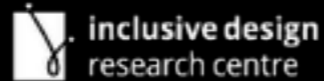


INCLUSIVE DESIGN CHANGE YOUR PERSPECTIVE

Jess Mitchell

OCAD University, Toronto



How many of you went to a presentation that turned out to be a sales pitch?

How many of you went to a presentation that turned out to be a research project report?

This is neither — I want to change your perspective, change your mind, your behaviour, and your approach to problem solving

How many of you attended a session with Inclusive or Inclusion in the title? How many with Design? How many of you consider yourselves designers? All of you will hopefully by the end of this presentation.

I want to start by talking about what some of you might think inclusive design sounds like:

1. mismatch as design solvable
2. one-size-fits-one
3. design decisions — as exclusion

3 things I want to focus on

HIPPY SPEAK



We live in a complex world that is moving very quickly — one where technology and computers and drones and robots do many of our everyday tasks — or they soon will. It's a world where our needs are more complex — we're trying to integrate all of this technology into our lives, make it work, make it make our lives better and work for us.

The Internet of Things is everywhere — our connected cars (soon to be the autonomous cars), programmable thermostats and smoke alarms, and robots to keep our pets company while we're at work — complete with treat dispensers, camera sensors to let us know when Fido is around, and an ability to speak to our pets in our voice. So, you say sit Fido, Fido sits, and you trigger the robot to dispense a treat.

This is our world — we're setting up a wireless printer at home (no big deal, right?) — but we're integrating it with our wireless network and with our IP-capable TV and with our Media Centre (little bit harder) — and you're watching the Jays game on Rogers, but at the moment Bautista hit his home-run you jumped up and spilled something on your lap and your computer so you missed his reaction. Now you want your TV and speakers to be able to detect your laptop so you can watch a clip of Bautista's home-run reaction online, streaming it from the couch.

For all of that to work we need usable, integratable systems that must be designed to work for us.



You might think this doesn't apply in my industry — I challenge you to come up with an industry that doesn't ultimately deal with people, doesn't strive for efficiency and sustainability, doesn't hope to innovate, or doesn't simply want to solve complex problems.

Not saying inclusive design is a silver bullet, but I think it will help us do all of these things better.



We should be careful about disregarding something that isn't relevant to us now — it's shortsighted. We're all aging — speaking of shortsighted — my glasses get a little bit stronger every few years...

And my parents are aging and I'm seeing what happens with the inevitable march of time. Many of us, most of us will need assistance at some point in our lives. Disability increases with age (42% between ages of 65-74, 64% at 75+) and populations are aging.

COMPLEX PROBLEMS NEED BETTER SOLUTIONS

- that have a longer shelf life
- that work better for more people
- that reach untapped markets

DEFINE INCLUSIVE DESIGN

Inclusive Design is design that considers the full range of human diversity with respect to ability, language, culture, gender, age and other forms of human difference. And in considering, inclusive design involves...

3 TENANTS OF INCLUSIVE DESIGN

1. recognize diversity and uniqueness
2. use an inclusive process and tools
3. have a broader beneficial impact

3 tenants of ID

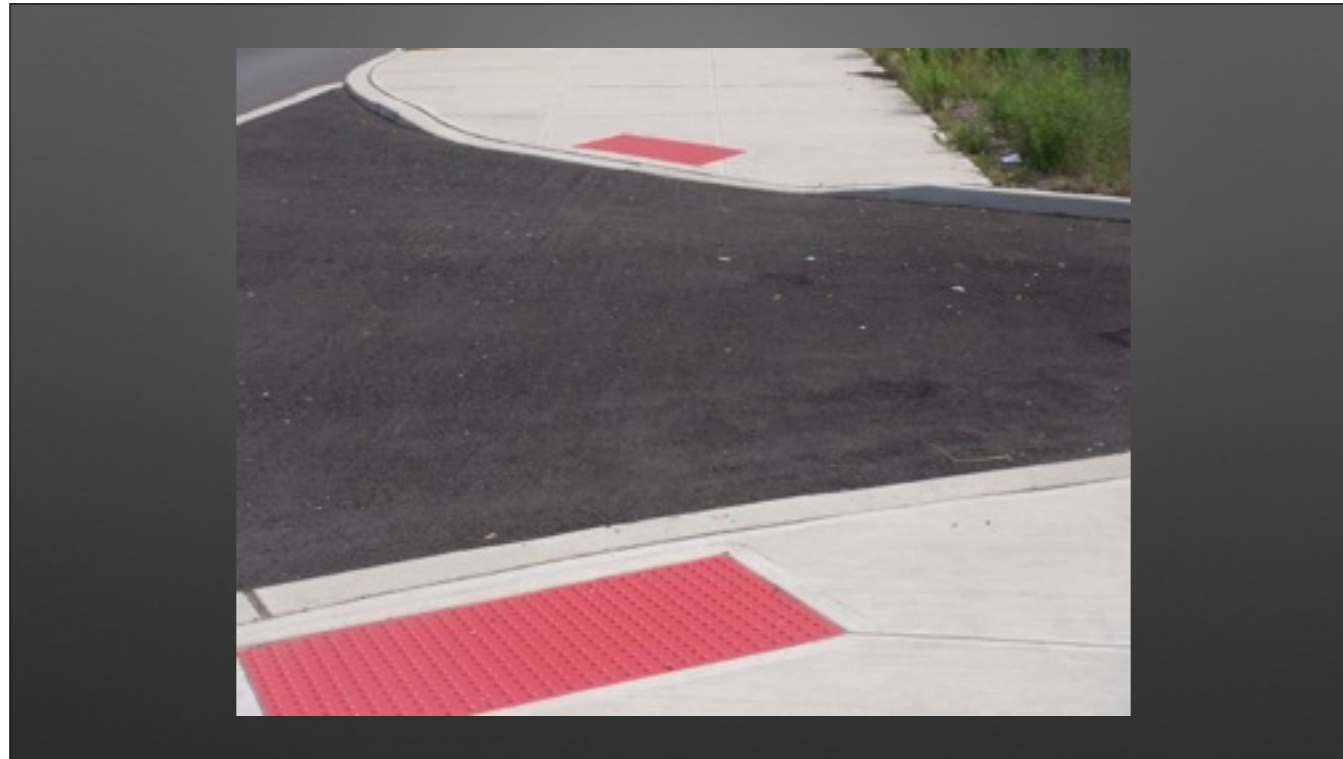
1. recognize diversity and uniqueness — how many of you consider yourselves average?
so why do we design for the average?
2. use an inclusive process and tools — get experts to make the best solutions — talk to moms to find out what strollers work best for them: talk to moms who are pushing strollers through the snow banks in Toronto in January, or strolling around the broken bricks in Old San Juan, Puerto Rico in the heat and humidity of June.
Talk to moms who are 6'5" and talk to moms who don't have the strength to lift 20 lbs, let alone a 20 lb stroller and a 20 pound kid.
3. have a broader beneficial impact — solve for everyone
of course if you set out to solve for everyone and you're designing a stroller it's going to be quite difficult. You simply can't make everyone happy.

You can still build an amazing stroller! We'll still strive for perfection, but in our attempts we'll make better strollers for everyone.

WHY INCLUSION?

- do the right thing
- reach a new market
- solve really hard problems that others aren't solving
- don't get sued

do the right thing — good person (philanthropist),
make a profit — good businessperson (successful),
solve hard problems — entrepreneur & innovator
don't get sued — good citizen and keeps you in the market



In Universal Design there's the curb cut — does everyone know what a curb cut is?



In Inclusive Design we aim for the digital curb cut — closed captioning is an example.

top 3 uses:

1. in a bar
2. in a gym
3. in bed with a sleeping spouse

REPRODUCIBLE STEPS

The good news is that there is a process we have developed for inclusive design — it's based on milestones, not a step by step linear process, but iterative — building on small successes. It requires a flexibility and a focus on delivering milestone-based artifacts.

If you were in the Google a11y design talk you know the basic milestones (roughly research, brainstorm, prototype, test, iterate)

PRACTICE

We've found that inclusive design can be applied to everything we do and the way we think about the problems we encounter. We want to think more critically in our work and not just be satisfied with the simple, quick solution. It actually costs more to do the thinking after you've built something already. Spending the time up-front incorporating diversity and wondering about more creative solutions is much more affordable.

In our work in Software and Hardware we employed a process that helped us think about making interfaces accessible — accessible to people with disabilities. And when we stumbled upon the utility of this process in basically everything we do we found it changed the way we thought about the problems
changed the way we solved the problems
we were able to solve the problems better and for more users

You might say to us now Inclusive Design is just good design

If you're doing good product design, then you're doing Inclusive Design — but what we've found is that people aren't doing it. And yet what we do at the IDRC is something any of us in this room can do

HOW DO WE DO THIS?

And I think this is the unique part of inclusive design — inclusive design gives us this perspective shift and challenges us to solve hard problems. And it challenges us to solve them not just for persons with disabilities but for everyone. Think of the curb cut.

PERSPECTIVE SHIFT

And we do this with what I call a perspective shift in our thinking and doing. It isn't enough to walk in someone's shoes — it's a start, but what if everyone with unique shoes was at the table together?

1. mismatch as design solvable
2. one-size-fits-one
3. design decisions — as exclusion

3 things I want to focus on

DISABILITY



We sometimes hear disability describes as a medical condition — someone is afflicted, they can't do something — they lack an ability.

DISABILITY



And it is often associated with the 4 main categories of disabilities:

mobility impaired

cognitively impaired

hearing impaired

seeing impaired

But at the IDRC we completely redefine disability. It isn't a medical condition to us...>>>

MISMATCH



Disability is a mismatch between the individual and their goals — the tools they have available to them in the environment where they are — their context

Disability is not a personal trait and because it's so context dependent, it is a relative condition. >>>>>

ALL EXPERIENCE MISMATCH
DISABILITY IS MISMATCH
MISMATCH IS SOLVABLE
DESIGN CAN SOLVE MISMATCH

I went grocery shopping the other day and my arms were full as I was trying to get in the car — my car has a button that makes it easy to open. Someone with a motor impairment can also benefit from simple buttons to open doors.

Making content available to those with cognitive disabilities often means simplifying the content — you know who else benefits from that? What about the executive 2-pager? In some cases it's become a 1-pager — they're busy, they don't have time or energy to focus. They are cognitively impaired at that moment.

At the dog park the other night and I needed to know the score in the Jay's game. I used an app on my cell phone that showed me all the action in the game in text only so I could easily keep up. The deaf person who wants to know what's going on in the game and is watching on TV gets captions that allow them to follow along in text.

It's Fall now and the sun is blazing. In the afternoon the sun shines in the window in my office and onto my screen and makes it impossible for me to read my monitor. I can change the brightness and contrast though — this simple solution also helps the sight impaired user who has partial sight but needs slight modifications.

So now what — how can we do this Inclusive Design thing?? >>>>

ONE-SIZE-FITS-ONE



https://www.mavenlink.com/images/blog/mobile_home_screen/04-iphone.png | <http://www.flickr.com/photos/scobleizer/4779911251/>

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Wherever possible take a one-size-fits-one approach — LET THE USER DECIDE

when you can offer flexibility and customizability or personalization do it!

examples:

car dashboard — with digital i can change units

same phone, different ways to organize the screen

sit down at someone else's computer and everything is different: the mouse scrolls the other way, the dock is somewhere else, the hot corners keep making your screen fly away.

CHANGE OF APPROACH

- Environmental Scan
- Solve for mismatch - edge case
- Scenarios
- Gentle prototyping

Rough outline of the process we use for inclusive design — NOT LINEAR

First we try to understand the environment of what we're working in. If we're trying to solve a problem in a particular context we'd better understand that context really well and understand what solutions exist in that space — what their limitations are — what their successes are.

Use cases — can't enumerate people, they're too unique and diverse

if you begin to think of people as disabilities again here, you're following a mental rut

Scenarios will help you think through what someone does — they are a person with likes, dislikes, pressures, etc.

Gentle prototyping because of the risk of going to a visual design too quickly.

EDGE CASES

"We have clients come to us and say, "Here's our average customer:", for instance, "She's female, she's 34 years old, she has 2.3 kids..." And we listen politely and say: "Well, that's great but we don't care about that person". What we really need to do to design, is look at the extremes, the weakest, or the person with arthritis, or the athlete, or the strongest or the fastest person. Because if we understand what the extremes are, the middle will take care of itself".
– Dan Formosa, Smart Design, "[Objectified](#)"

<http://sugoru.com/2013/07/14/designing-for-the-extremes/>

They aren't describing a person. It's so abstracted and so removed from what a person does, it's not that functionally useful. In other words, it's useless.

How about instead this is Molly, she's 34 years old and struggling to find her footing in her field — she's a lawyer. She works really long hours trying to make her mark on the cases she's taking on. She has a 2 year old who is very picky about what he eats and a 4 year old who is even pickier. Her husband works on the opposite end of town. They have two cars and a goldfish.

For a great read about how the average isn't a real person and why we've historically come to defer to it so thoroughly, I recommend reading Todd Rose's book, *The End of Average* that just came out in February this year. It's a perspective changer itself.

SCENARIO

Molly is working on a big case — this might be the one where she proves herself and gets the attention that will help her move to the next level...

This morning she's juggling a lot. She has to get the kids to daycare (her husband usually takes them) but he is at CSUN in San Diego and she's on her own all week. So as she's driving she's thinking of what to make for dinner — TACOS are easy and everyone will eat them — she can do tacos.

She gets a call at noon that her 2 year old has pink eye and she needs to come get him from daycare...

Now we have someone with real pressures, a real life, real needs. When Molly gets out of the car with her work computer slung over one shoulder, her groceries in one hand, and sick little Miles in the other, what does she need in a stroller? How might we design a stroller for her?

DESIGN IDEAS: BRILLIANT OR EXCLUSIONARY?

- With this brilliant design idea who just got excluded?
- Is there a way I can bridge the gap I just created? A way I can solve for the mismatch or avoid it?

some simple rules:

every time you make a design decision you're saying as much (NOT ANY OF THIS) as you're saying (THAT). In other words, if you put a quick release tab on the handle of Molly's stroller, you're saying NO to a foot-activated quick release. Just one example.

So, whatever your design decision is, think about what it isn't.

AND WHEREVER POSSIBLE LET THE END USER DECIDE... we see innovative uses of tools all the time — unintended ones.

Silly Putty — meant to be a synthetic rubber for WWII — there was a rubber shortage because of the war

Text Messages — cell phone carriers letting customers know about problems with their network

a precursor to Email — created to let hearing impaired computer engineer communicate with his wife

WD-40 meant to displace and repeal standing water to prevent corrosion in nuclear missiles. how many of you use it on your nuclear missiles??

Rogaine was used to treat high blood pressure — hair growth was an unintended side effect

Play-Doh was a wallpaper cleaner in the 1930s

Microplanes were for wood or metal — I use them on orange rinds or horseradish when I cook!

One way we do this in the digital world is to
make it multi-modal

- text
- audio
- video

NIKE FLYEASE



Inspired by a letter to Nike by a basketball loving teenager with Cerebral Palsy — what resulted is a sexy shoe with an innovative entry that is usable and attractive to everyone.

TRAMPOLINE



BLOORVIEW rehab hospital has one of these and what's so cool about it is that you have kids in their integrated school program playing together without barriers and kids in wheelchairs who have never had the sensation of jumping can feel what it feels like to jump.

STOPGAP



Stopgap created these little wedges to help folks in wheelchairs get into businesses in the GTA. Folks with strollers also use them — no one is inconvenienced by them and they help.

Luke Anderson an avid mountain biker had an accident and became paralyzed. He started stopgap.



OXO good grips was created when the owner's wife had trouble gripping tools because of some mild arthritis.

These tools for kitchen and gardening became the go-tos in rehabilitation centers working with people on activities of daily living...

Who else has trouble gripping things?

OXO



this population.

OXO saw a market and broadened their products.

HOW CAN I DO THIS?

- think about the edge cases early and solve for them — MISMATCH
- can you let the user decide — ONE-SIZE-FITS-ONE
- think about design decisions as excluding rather than solving — BRILLIANT? EXCLUSIONARY?

LET'S DO THIS NOW

- think about a problem you want to solve
- think about the edge case — create a persona
- think about a use case — your persona in action
MISMATCH
- solve for them ONE-SIZE-FITS-ONE
- ITERATE — watch for Design BRILLIANCE THAT
EXCLUDES

<p>Practice</p> <h3>Collaborate</h3> <p>Working together with others toward a common desired outcome and shared goal is an important part of the inclusive design process. We all bring our unique experiences, skills and talents to the table, and as a result, working collaboratively ensures more diverse perspectives and therefore a more inclusive design process.</p> <p>By working with others rather than in isolation we learn from one another; we share the responsibility for an outcome, and in doing so we learn to trust one another and rely on each other's expertise.</p> <p>Learning to work collaboratively requires an adjustment in the way that we approach our work. Gathering and incorporating ideas from a diverse group often takes more time and patience. Questions of ownership or credit sometimes arise. However, these challenges are far outweighed by the benefits, as the rich and diverse perspectives gained by working collaboratively ultimately enhance the work.</p> <p>https://wiki.gpii.net/index.php?title=Inclusive_Design_Guidelines&redirect=no</p> <p>Inclusive Design Guidelines</p>	<p>Practice</p> <h3>Collaborate</h3> <p>Try</p> <ul style="list-style-type: none"> • Pair up with a co-worker to sketch or code • Exchange your ideas/projects with participants from different disciplines in your organization on regular basis to get their feedback • Find an open-source community where you can ask questions and/or contribute • Keep track of meeting notes, sketches and research in a wiki or other open repository <p>Why</p> <ul style="list-style-type: none"> • Diverse participation & perspectives <p>How</p> <ul style="list-style-type: none"> ■ Accessible Communication Tools ■ Accessible Design Tools ■ Accessible Development Tools ■ Synchronized Design Assets <p>https://wiki.gpii.net/index.php?title=Inclusive_Design_Guidelines&redirect=no</p> <p>Inclusive Design Guidelines 33</p>
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<p>■ Tool</p> <h2>Personae</h2> <p>Personae are models representing potential stakeholders who may use a product or service. Although they are fictional people, their needs, characteristics, goals and motivations are rooted in the insights and feedback collected from various sources including interviews/surveys or through familiarity with the needs and interests of self, co-workers, friends or family members. They begin as early, provisional sketches and often evolve through iterations as more information is gathered.</p> <p>Personae are behavioural models; they do not represent the full demographics of any given population of complex and unique people. They enable designers, developers and evaluators across a project to keep a broad and diverse collection of stakeholders in mind. They must be developed and used with care in order to avoid stereotyping or fictionalizing the user, and they must be tempered with the awareness that no single persona or group of personae can independently determine the full range of potential uses of a product or service.</p> <p>https://wiki.gpii.net/index.php?title=Inclusive_Design_Guidelines&redirect=no</p> <p>Inclusive Design Guidelines</p>	<p>■ Tool</p> <h2>Personae</h2> <h3>Try</h3> <ol style="list-style-type: none">1. Think about various users in your domain with unmet needs2. Imagine a user, inspired by people you know that is unique and doesn't simply represent the norm, the average, or the typical3. Draft the first version of your persona. Give it a name, describe her life, needs, preferences, likes and dislikes4. Re-iterate and evolve your persona as you collect more feedback from potential users and/or stakeholders <h3>Combine with</h3> <ul style="list-style-type: none">■ UX Walkthroughs■ User States & Contexts■ Use-Cases <p>Inclusive Design Guidelines</p> <p>34</p>
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<p>■ Tool</p> <h3>Use-Cases</h3> <p>Use cases describe particular scenarios in which a persona may encounter and use a product or service, providing more detail about specific tasks and goals as well as helping to map out the potential steps in a workflow. User personae and accompanying use cases are not meant to exhaustively describe all potential stakeholders or situations; rather they help to illustrate key goals, the main steps that should be taken towards achieving that goal, and behaviour patterns related to the design in question.</p> <p>In an Inclusive design process it is important to include edge cases. These are personae and use-cases that describe both users with needs that are not typically considered in the design process, as well non-typical or unexpected uses of a product or service. Use-cases present a picture of a person in a specific context, with available tools, existing constraints and potential distractions, who is hoping to achieve a specific goal using the product or service in question.</p> <p>https://wiki.gpii.net/index.php?title=Inclusive_Design_Guidelines&redirect=no</p> <p>Inclusive Design Guidelines</p>	<p>■ Tool</p> <h3>Use-Cases</h3> <h4>Try</h4> <ol style="list-style-type: none">1. Imagine what is your persona hoping to achieve with your product/system (be specific)2. Describe the context, the available tools, the constraints, potential distractions, etc.3. Describe how your product can help the persona achieve their goals4. Re-iterate and evolve your use-cases as you collect more feedback form potential users and/or stakeholders and your project moves forward <h4>Combine with</h4> <ul style="list-style-type: none">■ Personae■ User States & Contexts <p>https://wiki.gpii.net/index.php?title=Inclusive_Design_Guidelines&redirect=no</p> <p>Inclusive Design Guidelines</p> <p>35</p>
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<p>Principle</p> <h3>One-Size-Fits-One</h3> <p>We all have diverse needs, and we all experience changes in our lives, in both the short-term and long-term, that affect our interests, goals and desires. As a result, designs that are flexible and allow for customization are more likely to meet our needs. A one-size-fits-one approach avoids the often segregated and specialized design solutions that are intended to meet the needs of those "on the margins". These solutions do not serve the individual or society in the long run.</p> <p>Adaptable designs that allow for personalization result in integrated systems that work better for everyone. In the digital world, we have the freedom to create a design system that can adapt, morph, or stretch to address each design need presented by each individual. One-size-fits-one design solutions give us the power to discover and choose what works best for us in any given context. This puts more control into the hands of any one of us to create our own experience, and to modify this experience as needed.</p> <p>https://wiki.gpii.net/index.php?title=Inclusive_Design_Guidelines&redirect=no</p> <p>Inclusive Design Guidelines</p>	<p>Principle</p> <h3>One-Size-Fits-One</h3> <p>Try</p> <p>Think of something you've come across in your daily life that demonstrates an adaptable design. For example, an office chair with multiple adjustment features, or a suitcase that can be turned into a backpack. How could this design be improved to offer additional or different adaptations? If you can't think of anything, consider 3 adaptations you'd like to have on a product or tool you use on a regular basis.</p> <p>Use</p> <ul style="list-style-type: none">◆ Design for adaptability & flexibility◆ Design for uncertainty <p>Inclusive Design Guidelines</p> <p>36</p>
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- https://wiki.gpii.net/index.php?title=Inclusive_Design_Guidelines&redirect=no

<p>Principle</p> <h3>Disability as Mismatch</h3> <p>The medical model defines disability as a trait; something permanent and limiting. In contrast, an inclusive design approach is one that perceives disability as a mismatch between our needs and the design features of a product, built environment, system or service. This shifts the responsibility to the design, and to the designer, to correct the mismatch. For example, a digital interface with poor contrast does not match the needs of someone standing in direct sunlight or someone with low vision.</p> <p>Inclusive design considers this mismatch to be conditional, solvable through design, and the result of many factors, including:</p> <ul style="list-style-type: none">• Context (e.g. upon waking up in the morning)• Environment (e.g. a dark room)• Hardware and software variations (e.g. desktop vs. smartphone)• Unique personal needs and learning styles (e.g. I prefer to listen rather than read). <p>https://wiki.gpii.net/index.php?title=Inclusive_Design_Guidelines&redirect=no</p> <p>Inclusive Design Guidelines</p>	<p>Principle</p> <h3>Disability as Mismatch</h3> <p>Try</p> <p>Record three examples of an experience of mismatch that you've had, no matter how large or small. For example - standing at an automated bank machine in the glare of the sun, I couldn't see the screen at all. How did you feel when this happened? What did you do about it?</p> <p>Use</p> <ul style="list-style-type: none">◆ Focus on functional needs & preferences◆ Design for adaptability & flexibility <p>Inclusive Design Guidelines</p> <p>37</p>
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THE MAGIC AT THE MARGINS

benefits the majority
supports the spectrum

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instead of 80/20, solve for the hard ones, the 20% and your solution will cover the 80%

SHOW & TELL

<http://floeproject.org> (learner options and Chart authoring demos)

<http://idrc.ocadu.ca/index.php/resources/idrc-online/library-of-papers/443-whatisinclusivedesign>

1. mismatch as design solvable
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THANK YOU

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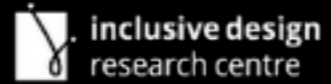


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