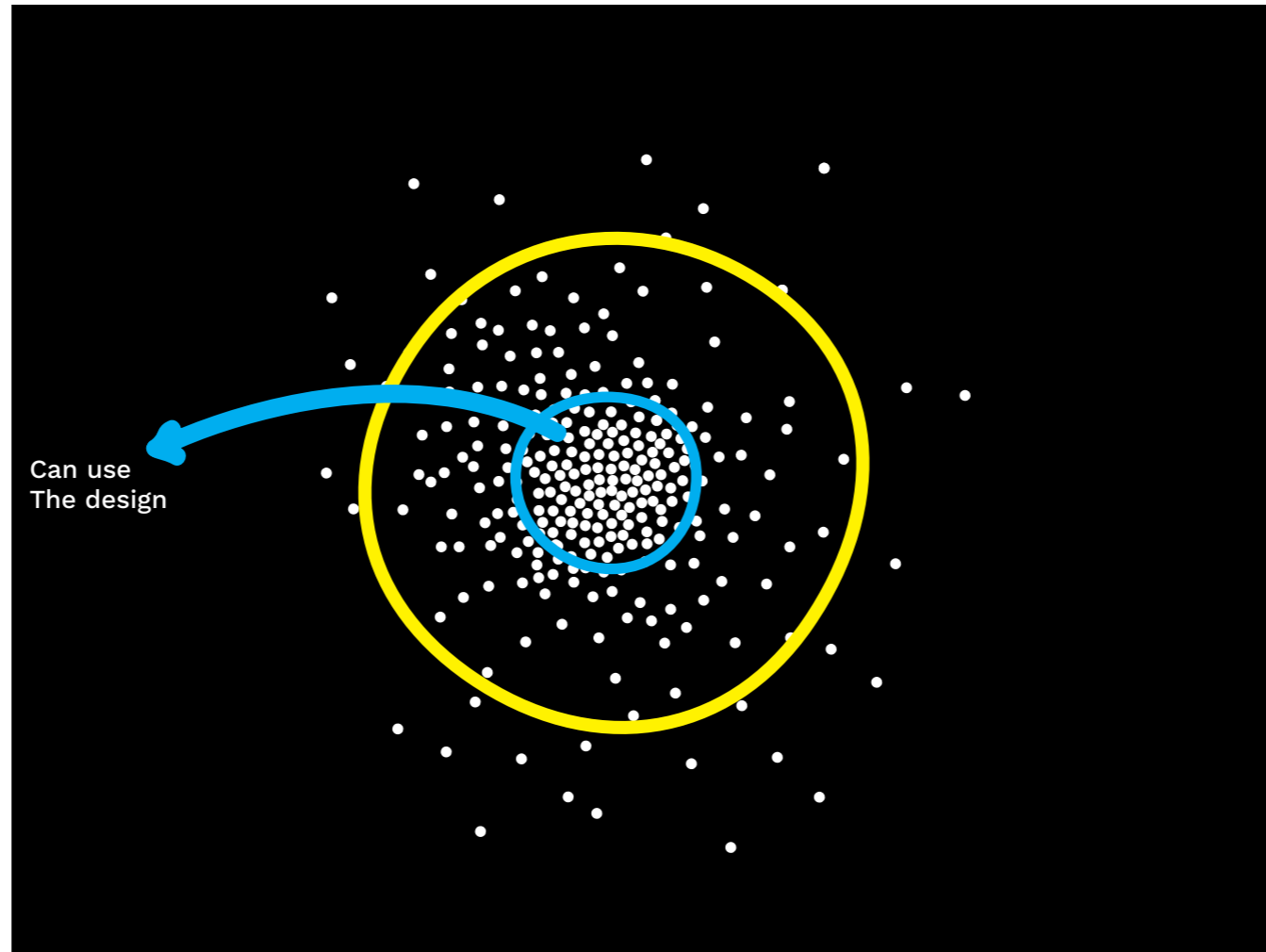
So the circled area becomes ...





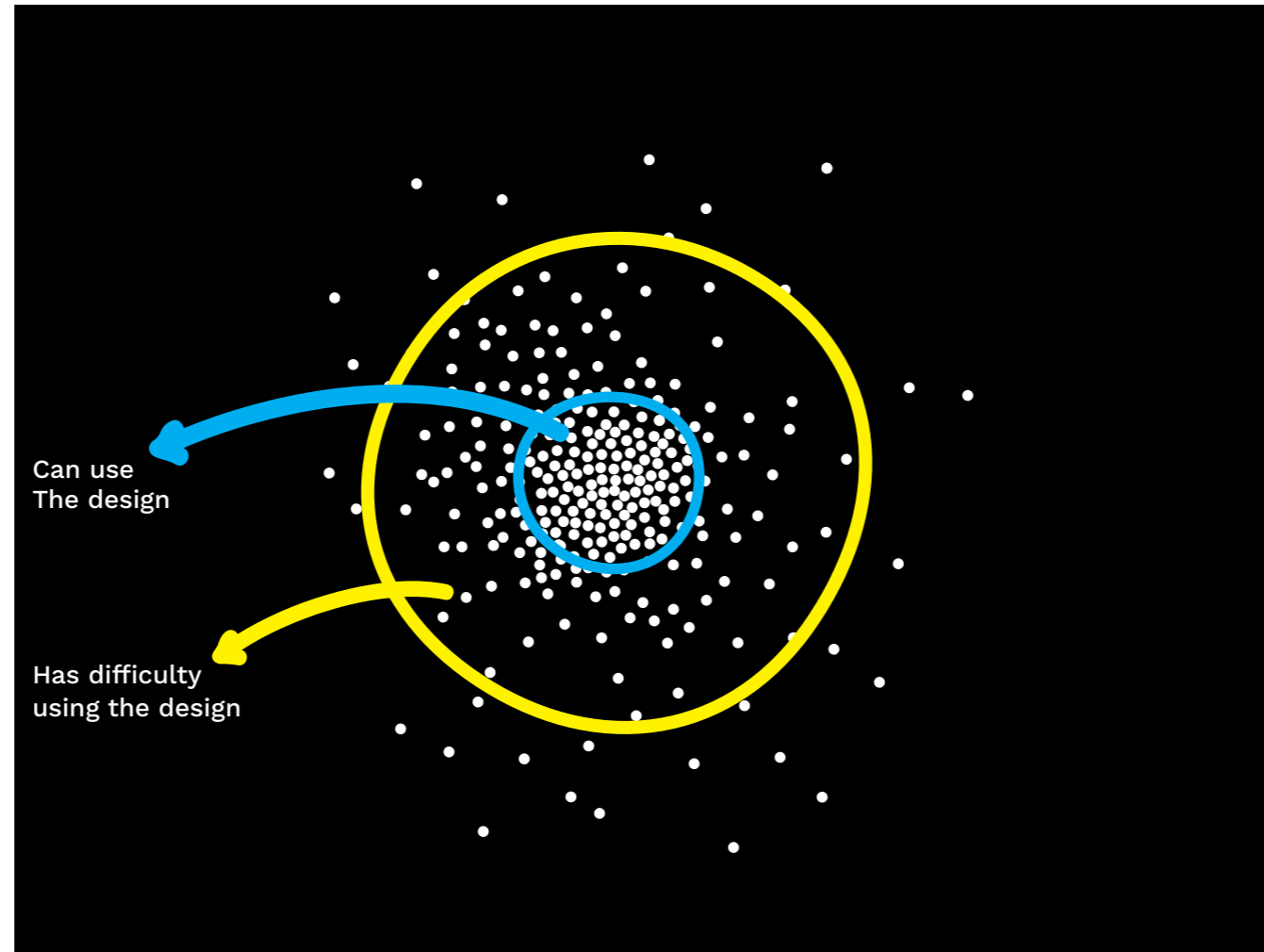
... the folks who can use the design in that context.

Quote from my kiddo when I was reviewing the presentation with them: these are “the people who don’t need accommodations. [these] people find things easy and take a shorter amount of time to do something”



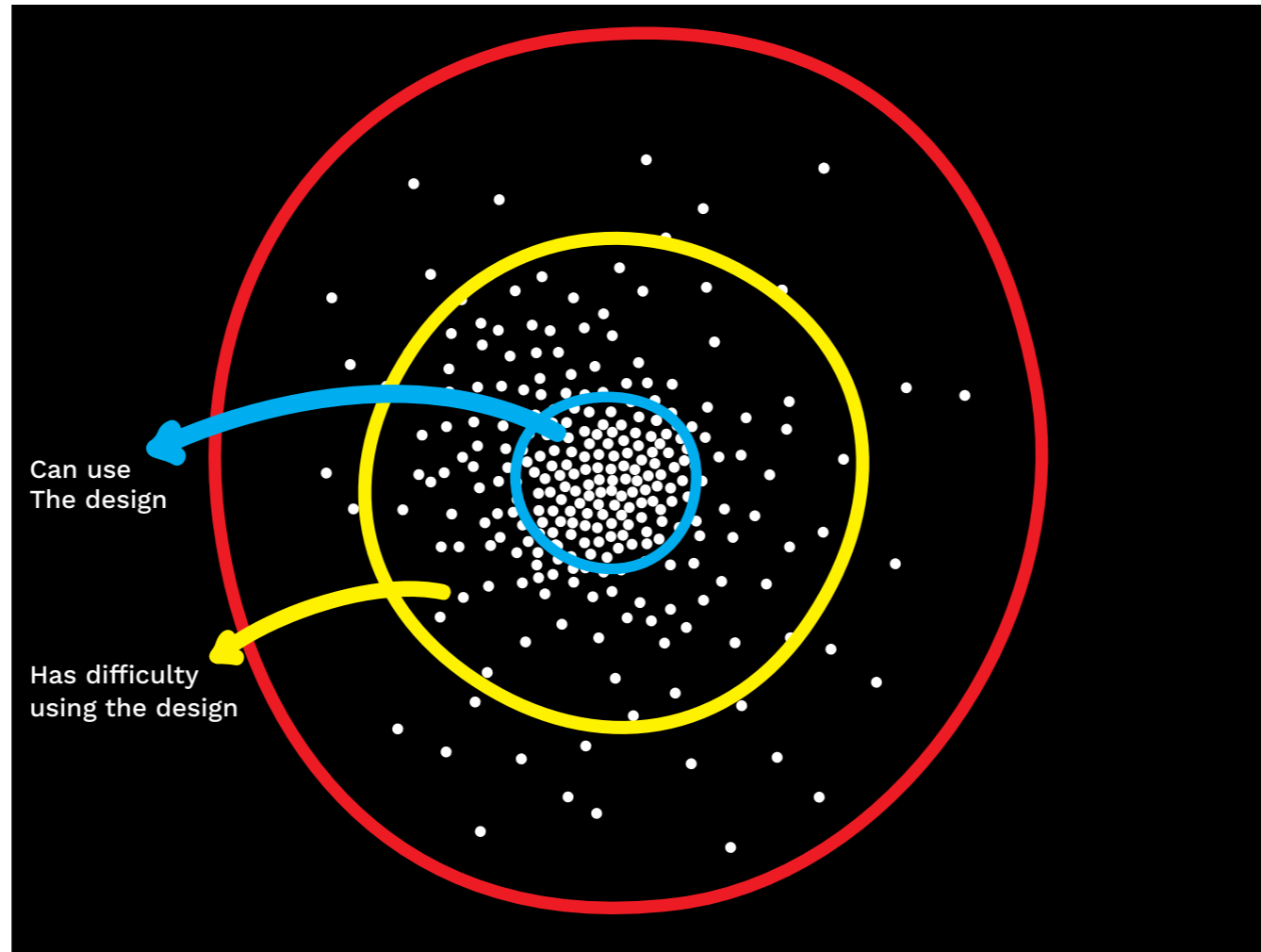
Can use  
The design

we radiate out to the next layer of folks and...

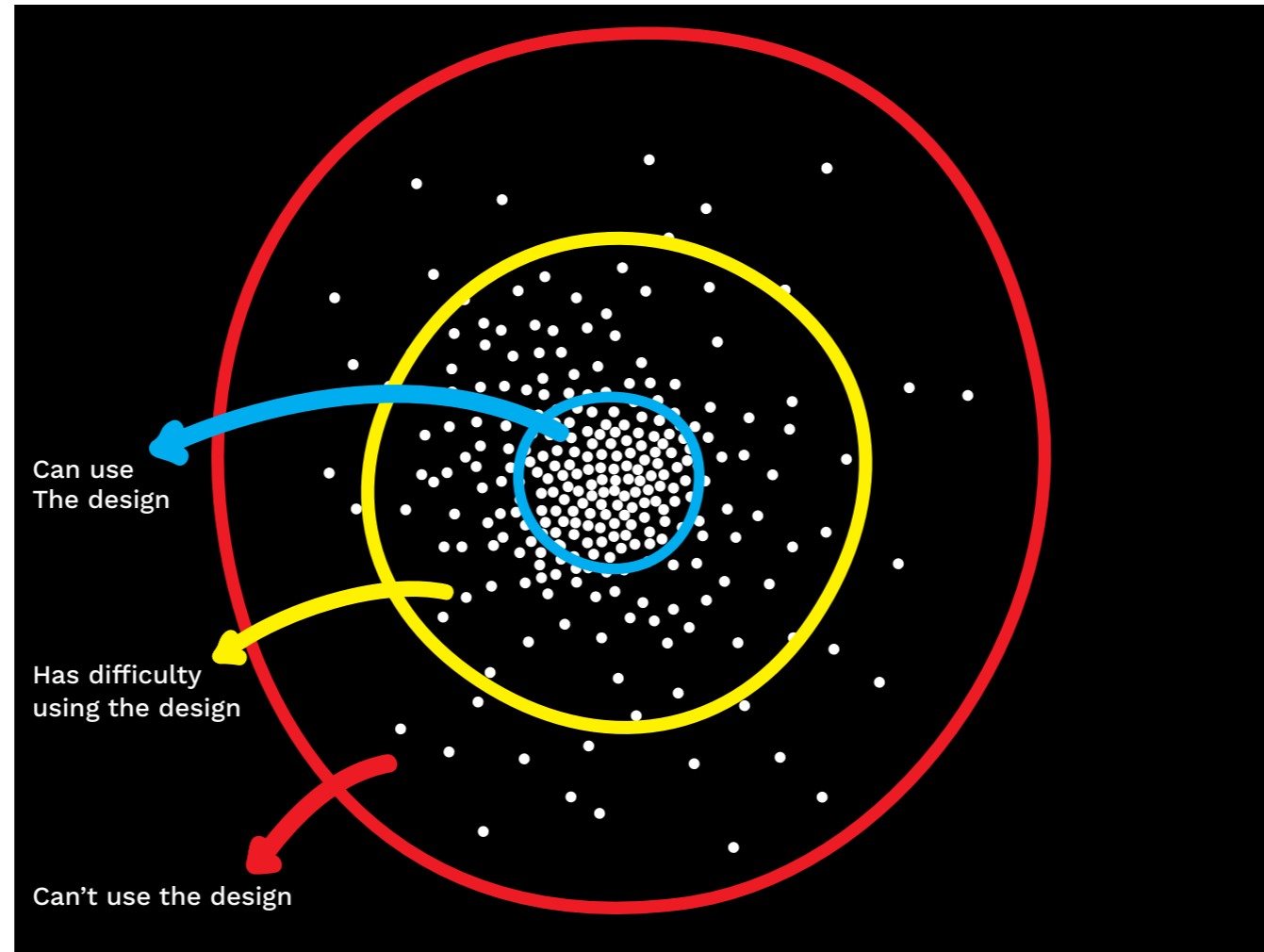


the design becomes difficult to use.

Quote from my kiddo when I was reviewing the presentation with them: "in order to succeed people need to accommodate but not very many people do"



and then when we radiate out to the edges...



these are the folks that can't use the design.

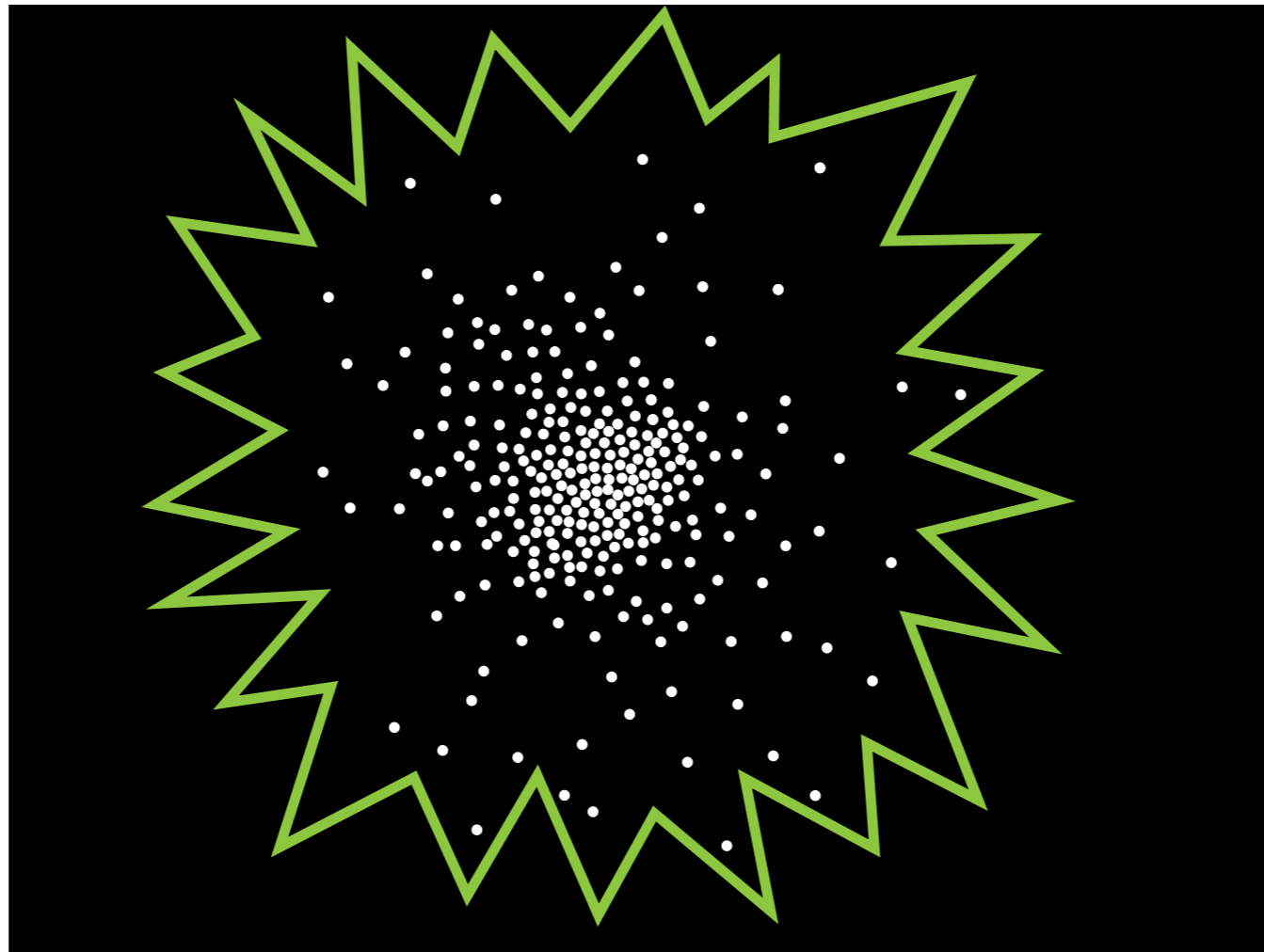
Quote from my kiddo when I was reviewing the presentation with them: "Least amount but they don't matter any the less. Often with the least amount of people or the minority they often get looked at less. But it affects those who need a computer or even needs someone to come in everyday to help them with stuff but that doesn't always happen."

To be inclusive is to design so diversity can learn side by side with equity.

Equity is not equality but rather it is fairness.

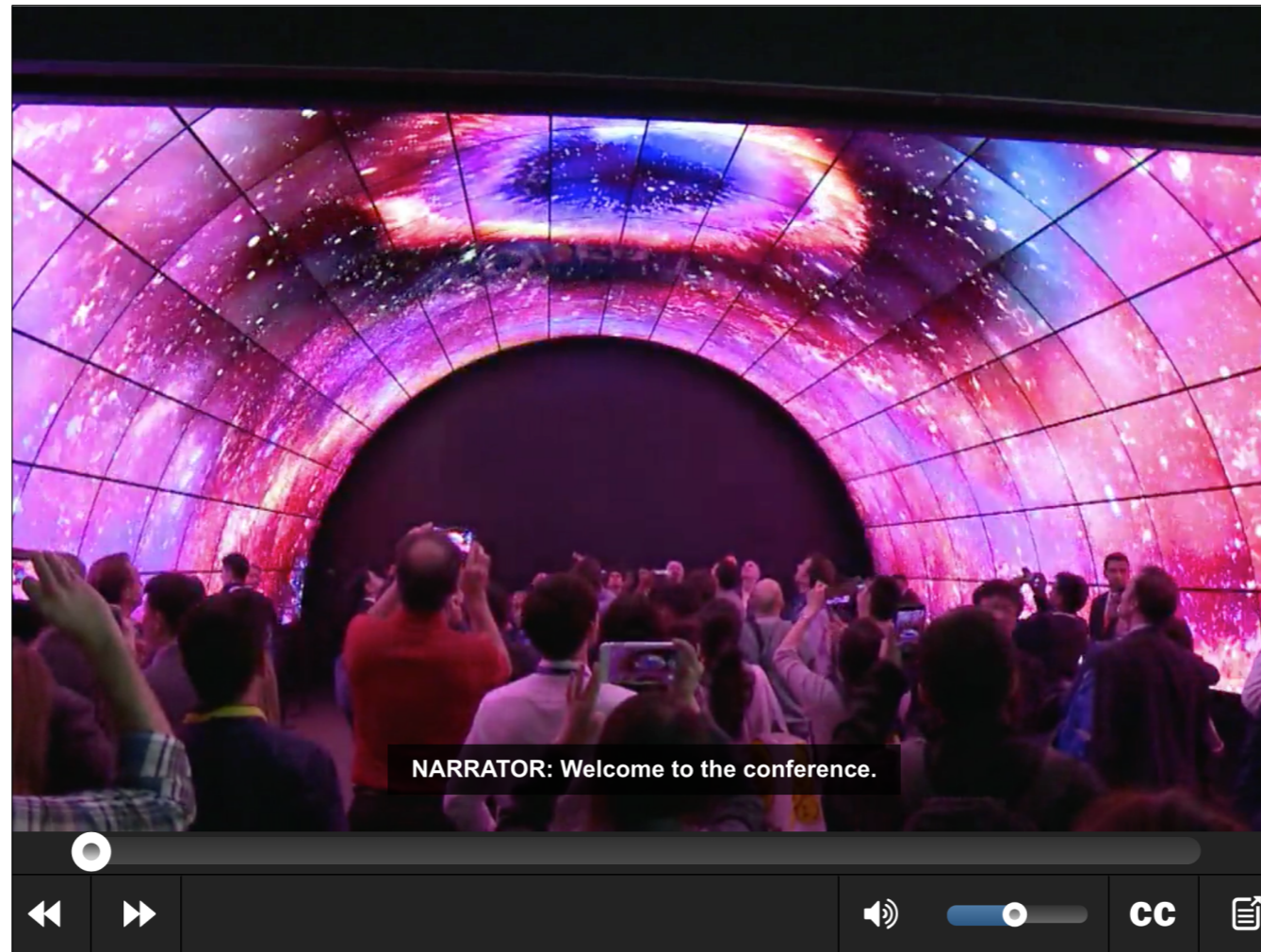
Diversity is quantitative representation while inclusion is the qualitative participation of the representation.

A question to ask is Who did I leave behind in this design?...and to be constantly asking this question



What if we design with those on the edges, the outliers, the jagged edge of extreme difference.

Design from the perspective of individual experiences on the edges.



Let's consider video captioning.

Captioning is the display of text on screen that represents the audio in a video for example  
Was designed for deaf and hard of hearing to be able to access the meaning of the audio

But where did the idea of captioning come from? Not the company that worked on the digital application for auto generated captions found on YouTube, or the organization that researched best practices in caption layout on the screen.



*From Biographical data of Emerson Romero by By Alejandro Oviedo <http://www.cultura-sorda.org/emerso-romero-actor-sordo-cubano/>  
Photo caption: Emerson Romero, accompanied by the also Cuban deaf actress Carmen de Arcos, in a scene from "Great Guns" (1926).  
Photo: Courtesy of Gallaudet Archives.*

Emerson Romero, a deaf actor during the silent film era.

When films became talkies in the late 1920s he lost his job—he also wasn't able to hear "talkies" so he could no longer enjoy a film.

Hearing people, the majority, didn't need words on the screen to describe what was happening, so they weren't considered in the design of "talkies".

The story is Romero acquired some sound motion pictures and spliced in the dialogue or explanatory text in the same fashion as the old "silents."

The point here is ideas come from people, their story, their individual experiences, those who can't use a design.

From Biographical data of Emerson Romero by By Alejandro Oviedo <http://www.cultura-sorda.org/emerso-romero-actor-sordo-cubano/>

Photo caption: Emerson Romero, accompanied by the also Cuban deaf actress Carmen de Arcos, in a scene from "Great Guns" (1926). Photo: Courtesy of Gallaudet Archives.

Captions are now widely used and in a recent study from Oregon State University that asked over 2 000 adult students how they used captioning revealed broader benefits.



- 71% of students without hearing difficulties use captions at least some of the time
- 75% of students that use captions said they use them as a learning aid—to help them focus was the most common reason they used captioning
- 6% said they used them as a disability accommodation

*2016 Oregon State University study  
<https://www.3playmedia.com/resources/industry-studies/student-uses-of-closed-captions-and-transcripts/>  
2k adult students*

71% of students without hearing difficulties use captions at least some of the time

75% of students that use captions said they use them as a learning aid—to help them focus was the most common reason they used captioning

6% said they used them as a disability accommodation

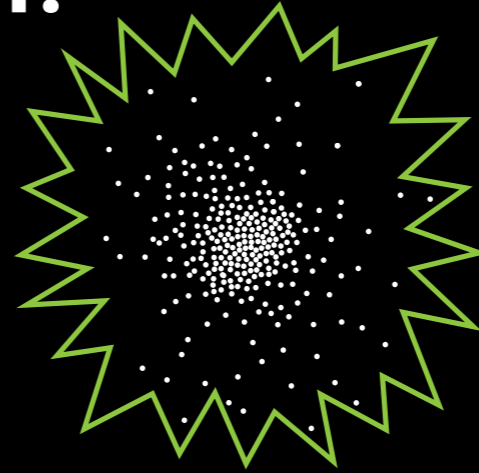
The proverbial 6 percent that impacted 75%

This is broader beneficial impact

2016 Oregon State University study

<https://www.3playmedia.com/resources/industry-studies/student-uses-of-closed-captions-and-transcripts/>

**Who is being pushed to  
the edges in your  
curriculum design?**



Who is being pushed to the edges in your curriculum design? Those are the people to invite to the table to co-design a more inclusive curriculum.

# **Some on the ground examples of designing for the edges in the classroom**

- **Being curious, listening, hearing learners perspective**
- **Recasting projects**
- **Finding solutions to prescriptive and limiting education resources**

Some on the ground examples of designing for the edges in the classroom based on my experience of practicing inclusive design.

Being curious, listening, hearing learners perspective

Recasting projects

Finding solutions to prescriptive and limiting education resources

# The Chicken and the Egg

Parenting children with multiple exceptionalities through reflection



[Home](#) [About](#)

[← Non-prescriptive Learning and Pumpkin Carving](#)

[Lessons in hockey lessons →](#)

## The midnight co-design

Posted on [January 11, 2016](#)

I heard little footsteps come down the stairs at 11pm last night. Moments later a little face peeks into my office: Mommy, I can't sleep.

Not an unusual scenario for parents. Nevertheless, what I have come to learn from the many late night chats with my child when he can't sleep, is what his worries and wishes are.

This particular night we chatted about expectations at school and how learning and content was disseminated. These are big pain points for them. In their gifted classroom, children are given modules to work on over a number of weeks, sometimes up to six weeks long. The new module topic had to be about Canadian Heritage and the students were to build their presentation from topic selection to presentation. The stakes were high for my child because the result was to be displayed in the gym amongst many other student work—and there would be judging. Judging to determine who would move on to the next level,

Tweets by [@ThisisCaren](#)

[Caren Watkins Retweeted](#)

 **jutta treviranus**  
[@juttatrevira](#)

Hearing the circumstances that led to a family camping under an underpass here in LA, I'm struck by our collective inability to prepare a soft landing for the unpredictable things that could happen to each of us. A strong social safety net is the best insurance to invest in!

  [Nov 27, 2018](#)

[Caren Watkins Retweeted](#)

 **John Malloy**  
[@malloy\\_john](#)

We believe that every student has a right to attend schools that

I used auto-ethnography to explore parenting a diverse learning in a research project.

“Auto-ethnography is a form of qualitative research in which an author uses self-reflection and writing to explore anecdotal and personal experience and connect this autobiographical story to wider cultural, political, and social meanings and understandings.” <https://en.wikipedia.org/wiki/Autoethnography>

I kept a diary and then reflected on the stories within the larger context.

So I'll share one diary entry and reflections.

Science Fair style project with many requirements written on a handout.

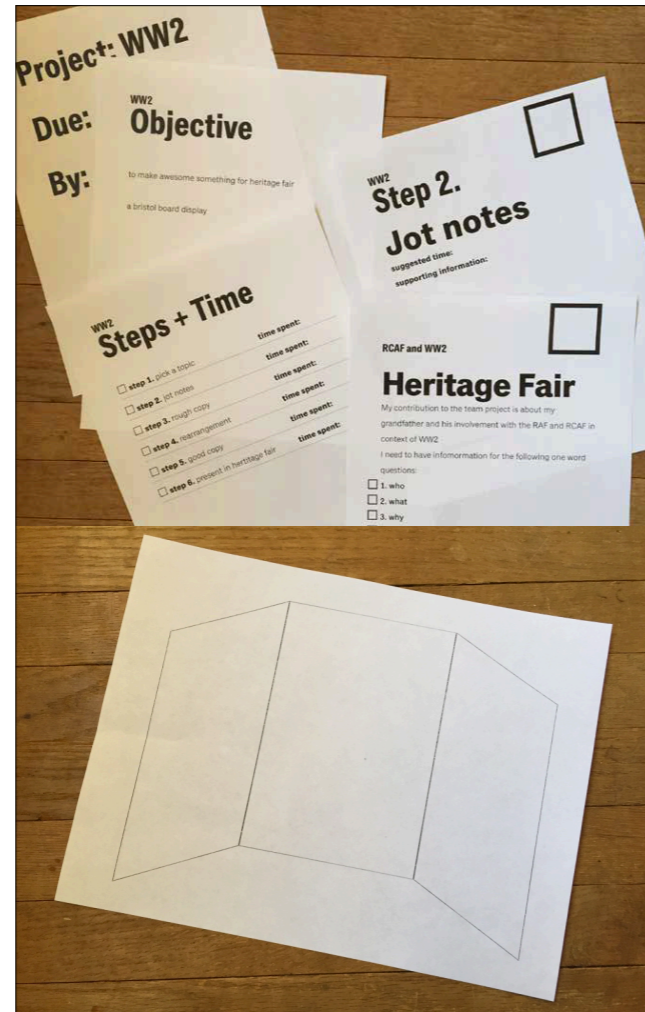
My kiddo was overwhelmed.

We talked for an hour.

“there isn't step by step stuff so it would be easier if I was given a step and then some time, then once I'm done that I wait until the time is done and then I'm given another step and some time.

Actually it's step, description on how to do it, and then some time.”

They were designing how best they could experience the project.



## Reflections & Observations

- A virtuous cycle can happen when one-size-fits-one ideas, solutions and tools get shared.
- One person's perception of time management can be different from another person's perception of time management.
- One person's logic can be another person's confusion.

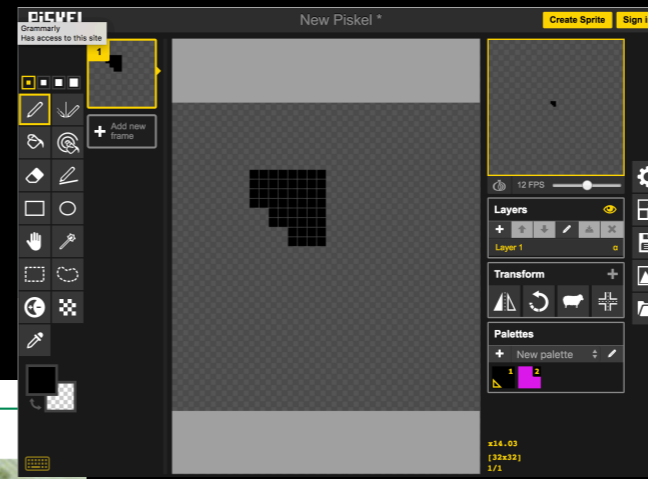
This iteration of our co-design was a digital document with a single step of the project on each page and a linear drawing of the display board to help visualize the processes and final project. We brought the design to the teacher and described the process, and were asked for extra copies and digital files. When I was next volunteering in class students were choosing to use some of the resources—resources that had been co-designed based on one learner's needs.

### Learn about the Math

Each school day, Mike is awake for  $\frac{2}{3}$  of the time, and he spends  $\frac{1}{4}$  of the time at school or on the school bus.

? What fraction of the day does Mike have left for other activities?

- A. Outline a rectangle on grid paper with 3 rows of 4 to show the common denominator of  $\frac{2}{3}$  and  $\frac{1}{4}$ .
- B. How many rows of the rectangle show the fraction of the day Mike is awake? Use counters to cover the number of rows that model the fraction of the day Mike is awake.

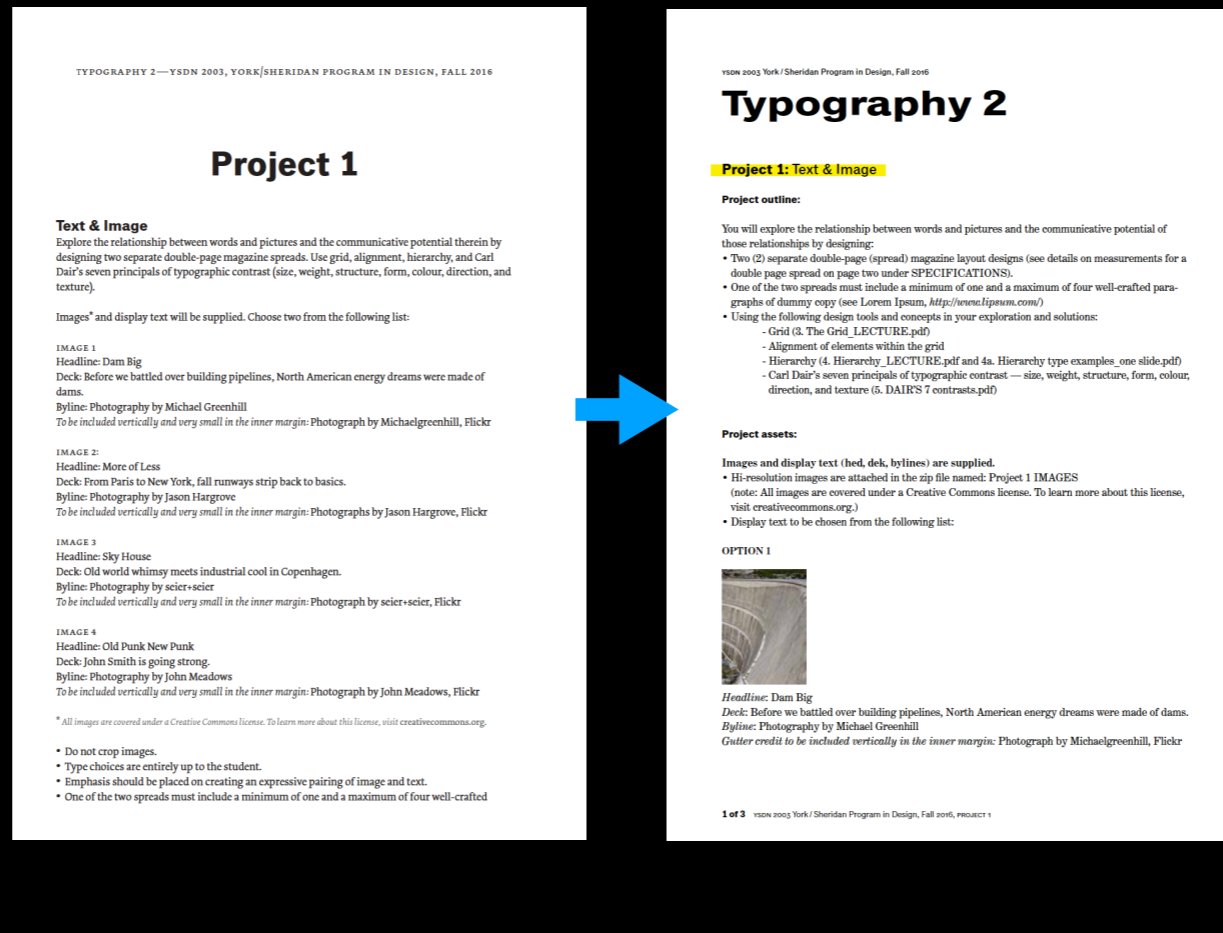


Printed school book with instructions for manual dexterity only. Printed instructions read: Outline a rectangle on grid paper with 3 rows of 4 to show the common denominator of  $\frac{2}{3}$  and  $\frac{1}{4}$ .

How can a learner who uses a computer to record answers “draw on grid paper”?

Through conversations with the student we recalled them drawing pixel art on a free online editor called Piskel. The student used this program to express their learning, took a screen snap of the result and pasted it into their Google doc.

It’s not perfect but by sharing the barriers faced and the solutions used we start to build a resource of ideas to build upon and examples of gaps in resources that need to be addressed.



Examples from post secondary teaching:

1. IEPs can be generic. Feedback from a student identified the following: Project handout is overwhelming, looks like grey sea of words, not sure where to find all the things being referenced in the handout.

Solution: recast the project description to include visuals to reference assets found in other digital folders, links to past class notes and resources, more subheads with visual contrast (bold and white space) for navigation and scanning.

Did this take time? Yes. But it is now a template that can be used, adjusted, modified with feedback from learners, educator, etc.

## 2. Cultural differences and web design

### Project was to Design a website

through conversations with one student about their sketches it was revealed that conventions of web design from their culture were different from North American conventions.

The student agreed to present their designs with that perspective. During their presentation the student suggested that North American web design was more progressive because of technical advances. This gave all students and me the opportunity to reflect on privilege and our places in global context.

I now consider ways to discover cultural differences through co-designing with students.

**Who are we willing to  
leave behind in our  
designs?**



**“I would be denied the ability to think by scientists who maintain that language is essential for thinking.” —Dr. Temple Grandin**

Wolfe, Cary. "Learning from Temple Grandin, or, animal studies, disability studies, and who comes after the subject." *New Formations*, no. 64, 2008, p. 110+. Academic OneFile, <http://link.galegroup.com.ocadu.idm.oclc.org/apps/doc/A178452227/AONE?u=toro37158&sid=AONE&xid=017c7741>. Accessed 29 Nov. 2018.

There is an entrenched belief about language ability: ‘where there is language, there is subject’

Wolfe, Cary. "Learning from Temple Grandin, or, animal studies, disability studies, and who comes after the subject." *New Formations*, no. 64, 2008, p. 110+. Academic OneFile, <http://link.galegroup.com.ocadu.idm.oclc.org/apps/doc/A178452227/AONE?u=toro37158&sid=AONE&xid=017c7741>. Accessed 29 Nov. 2018.

Temple Grandin has an intensely visual quality to her mental life. This enabled her to design animal holding and processing facilities that are more humane for the animals involved.

<http://www.templegrandin.com/>

If algebra had been required course for college graduation in 1967 “I probably would have been a handyman, fixing toilets at some apartment building somewhere.  
**I can't do algebra. It makes no sense. Why does algebra have to be the gateway to all other mathematics?” —Dr. Temple Grandin**

<http://www.templegrandin.com/>

If algebra had been required course for college graduation in 1967 “I probably would have been a handyman, fixing toilets at some apartment building somewhere. I can't do algebra. It makes no sense. Why does algebra have to be the gateway to all other mathematics?” —Dr. Temple Grandin

Algebra uses letters (like x or y) or other symbols in place of values, and then plays with them using special rules. <https://www.mathsisfun.com/definitions/algebra.html>

Who has the power over how we learn?

Democracy of learning.

**“My wish is for my wonderfully diverse child to be in a learning environment that embraces their differences as an opportunity to enrich everybody’s learning without me having to advocate for them.”**  
—Caren, mom to Cal

“My wish is for my wonderfully diverse child to be in a learning environment that embraces their differences as an opportunity to enrich everybody’s learning without me having to advocate for them.”  
—Caren, mom to Cal

“I thought I wouldn’t understand much but I did and that’s from a 12 year old person who doesn’t get their work done very much”

# What we do at the IDRC

We practice transparency and openness in our processes, so anyone can explore projects, and contribute or use resources.  
We often collaborate with other organizations to bring an inclusive lens to projects.

The IDRC is 25 years old.

The image shows two overlapping web pages. The background page is the CAST website, featuring a navigation menu and a main heading: "CISL: Working to Ensure High Quality Digital Learning for All". Below this, there is a "Project Title" section for "Center on Inclusive Software for Learning (CISL)" and a "Project Description" section. The foreground page is a Fluid Project Wiki entry titled "CISL - Early Design Sketching", which includes a "Goal" section ("Use storytelling as a way to enhance and improve learning."), "Guiding Themes" (a list of educational principles), and a "How? (Evolving concept)" section.

The CISL Project (Center on Inclusive software for learning) explores and creates tools to ensure that student with disabilities get engaging, high-quality accessible digital learning materials, especially open education resources.

<http://www.cast.org/our-work/research-development/projects/center-on-inclusive-software-for-learning.html#.XA6ACxNKjOS>

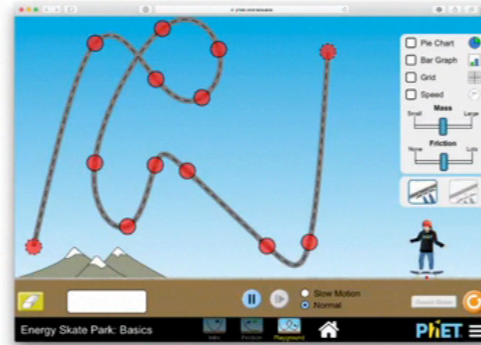
<https://wiki.fluidproject.org/display/fluid/CISL+-+Early+Design+Sketching>

# PhET Energy Skate Park Simulation

Created by Jonathan Hung, last modified on Nov 07, 2017

## Introduction

IDRC's contribution to the PhET Energy Skate Park (hereafter called "ESP") simulation accessibility project includes technical expertise in the field of accessibility and inclusion, as well as the practice of inclusive design. Inclusive design's objective is to consider all learner differences in our research and design intentions. A key perspective during our research and design has been to consider how students with different needs can collaborate as seamlessly as possible while using the sim.



## Table of Contents

- [Introduction](#)

PhET: math and science simulations

Goal to make simulations accessible to a diversity of learners so those diversities can learn side by side where all learners have autonomy over their learning interactions.

<https://phet.colorado.edu/en/simulations/category/new>

<https://wiki.fluidproject.org/display/fluid/Inclusivity+and+Accessibility+of+Interactive+Web+Games+and+Simulations>

<https://wiki.fluidproject.org/display/fluid/PhET+Energy+Skate+Park+Simulation>

### Designing for Diverse Learners.

FLOE provides the resources to personalize how we each learn and to address barriers to learning. Learners learn differently, and today's society needs diverse, self-aware, life-long learners. FLOE supports learners, educators and curriculum producers in achieving one-size-fits-one learning design for the full diversity of learners, leveraging the variants made possible by **Open Education Resources** (OER).

FLOE is led by the **Inclusive Design Research Centre** and applies **Inclusive Design** to open learning.

Floe project: flexible learning for open education houses a variety of tools.

Preference editing tools help learners personalize their learning experience. Learner Options allow selection and fine-tuning of preferences.

<https://build.fluidproject.org/infusion/demos/prefsFramework/>

<https://floeproject.org/>





Helping you meet Ontario's



Find out how SNOW helps you meet  
and exceed the AODA.

SNOW is a branch of the [Inclusive Design Research Centre](#) at [OCAD University](#) that focuses on technologies for learning and promotes understanding of inclusive learning practices. Find out how to get the most out of SNOW on the [About](#) page.

SNOW: Inclusive Learning and Education

Hub for assistive and accessible technology

Goal is to provide information and training about technologies and inclusive practices both in and outside the classroom.

We also offer online workshops about differences and disabilities in the classroom

Committed to providing open source tools that can be adapted and used freely

<https://snow.idrc.ocadu.ca/>





Guides and Resources:

<https://handbook.floeproject.org/>

<https://guide.inclusivedesign.ca/>

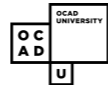
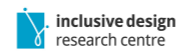
<https://cities.inclusivedesign.ca/resources/>

**Can't please everyone all  
the time but what we can  
do is consider the  
difference all the time**

Can't please everyone all the time but what we can do is consider the difference all the time

**Thank you!**

**[cwatkins@ocadu.ca](mailto:cwatkins@ocadu.ca)**



Thank you!

[cwatkins@ocadu.ca](mailto:cwatkins@ocadu.ca)

# Workshop resources

From the IDRC:

- **The Inclusive Design Guide** <https://guide.inclusivedesign.ca/>
- **The Inclusive Learning Handbook** <https://handbook.floeproject.org/>
- **SNOW Inclusive Learning and Education** includes assistive and accessible technology resources <https://snow.idrc.ocadu.ca/>
- Co-designing Inclusive Cities has resources developed through several applied co-design sessions with diverse and marginalized communities. It is also an example of designing inclusion into an existing structure, both systematically and applied and **Planning a co-design activity sheet** <https://cities.inclusivedesign.ca/resources/> [https://docs.google.com/document/d/15PBY1O8iSJjNhua\\_quWQQBowpm1c-TC6SxJkSwgFSTk/edit#heading=h.fymrjx6xd4zs](https://docs.google.com/document/d/15PBY1O8iSJjNhua_quWQQBowpm1c-TC6SxJkSwgFSTk/edit#heading=h.fymrjx6xd4zs)
- **Functional Mashup Activity** <https://guide.inclusivedesign.ca/activities/FunctionalMashup.html>
- **Toddler Grandparent Conversation Activity** <https://guide.inclusivedesign.ca/activities/ToddlerGrandparentConversation.html>

Other resources:

- **Explore system structures** activities: <http://www.liberatingstructures.com/>, <http://www.liberatingstructures.com/1-1-2-4-all>, <http://www.liberatingstructures.com/6-making-space-with-triz> When using these activities apply an inclusive framework that considers diversity and uses inclusive processes and tools. Diversity does not equal inclusion. Diversity is quantitative representation while inclusion is the qualitative participation of the representation.