

DTU



Assessing the world through

Universal Design

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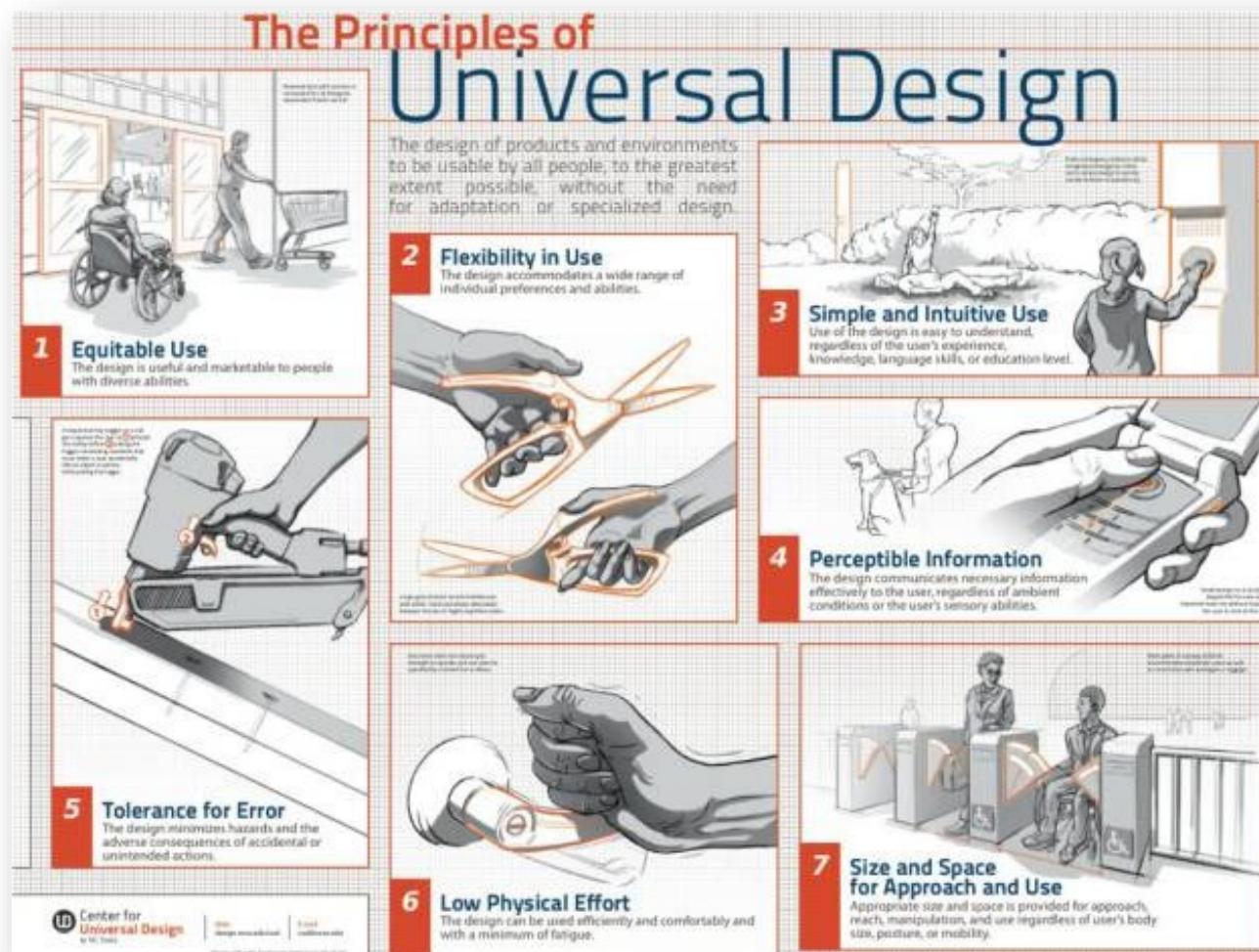
Agenda

- Introduction to workshop theme and Universal Design principles
- TASK 1: Assessing public transportation using Principle Prompt Cards
- TASK 2: Assessing public transportation using Ability Prompt Cards
- Wrap up and Thank you!

Universal Design

“...the design of **mainstream** products, services and environments in such a way that they can be **used by all people**, to the greatest extent possible, without the need for adaptation or specialized design.”

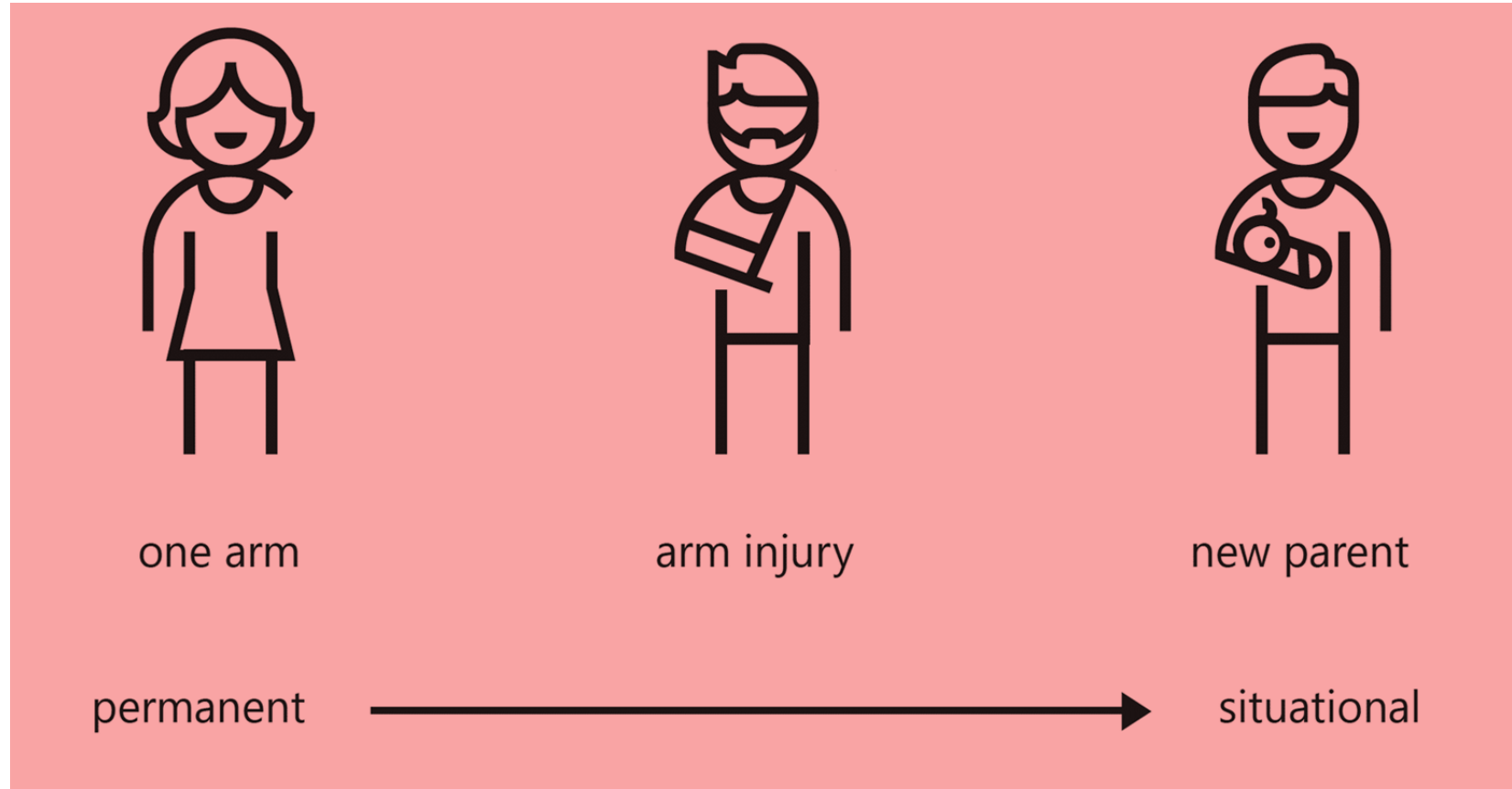
MINDSET & SET OF SKILLS



We can all be excluded

We are all
temporarily
able bodied

Mismatch
between
environment
and peoples
abilities create
exclusion



The 7 principles of Universal design

Tolerance for error

The design minimizes hazards and the adverse consequences of accidental or unintended actions



The 7 principles of Universal design

Flexibility in use

The design accommodates a wide range of individual preferences and abilities



Right & left-handed scissors

The 7 principles of Universal design

Simple and intuitive use

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level



The 7 principles of Universal design

Perceptible information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities



The 7 principles of Universal design

Low physical effort

The design can be used efficiently and comfortably and with a minimum of fatigue



The 7 principles of Universal design

Size and space for approach and use

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture or mobility



The 7 principles of Universal design

Equitable use

The design is useful and marketable to people with different abilities



Assessing the world through Universal Design

Public Transportation Trains

Team

Instructions

The goal of this workshop is to introduce you as a team to the 7 principles of universal design.

On this page, you will find three different artefacts (software, physical space, product).

Your task is to assess, discuss, and reflect on how each artefact has implemented (or not) the principles of Universal Design in its design.

Allocate approximately 5 minutes for each artefact

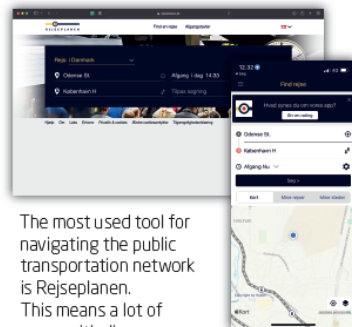
During the discussion of each artefact, use the boxes provided to mark with an "X" if the artefact adheres to the principle.

Remember the purpose of this activity is to encourage reflection on the implementation of Universal Design principles in different artefacts.

Planning trip

Finding out how to get from A to B

5 MIN



The most used tool for navigating the public transportation network is Rejseplanen. This means a lot of users with diverse needs, uses the app/website every single day. Discuss if Rejseplanen lives up to the different principles. Why? Why not?

Which principles are being followed?

Add an X if the principle is implemented in the design

- ☐ Tolerance for error
- ☐ Flexibility in use
- ☐ Simple and intuitive
- ☐ Perceptible Information
- ☐ Low physical effort
- ☐ Size & space for approach & use
- ☐ Equitable use

Navigating

Locating and getting to the right track

5 MIN



The bigger train stations in Denmark e.g. Odense, Aarhus and Copenhagen, are all busy places, with many different tracks, stores, smells and sounds. An environment you need to navigate in order to get to your train. Discuss if Copenhagen Central Station lives up to the different principles. Why? Why not?

Which principles are being followed?

Add an X if the principle is implemented in the design

- ☐ Tolerance for error
- ☐ Flexibility in use
- ☐ Simple and intuitive
- ☐ Perceptible Information
- ☐ Low physical effort
- ☐ Size & space for approach & use
- ☐ Equitable use

Taking the train

Boarding on to the train

5 MIN



We have several types of trains used by DSB in Denmark. The most iconic of them being the IC3-train, which saw its first passenger journey more than 30 years ago. The IC3 is still to this day, DSB's primary train for inter city travels. Discuss if the IC3 train lives up to the different principles. Why? Why not?

Which principles are being followed?

Add an X if the principle is implemented in the design

- ☐ Tolerance for error
- ☐ Flexibility in use
- ☐ Simple and intuitive
- ☐ Perceptible Information
- ☐ Low physical effort
- ☐ Size & space for approach & use
- ☐ Equitable use

Principle Prompt Cards

Tolerance for error

Does the design minimize hazards and the adverse consequences of accidental or unintended actions?

Prompts

- Arrange commonly used elements where most accessible and hazardous elements either removed or shielded
- Provide warnings and fail safe features

Example: Undo

Flexibility in Use

Does the design accommodate a wide range of individual preferences and abilities?

Prompts

- Provide choice such as right or left-handed use
- Allow for different levels of accuracy
- Allow for people who may do things at a different pace

Example: Adjustable desks

Simple and Intuitive

Is the use of the design easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level?

Prompts

- Keep it simple and consider what the user may be expecting
- Allow for different literacy and languages
- Provide prompts and feedback

Example: Assembly instructions

Perceptible Information

Can the design communicate information effectively to the user, regardless of ambient conditions or the user's sensory abilities?

Prompts

- Make it easy to provide directions or instructions
- Create compatibility for different devices or techniques used by people with sensory disabilities

Example: Tactile pavement

Low physical effort

Can the design be used efficiently and comfortably and with a minimum of fatigue?

Prompts

- Use operating forces that are reasonable
- Minimize repetitive actions
- Minimize the need for a sustained physical effort

Example: Automatic soap dispenser

Size & space for approach & use

Is appropriate size and space provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility?

Prompts

- Allow for a comfortable reach whether sitting or standing
- Provide space for someone using an assistive device or the assistance of another person or support animal

Example: Wide access

Equitable Use

Is the design useful to people with diverse abilities?

Prompts

- Means of use is identical or equivalent for all users.
- No one is segregated or stigmatized.
- Safety and security are equally available to all users.

Example: Curb Cut

Assess using the Principle Prompt Cards

- The goal of this workshop is to introduce you as a team to the 7 principles of universal design. On the template, you will find three different artefacts (software, physical space, product).
- Your task is to **assess**, **discuss**, and **reflect** on how each artefact has implemented (or not) the principles of Universal Design in its design. Allocate approximately 5 minutes for each artefact
- During the discussion of each artefact, use the boxes provided to mark with an "X" if the artefact adheres to the principle.
- Remember the purpose of this activity is to **encourage reflection** on the implementation of Universal Design principles in different artefacts

Assessing the world through Universal Design

<h2>Public Transportation Trains</h2>	<h3>Planning a trip</h3> <p>What are challenges for people with your given disability with the current version of Rejseplanen?</p>	<h3>Navigating</h3> <p>What are challenges for people with your given disability with the current layout/design of Copenhagen Central Station?</p>	<h3>Taking the train</h3> <p>What are challenges for people with your given disability using the IC3-Train?</p>
<h4>Team</h4> <div></div>			
<h4>Ability</h4> <div></div>			
<h4>Instructions</h4> <p>In this exercise, you will revisit the discussions you had in the previous exercise, but this time, you will focus on a specific ability given to you. The Ability Prompt Cards will be used to guide your discussion.</p> <p>Using the information from the previous exercise, individually brainstorm how one of the artefacts you evaluated challenges people with the lack of your given ability.</p> <p>After that, discuss the issues you came up with within the team. There is space on the page for you to place your Post-Its.</p> <p>Finally, you should agree on one thing that could be changed with the artefact to create the most significant improvement.</p> <p>This exercise aims to broaden the discussion beyond implementing the Universal Design principles and to consider the specific needs of different abilities.</p>	<h4>Improvement</h4> <p>If only one thing could be improved, what should it be?</p>	<h4>Improvement</h4> <p>If only one thing could be improved, what should it be?</p>	<h4>Improvement</h4> <p>If only one thing could be improved, what should it be?</p>

Technology Leaving No One Behind is a programme driven by DTU Skylab and enabled through strong partnerships with BEVICA, DPoD, SUMH, DTU Management and DTU Entrepreneurship

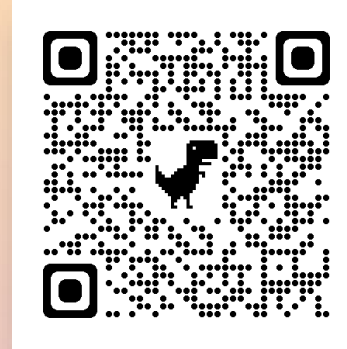
Ability Prompt Cards

Unable to Move	Unable to See	Unable to Touch	Unable to Navigate	Unable to Understand
The inability to have full function of the bodies motorics	The inability to use the full function of your eyesight	The inability to use the full function of your hands.	The inability to cognitively navigate different situations	The inability to understand different forms of infomation
Wheel chair Pregnant Truck driver	Blind Cataract In the dark	One arm Arm injury Hands full	Downs Syndrome Concussion Confusion	Dyslexia Abroad New tech

Assess using the Ability Prompt Cards

- In this exercise, you will revisit the discussions you had in the previous exercise, but this time, you will focus on a **specific ability** given to you. The Ability Prompt Cards will be used to guide your discussion.
- Using the information from the previous exercise, **individually brainstorm** how ONE of the artefacts you evaluated challenges people with the lack of your given ability.
- After that, discuss the issues you came up with **within the team**. There is space on the page for you to place your Post-Its.
- Finally, you should **agree on one thing that could be changed** with the artefact to create the most significant improvement.
- This exercise aims to **broaden the discussion** beyond implementing the Universal Design principles and to consider the specific needs of different abilities.

www.universaldesignguide.com



Thank you for your insightful discussions!

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