Design guidance for youth with learning disabilities

How do I use these materials?

Use these personas with your design team to reflect on the needs, strengths, preferences and motivations of youth with Learning Disabilities (LD).

While these personas are fictional, they are informed by the research literature and designed in collaboration with youth with LD.

Using these personas will help you step out of yourself to consider the experiences and perspectives of this diverse group, which may feel unfamiliar to you.

When possible, you should consult or design with people with LD.

What is LD?

A set of brain-based differences that can affect how people read, write, do math, or approach similar tasks. Some youth with LD are also youth with ADHD. Others are not.

When learning environments are not designed with these brain-based differences in mind, people with LD can experience challenges with listening, speaking, processing, reading, or doing math.

What should designers know

It is important not to conceptualize people with LD primarily in terms of their perceived deficiencies, problems, or limitations.

More than anything else, youth with LD hope designers will know that **they are bright, capable, and often looking for challenges and creative opportunities** that they do not typically receive in school.

In their own words: "WE ARE NOT DUMB-ASSES!"

People with LD experience varied strengths and challenges depending on their particular diagnoses, school experiences, and available supports.

Written by:

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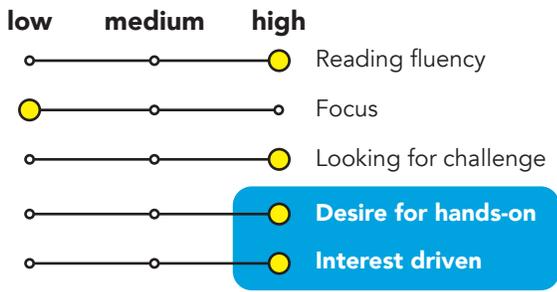Calvin Uzelmeier (Rochester Museum & Science Center)

Who are people with LD?

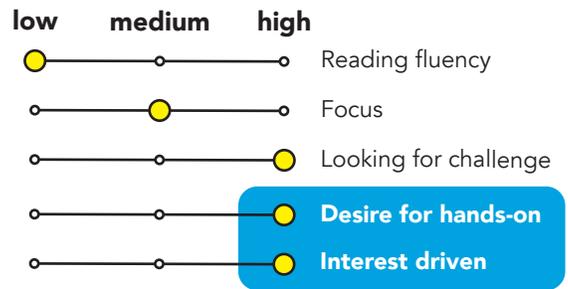**Person 1:** *"For people with ADHD like me, it's hard to focus and stay at one thing. Exhibits make me want to learn more when they look cool, and kind of grab my attention, and you can do lots of things with it. I feel more focused."*

low	medium	high	
		●	Reading fluency
●			Focus
		●	Looking for challenge
		●	**Desire for hands-on**
		●	**Interest driven**

Person 2: *"When it's hands-on I feel like I learn so much more. And I like having examples in pictures that make things clear. When there's pictures and I know what to do, it doesn't stress me out as much."*

low	medium	high	
	●		Reading fluency
		●	Focus
●			Looking for challenge
		●	**Desire for hands-on**
		●	**Interest driven**
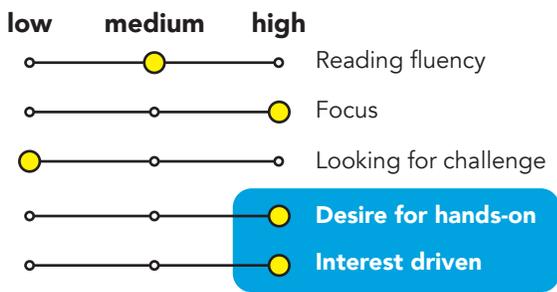
Person 3: *"I like it when there are different challenges, especially if I get to be creative. I like when I get to decide what to do. It helps when I am really interested or know something about the activity.*

low	medium	high	
●			Reading fluency
	●		Focus
		●	Looking for challenge
		●	**Desire for hands-on**
		●	**Interest driven**

By considering the strengths and needs of people with LD in the design process, we make learning environments more accessible, engaging, and supportive for a wider array of people.

Access to information: Visual

Youth with LD find the use of visual depictions for instructions or concepts helpful.

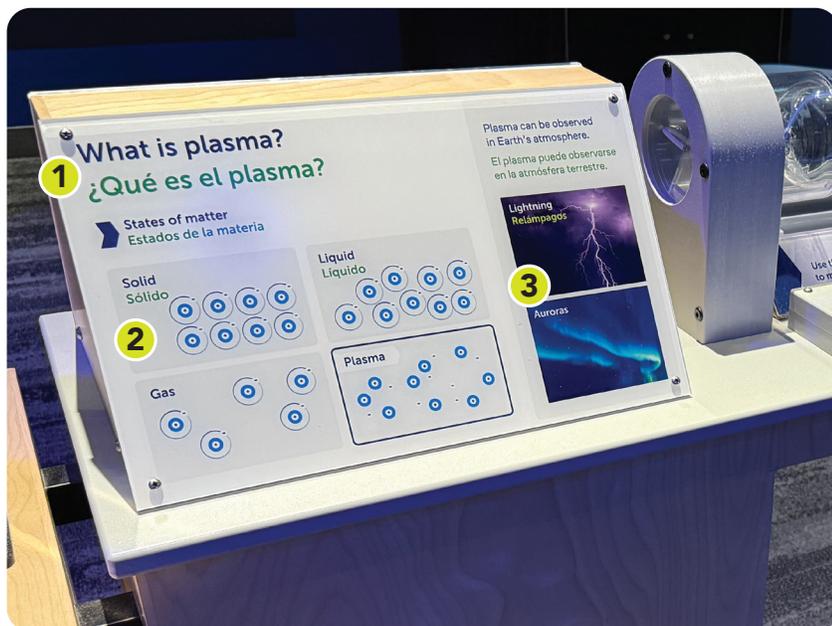## Design Guidance

Keep text short

Keep text meaningful

Use pictures, icons, or diagrams in place of text when possible

✦ **Prompts:**

What is the most important thing to communicate?

Can a picture communicate this better than words?

1 Informative title

2 Diagrams

3 Visual examples

Access to information: Auditory

Youth with LD can find the presence of audio text (a) helpful, and (b) uncomfortable because of what it might reveal to others in the space.

Design Guidance

Prioritize use of audio text where it is most needed

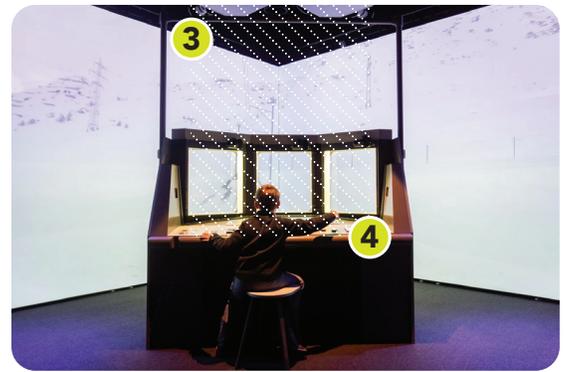When present, default broadcast audio text to "on"

Not too loud!

✦ Prompts:

Is broadcast audio text the way most people will get the information they need?

1 Always-on audio text (speakers above)

2 Sound effects/music (speakers in component)

No audio text

3 Music/soundtrack (speakers above)

4 Audio text/sound effects (speakers in component)

Supporting agency:
Re-defining "Creativity"

Youth with LD highlight a need for agency and meaningful choices.
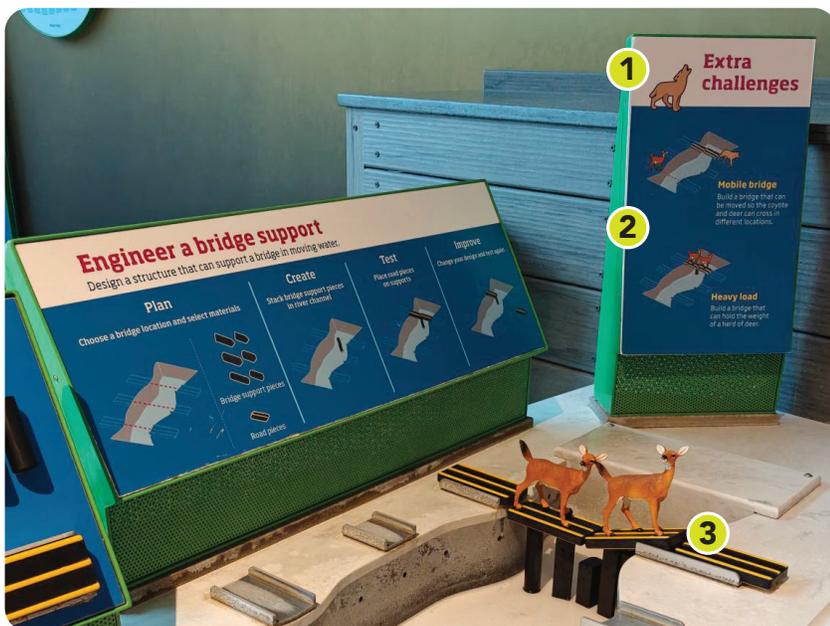
Design Guidance

Support agency

Support autonomy

Anchor open-ness with meaningful goal(s)

Prompts:

Can visitors figure out how to get started (and keep going)?

1. Meaningful goal(s)

2. Visual instructions

3. Multiple ways to engage (materials and challenges offer options)

Supporting agency: Re-defining "Hands-on"

Youth with LD want to use their minds with their bodies as a way to construct knowledge.

Design Guidance

Support moving (materials, self)

Focus on doing, not just reading/answering
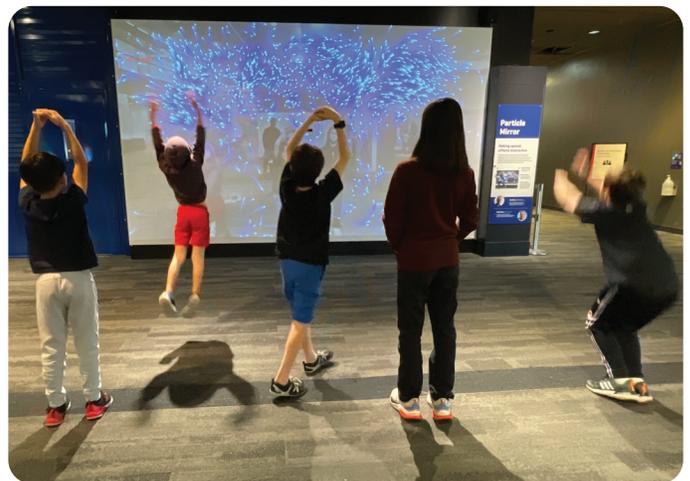
Offer choices/options

✦ **Prompts:**

Are there meaningful ways to participate without attending to text?

Are there multiple ways visitors can engage their bodies, including things to touch?

Ways to create and iterate

Tactile materials

Meaningful feedback from experimenting

Authentic challenges

Ways to interact with your whole body

Engages multiple senses

Ways to manipulate virtual materials

Supporting agency: Challenge & Satisfaction

Youth with LD are likely to experience feelings of belonging and agency when they can express and leverage their intellect and creativity.

Design Guidance

Include levels of challenge

Design for "mini wins"

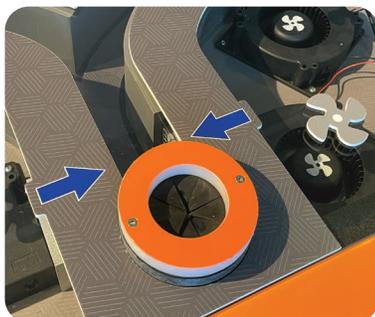Balance frustration/cognitive load with feeling motivated/productive

Support knowing what to do next

✦ **Prompts:**

Can most visitors access the supports they need to feel satisfied by engaging in the challenge?

Multiple activity options

Challenges vary in difficulty

Offers free-play and explicit tasks

Clear orientation

Easy to try again

Clear feedback

See also: *Designing for Productive Struggle: A Research and Development Guide to Creating Exhibits that are Both Challenging and Rewarding* (Paneto et al., 2021).