Hear and See Your Audience

Intentional Resource and Program Design and Delivery

June 12, 2020

NIH › NLM › NNLM
Training and Education Center

Universal design shifts the discourse about accessibility from the way most people think about it—as something that's done to accommodate people with disabilities—to redefining design itself in a way that intends to accommodate everyone.

Cornerstones of Science

Founded in 1999, working nationwide with 350+ libraries and 5 states

Mission: We work with public libraries to create science experiences that spark curiosity and foster a deeper understanding of the world around us.

We achieve our mission through:

- Development of STEM kits to facilitate library programming

- Training to support the use kits amd build staff capacity, and provide ongoing public access to science experiences, tools and resources that are relevant and meaningful to all members of the community.

Please visit www.cornerstonesofscience.org

Test The Waters Kit

- targeted at 5th grade level

- Some activities accessible for visually impaired/blind individuals

- Highlights s NIH/NLM citizen science project

- Use of NIH themes (Health, Environment and Lifestyle) and *All of Us*

- Culturally appropriate for Hispanic/Latino, Chinese, Korean, Arab and American

- $50 or less

As an Empathetic Designer

understanding the relationship between visual and tactile aesthetics

Involve Visually Impaired / Blind Users Throughout

aesthetics sighted designers may not be able to discern completely

Design For Self Sufficiency

little to no facilitative assistance by a sighted person.

Intentional Design Process/ Using Universal Design Principles

both should be able to have many of the same benefits and experiences.

As an Empathetic Designer

understanding the relationship between visual and tactile aesthetics

Involve Visually Impaired / Blind Users Throughout

aesthetics sighted designers may not be able to discern completely

Design For Self Sufficiency

little to no facilitative assistance by a sighted person.

Intentional Design Process/ Using Universal Design Principles

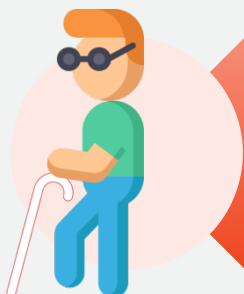both should be able to have many of the same benefits and experiences.

As an Empathetic Designer — understanding the relationship between visual and tactile aesthetics

Involve Visually Impaired / Blind Users Throughout — aesthetics sighted designers may not be able to discern completely

Design For Self Sufficiency — little to no facilitative assistance by a sighted person.

Intentional Design Process/ Using Universal Design Principles — both should be able to have many of the same benefits and experiences.

As an Empathetic Designer — understanding the relationship between visual and tactile aesthetics

Involve Visually Impaired / Blind Users Throughout — aesthetics sighted designers may not be able to discern completely

Design For Self Sufficiency — little to no facilitative assistance by a sighted person.

Intentional Design Process/ Using Universal Design Principles — both should be able to have many of the same benefits and experiences.
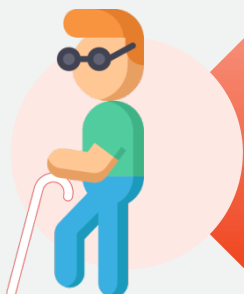
As an Empathetic Designer — understanding the relationship between visual and tactile aesthetics

Involve Visually Impaired / Blind Users Throughout — aesthetics sighted designers may not be able to discern completely

Design For Self Sufficiency — little to no facilitative assistance by a sighted person.

Intentional Design Process/ Using Universal Design Principles — both should be able to have many of the same benefits and experiences.

Involving Visually Impaired Users / Experts In Design Process

1 **Identify** Visually Impaired Users and Experts to review and beta-test

2 Send brief 2-page project overview that includes **expectations** for and **benefits** to advisors

3 Establish an iterative design/critique process; **communicate** regularly

4 **Respect** their expertise and feedback

5 Have advisors help find individuals to **independently** test

6 **Interview** users on the overall experiences
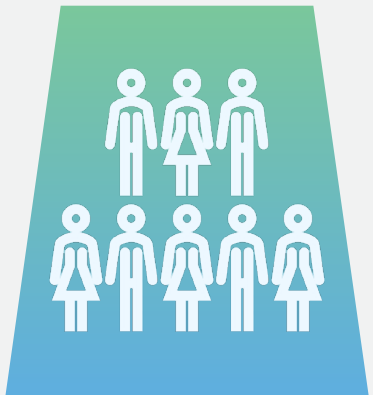
Current Accessibility Landscape

3.4 million (2.4% of population) is visually/impaired/blind over 40

NIH states visual impairment & **blindness will double by 2050** due to aging population, increase in poor health and wellness, genetics https://pubmed.ncbi.nlm.nih.gov/15078664/

According to the CDC, more than 9,000 **public library** systems across the country hosted 1.5 billion in-person visits annually, exceeding the number of physician office visits by over 50%. During those visits, 42% of patrons report using **libraries'** digital resources to **search for health information**. https://www.cdc.gov/pcd/issues/2018/17_0392.htm

x2

Universal Design Principles

Universal Design Principles

Equitable Use

◉ Useful and marketable to people with diverse abilities

◉ Provides the same or equivalent means for all users

◉ Avoid stigmatizing or segregating any users

◉ Make design appealing to all users

Flexibility in Use

◉ Accommodates a wide range of preferences and abilities

◉ Provide choice in methods of use

◉ Accommodate left- and right-handed users

◉ Facilitate accuracy and precision

◉ Provide adaptability to user's pace

Universal Design Principles

Simple and Intuitive Use

- Easy to understand, regardless of user's experience, knowledge, language skills or concentration level

- Eliminate unnecessary complexity

- Be consistent with user expectations

- Accommodate variety of literacy levels

- Highlight most important information

Universal Design Principles

Perceptible Information

- Accommodates a wide range of preferences and abilities

- Provide choice in methods of use

- Accommodate left- and right-handed users

- Facilitate accuracy and precision

- Provide adaptability to user's pace

Universal Design Principles

Tolerance for Error

⊙ Minimizes hazards and negative consequences of accidental or unintended actions

⊙ Arrange elements to minimize hazards and errors

⊙ Provide warnings of hazards and errors

⊙ Provide fail-safe features

Low Physical Effort

⊙ Can be used efficiently and comfortably with minimum fatigue

⊙ Allow user to maintain neutral body position

⊙ Use reasonable operating force

⊙ Minimize repetitive actions

⊙ Minimize sustained physical effort

Universal Design Worksheet

Audience Type	Communication	Product	Environment
Describe all the types of audiences are you intentionally designing for	Can diverse audiences easily access and understand the information	Can diverse audiences easily use your product self sufficiently/with little help	Are diverse audiences able to access the information/product easily within their home or technology they commonly use without help from others
Sighted: Gain info. through reading (ages over 40 lg print), pictures, and audio.			
Vis. Impaired/Blind: Gain info. Through reading (lg print), pictures (swell), and audio.			

Universal Design Worksheet

Audience Type	Communication	Product	Environment
Describe all the types of audiences are you intentionally designing for	Can diverse audiences easily access and understand the information	Can diverse audiences easily use your product self sufficiently/with little help	Are diverse audiences able to access the information/product easily within their home or technology they commonly use without help from others
Sighted: Gain info. through reading (ages over 40 lg print), pictures, and audio.			
Vis. Impaired/Blind: Gain info. Through reading (lg print), pictures (swell), and audio.			

Universal Design Worksheet

Audience Type	Communication	Product	Environment
Describe all the types of audiences are you intentionally designing for	Can diverse audiences easily access and understand the information	Can diverse audiences easily use your product self sufficiently/with little help	Are diverse audiences able to access the information/product easily within their home or technology they commonly use without help from others
Sighted: Gain info. through reading (ages over 40 lg print), pictures, and audio.			
Vis. Impaired/Blind: Gain info. Through reading (lg print), pictures (swell), and audio.			

All of Us RESEARCH PROGRAM | NIH NLM NNLM Training and Education Center

Universal Design Worksheet

Audience Type	Communication	Product	Environment
Describe all the types of audiences are you intentionally designing for	Can diverse audiences easily access and understand the information	Can diverse audiences easily use your product self sufficiently/with little help	Are diverse audiences able to access the information/product easily within their home or technology they commonly use without help from others
Sighted: Gain info. through reading (ages over 40 lg print), pictures, and audio.			
Vis. Impaired/Blind: Gain info. Through reading (lg print), pictures (swell), and audio.			

Universal Design Worksheet

Audience Type	Communication	Product	Environment
Describe all the types of audiences are you intentionally designing for	Can diverse audiences easily access and understand the information	Can diverse audiences easily use your product self sufficiently/with little help	Are diverse audiences able to access the information/product easily within their home or technology they commonly use without help from others
Sighted: Gain info. through reading (ages over 40 lg print), pictures, and audio.			
Vis. Impaired/Blind: Gain info. Through reading (lg print), pictures (swell), and audio.			

For More Information

Laura Bartlett, Project Scientist, Office of Engagement and Training, National Library of Medicine (OET, NLM)

Lydia N. Collins, Participant Engagement Lead, NNLM All of Us Training and Education Center (TEC)

lydia@pitt.edu

Cynthia Randall, Executive Director Cornerstones of Science

cynthia.randall@cornerstonesofscience.org

www.cornerstonesofscience.org