

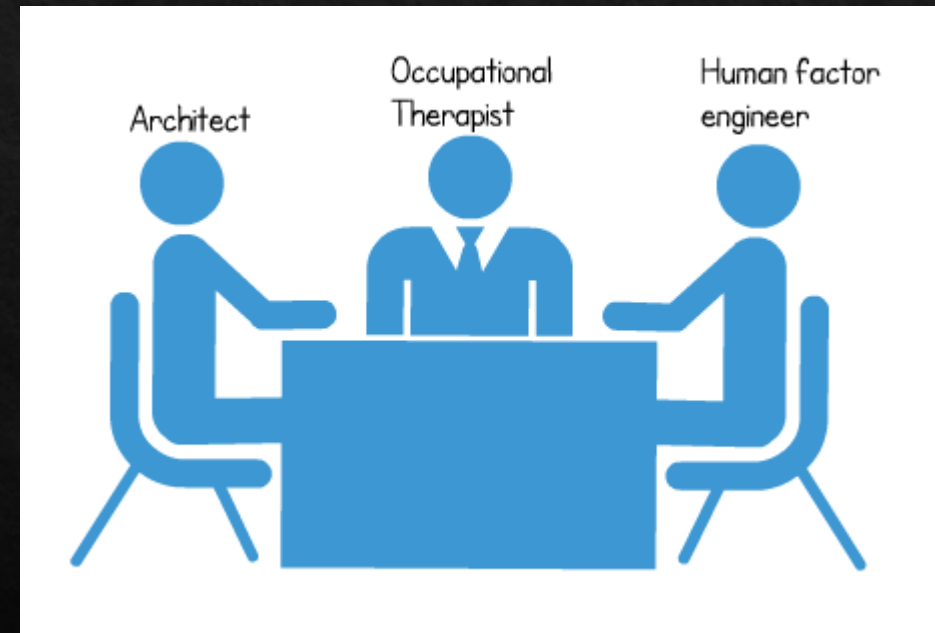
# Development and Evaluation of Universal Design Consultation Guide for Occupational Therapy Practitioners

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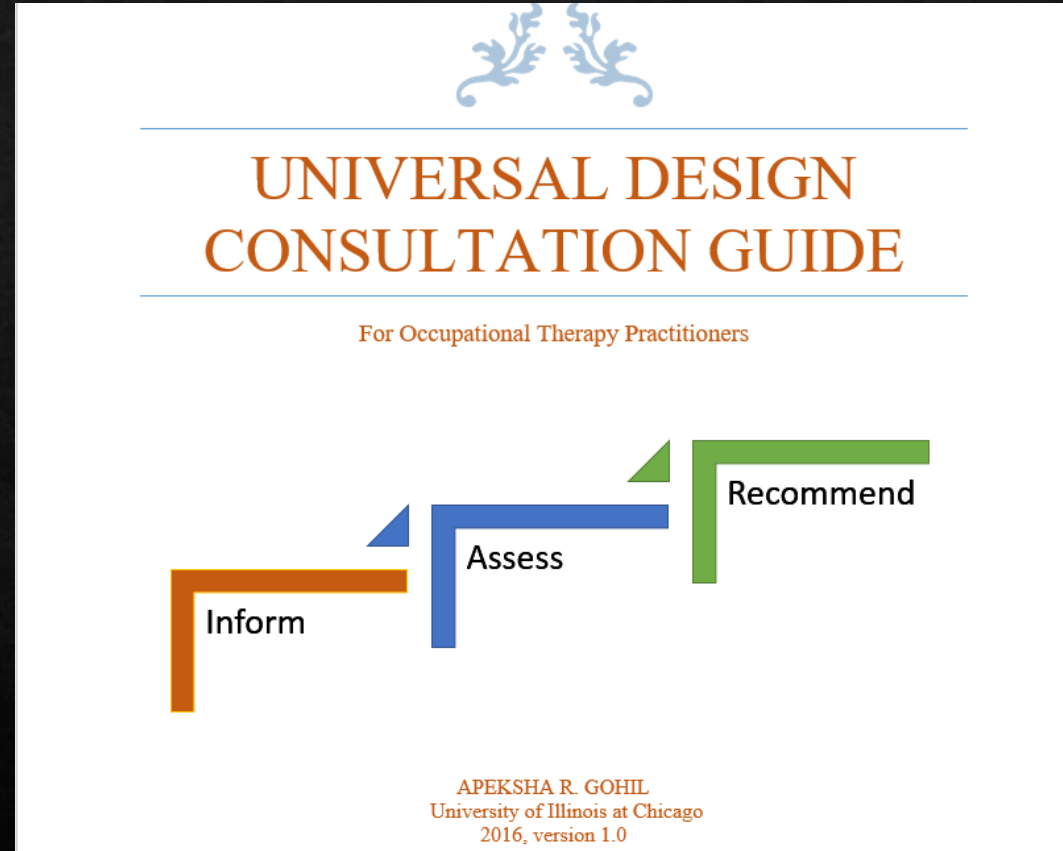
# My Vision

Entrepreneur -  
Work as a  
Universal Design  
Consultant

consultancy firm  
of  
interdisciplinary  
professionals



# The OTD Project





# Need for the Project

## **Current approach to address accessibility – ADA 1990, Section 504 of the Rehab Act**

- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Minimum technical requirements to make buildings and facilities, program and services accessible
- Intended to promote participation of people with disabilities
- Focus on physical barriers

## **Reality after 25 years of the ADA**

- People with disabilities are still excluded from participating in society
- Why: Minimum requirements, non-compliance, complex interpretation of the law



# Need for the Project (continued)

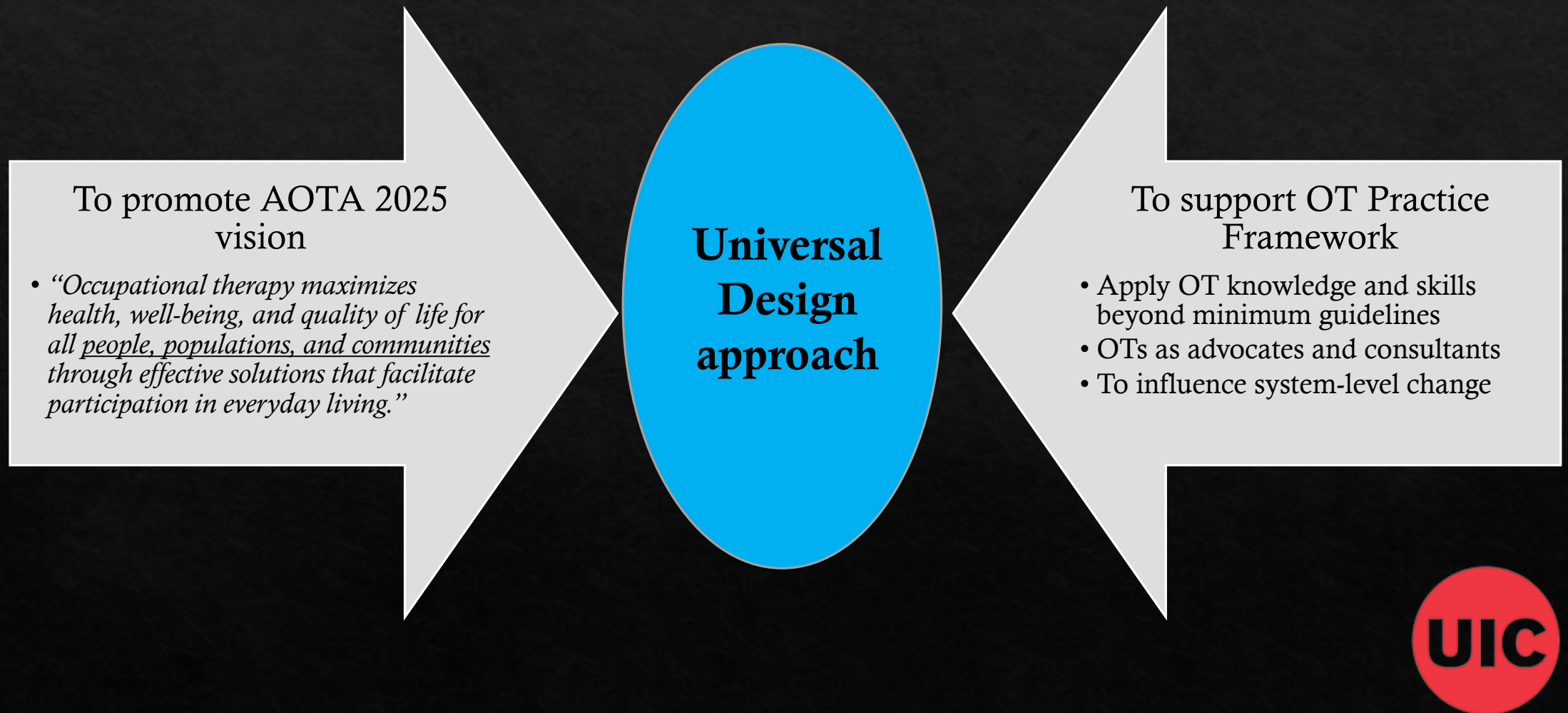
## **Anyone can experience disability**

- Aging, injury, illness, life style factors
- Permanent or temporary disability, invisible disability

## **Different types of environmental barriers**

- Physical, sensory, cognitive, socioemotional
- Cultural, economic

# Need for the Project (continued)



# Project Development

Universal Design Consultation Guide

(UDC Guide)





# Universal Design Consultation Guide

## What is it

- A stepwise process for OT practitioners to consult with clients from diverse contexts
- Based on the concept of user involvement in the design process
  - Participatory approach to design
- Recommendations for engaging different stakeholders to reach universal design solutions

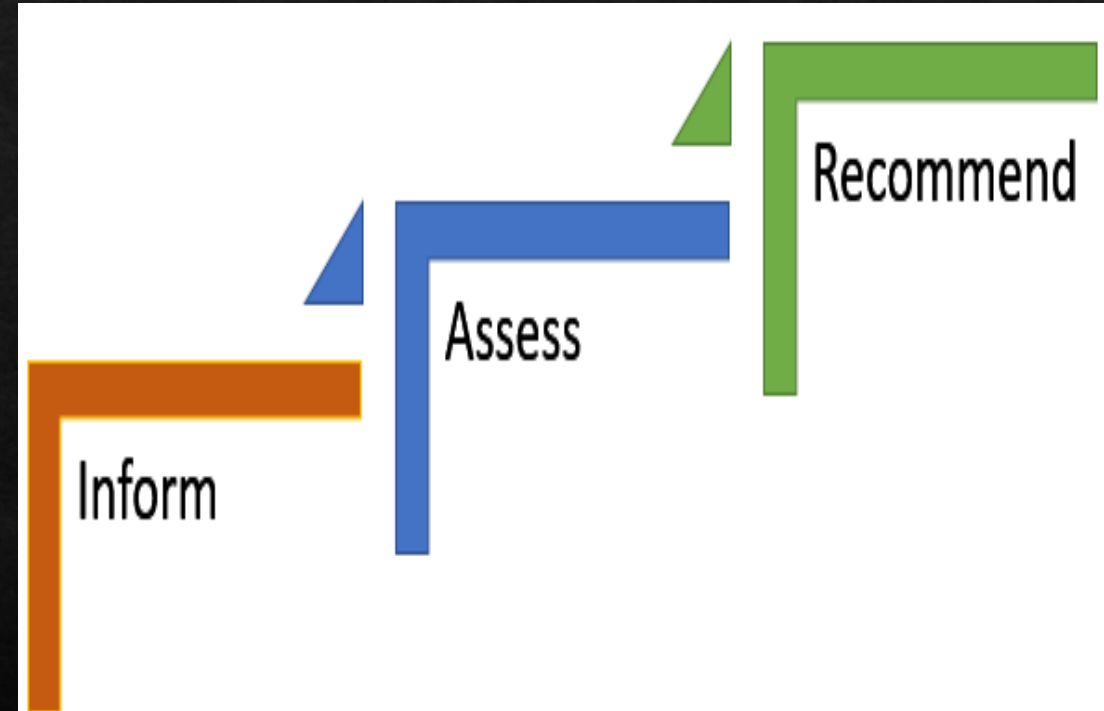
## What it is not

- Not a checklist of prescriptive standards of accessibility
- Not a curriculum on universal design



# Structure of the guide

- ◆ Divided into three stages:
  - ◆ Stage 1 – Provide Information
  - ◆ Stage 2 – Conduct Needs Assessment
  - ◆ Stage 3 – Recommend Universal Design Solutions
- ◆ Each stage has different interactive tools:
  - ◆ PowerPoint, Case study, Templates, Worksheets, and Matrix.



# Stage 1 Inform

- ◆ Purpose: To educate your client on the concept of universal design (UD) and applicable accessibility laws.
- ◆ Conceptual framework: UD Philosophy, theories of behavior change, view of environment in OT theories

<b><u>STAGE 1 Provide Information</u></b>	<b>4</b>
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# Stage 1 Content

## Universal Design PowerPoint

### 1.1.B Universal Design PowerPoint

A PowerPoint is provided which gives a quick overview about evolution, definition, principles, and goals of universal design. A few online resources are also provided at the end of the PowerPoint to read more about UD approach.

#### How to use the PowerPoint

- ✓ Download the PowerPoint provided with this guide on your computer
- ✓ Double click on the image below
- ✓ Use a presenter view to access notes for each slide

## Universal Design Overview

Apeksha Gohil  
University of Illinois at Chicago

### Principle 4: Perceptible Information

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



As an occupational therapist, one should think not only how a disability can limit one's abilities but also, how a situation can limit one's abilities to access environments. For example, Were you ever in a situation on a train or a bus when you were so busy looking in your phone, or talking to your friends riding with you that you are not paying attention to what announcement (what is the next station) is displayed on the screen – you are grateful that there were audio announcements on the train.

On the other hand, have you ever been in a situation where you are listening to the music on your phone that you can't hear audio announcements, or a long day after work – you are so absent minded that you are not actively listening to the announcement – well, visual announcements help in such situations.

People usually think that audio announcement are for blind individuals and visual announcements are for hearing impaired, but as you can see in the examples, it is useful for everyone.

# Stage 1 Content (continued)

## Policy Analysis

### 1.2.B Analysis of Accessibility Laws

Table 1.2 Comparison of Accessibility Laws<sup>6</sup>

The Architectural Barriers Act (ABA 1968)	Section 504 of the Rehabilitation Act (1973)	The Fair Housing Act (1988)	The Americans with Disabilities Act(ADA 1990)
<p>Applies to facilities designed, built, altered, or leased with federal funds.</p> <p>Applies only to new and altered buildings or newly leased facilities</p>	<p>Applies to new constructions, alteration, existing facilities.</p>	<p>Applies to private housing, housing that receives federal funds, state, and local government housing</p>	<p><u>Five Titles</u>            Title 1 – Employment,            Title 2- State and Local government,            Title 3 – Private entities,            Title 4- Telecommunication Act,            Title 5- miscellaneous</p> <p>Applies to fixed or built-in elements of public and private entities</p>
<p>Requires access to the built environment; No guidelines to provide accessible programs and services in the facilities</p>	<p>Requires access to programs, activities and services that are funded or conducted by the federal government.</p> <p>Access to program involve facility construction and alteration, retrofits to existing facilities to provide access to programs and services</p>	<p>Prohibits discrimination on the basis of disability, race, color, religion, sex, familial status, national origin</p>	<p>Prohibits discrimination on the basis of disability by businesses, non-profit organizations, local county, state government</p>

### 1.2.C Applicability of Laws – Case Study

#### Case study

Sara works at a private hospital. She has a physical disability and uses a power wheelchair for functional mobility. The hospital's mammography department received federal funding to provide free breast cancer screening for all the female employees in August 2016. However, when Sara went to the facility for screening, she realized that the mammogram machine was not accessible to wheelchair users. Sara left the facility without screening.

In this scenario, the hospital discriminated against an employee with a disability. What law(s) were violated in this situation?

#### Ask yourself

- Is it a government or a private entity? It is a private entity (Title III of the ADA)
- Has the entity received federal funds? Yes
  - Is this federal money provided to design, built or altered the facility? No
  - Is this federal money provided for activities or services in the facility? Yes, the hospital's mammography department has received federal funding to provide breast cancer screening for all the female employees in the university. (Section 504 of the Rehabilitation Act)

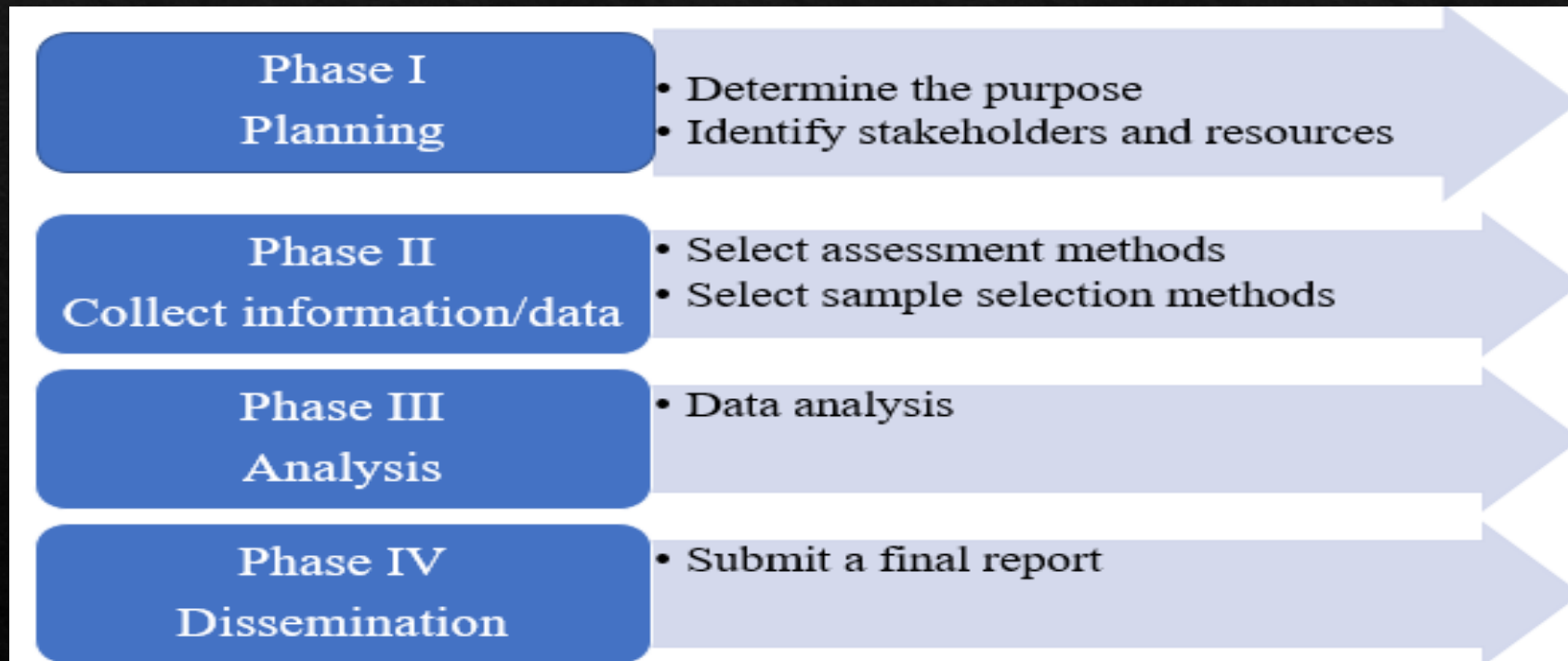
#### Now ask yourself

- ✓ Was Title III of the ADA violated? No, the case does not mention inaccessibility of the built environment.
- ✓ Was Section 504 of the Rehabilitation Act violated? Yes, the mammogram service was inaccessible for wheelchair users.



# Stage 2 Assess

- ❖ Purpose: To identify different stakeholders, to identify and prioritize their needs for universally designed services, programs, products, and built environment through a systematic needs assessment process.
- ❖ Conceptual framework: Participatory approach, stakeholder theory, needs assessment





# Stage 2 – Phase I Planning

## Determine the Purpose

### Template 2.3.A Define the Purpose of Needs Assessment

Define the Purpose	Guiding Questions
<b>Example</b>  A library at a state university wants to conduct a needs assessment to improve its built environment and programmatic services for all the users.	What kind of information is expected out of the needs assessment?  What are the goals your client/ organization wants to achieve from the needs assessment?

## Identify Stakeholders

### Template 2.3.B1 Identify Stakeholders

#### Example

**Purpose:** A public hospital wants to conduct a needs assessment to improve its built environment and services for all the users.

Guiding Questions	Service providers or Key stakeholders	Service users	
		Primary users	Secondary users
Who takes decisions about policies and procedures?	State government Policy makers Employees, e.g. <ul style="list-style-type: none"><li>- Doctors</li><li>- Nurses</li><li>- Rehabilitation professionals</li></ul> Managers Architects Designers	A patient	A visitor or caregiver of a patient
Who are current and potential primary users of the services?			
Will the services affect secondary users?			
Who can be impacted positively or negatively by the decisions?			
Who is an investor or a funder?			

# Stage 2 – Phase I Planning (continued)

## Prioritize Stakeholders

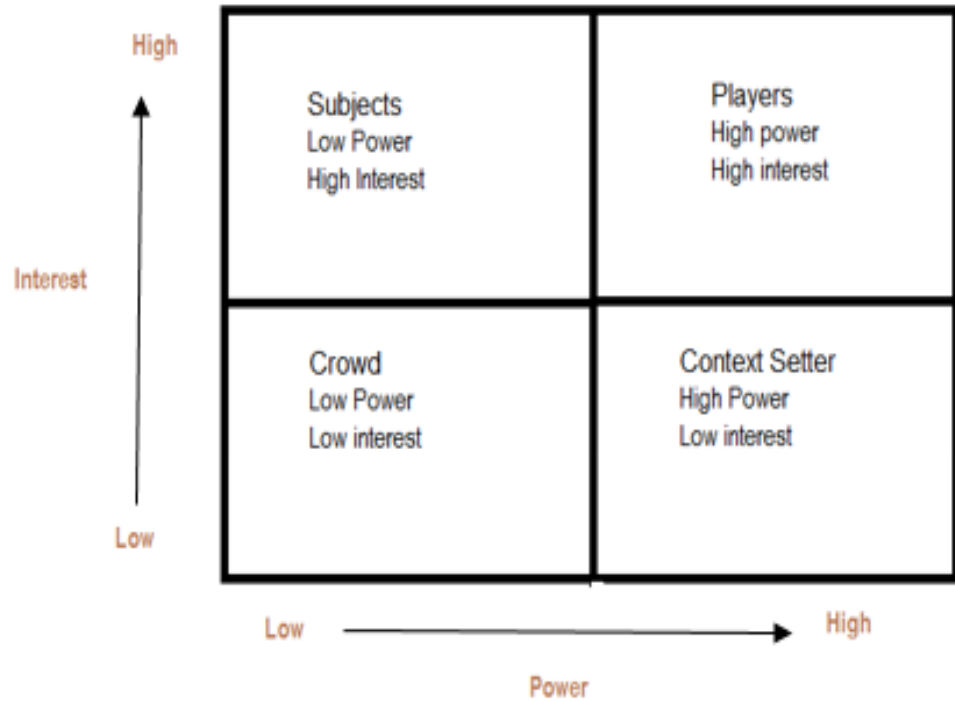


Figure 2. Power versus Interest grids<sup>16</sup>

## Final List of Stakeholders

Template 2.3.B2 Final List of Stakeholders

Purpose of needs assessment					
Stage of the project					
Name of stakeholders	Players	Subjects	Context setter	Crowd	Why is it important to involve this stakeholder?
Example Mr. Thomas (User)		x			To obtain data on the accessibility and usability of the services
Ms. Watson (Manager)	x				To determine cost, affordability, and willingness to implement changes

# Stage 2 – Phase I Planning (continued)

## Identify Available Resources


Template 2.3.C Available Resources

Available resources	Guiding Questions	List available resources for your project
<b>Financial resources</b>	<ul style="list-style-type: none"><li>• What is the budget to conduct a needs assessment?<ul style="list-style-type: none"><li>○ Incentives for participants</li><li>○ Stationery supplies, printing costs, computers etc.</li><li>○ Costs of statistical software</li></ul></li></ul>	<ul style="list-style-type: none"><li>•</li></ul>
<b>Human resources</b>	<ul style="list-style-type: none"><li>• Who is available to help with different aspects of needs assessment?<ul style="list-style-type: none"><li>○ Recruiting participants</li><li>○ Data collection</li><li>○ Data analysis</li></ul></li><li>• Does the organization/client have statisticians or need to seek external consultation?</li><li>• Is clerical staff available?</li></ul>	<ul style="list-style-type: none"><li>•</li></ul>
<b>Other</b>	<ul style="list-style-type: none"><li>• What is the timeline to gather data?</li><li>• Are there enough financial and human resources to achieve the outcome in that time frame?</li></ul>	<ul style="list-style-type: none"><li>•</li></ul>



# Stage 2 – Phase II Collect data

## Determine the Level of Engagement

Level of Public Impact 				
	Consult	Involve	Collaborate	Empower
Public Participation Goal	“To obtain public feedback on analysis, alternatives, and/or decisions.”	“To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.”	“To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.”	“To place final decision-making in the hands of the public.”
Promise to the Public	“We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.”	“We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.”	“We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decision to the maximum extent possible.	“We will implement what you decide.”
Suggested methods	Survey Interviews Focus groups Secondary data	Workshops	Participatory action research	Co-design

# Stage 2 – Phase II Collect data (continued)

## Select Data Collection Method(s)

Methods	Benefits	Limitations	Things to Consider	Focus groups			
Secondary data/existing data	<ul style="list-style-type: none"> <li>Already available</li> <li>Available for free or at a very low cost</li> <li>Time saving</li> </ul>	<ul style="list-style-type: none"> <li>May not contain all required information</li> <li>Requires expert assistance to interpret the data.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Type of information required</li> <li>✓ Financial resources</li> </ul>		<ul style="list-style-type: none"> <li>Can be used with quantitative data</li> <li>Can provide different perspectives</li> </ul>	<ul style="list-style-type: none"> <li>Transcribing process is time consuming.</li> <li>Do not provide numerical information</li> </ul>	<ul style="list-style-type: none"> <li>✓ Expectation of funders</li> <li>✓ Accuracy of data collected</li> </ul>
Surveys	<ul style="list-style-type: none"> <li>Creates a large amount of numerical data</li> <li>Cost-effective</li> <li>Participants require little or no assistance</li> </ul>	<ul style="list-style-type: none"> <li>Difficult to obtain in-depth information</li> </ul>	<ul style="list-style-type: none"> <li>✓ Timeline</li> <li>✓ Staff availability</li> </ul>			<ul style="list-style-type: none"> <li>Difficult to gather information</li> <li>May provide irrelevant information</li> </ul>	<ul style="list-style-type: none"> <li>✓ Multidisciplinary team</li> </ul>
Semi-structured Interviews	<ul style="list-style-type: none"> <li>Providing respondents with realistic and convenient responses</li> </ul>	<ul style="list-style-type: none"> <li>Likelihood to provide choices from fixed responses</li> </ul>	<ul style="list-style-type: none"> <li>✓ Professional expertise</li> </ul>			<ul style="list-style-type: none"> <li>Needs careful planning</li> </ul>	<ul style="list-style-type: none"> <li>✓ Reasonable accommodations for participants with disabilities, e.g. providing sign language interpreter for deaf participants in focus groups or interviews</li> </ul>
Expert interviews <sup>19</sup>	<ul style="list-style-type: none"> <li>Participants have in-depth knowledge of a specific issue</li> <li>Limited number of participants needed</li> </ul>	<ul style="list-style-type: none"> <li>Small number of participants</li> <li>Biased responses</li> </ul>	<ul style="list-style-type: none"> <li>✓ Access to members of target population</li> </ul>				
				Participatory Action Research <sup>20</sup>	<ul style="list-style-type: none"> <li>Opportunities for different stakeholders to define problems and suggest solutions</li> <li>Generates qualitative data</li> </ul>		
				Co-design	<ul style="list-style-type: none"> <li>Stakeholders with different needs and skills together create a product or services</li> <li>Opportunity to test different ideas</li> <li>Creates a sense of responsibility and ownership</li> </ul>		
				Field trips/on-site tours <sup>21,22,23,24</sup>	<ul style="list-style-type: none"> <li>To demonstrate challenges while using the facility</li> <li>Opportunity for collecting activity or task related data</li> </ul>	<ul style="list-style-type: none"> <li>Difficult to generalize results</li> </ul>	
				Observation <sup>25,26</sup>	<ul style="list-style-type: none"> <li>Passive way of collecting data</li> <li>Possible to involve larger sample</li> </ul>	<ul style="list-style-type: none"> <li>Potential bias of the observer</li> </ul>	

# Stage 2 – Phase II Collect data (continued)

## Select Sample Selection Method

Table 2.4.C Sample Selection Methods<sup>27</sup>

Sample Selection Method	Benefits	Limitations
<i>Probability Sampling Methods: Less systematic bias</i>		
<b>Simple Random Sampling</b> <i>Equal chances of every subject in the population to be selected</i>	<ul style="list-style-type: none"> <li>• More likely to select a representative sample</li> <li>• Easy to understand</li> </ul>	<ul style="list-style-type: none"> <li>• Costly</li> <li>• Large Sampling errors</li> </ul>
<b>Stratified Sampling</b> <i>Subjects are selected from homogenous segments of the population using simple random sampling</i>	<ul style="list-style-type: none"> <li>• Less random sampling errors</li> <li>• Subjects from each segment are represented</li> </ul>	<ul style="list-style-type: none"> <li>• Costly, time consuming</li> <li>• Complicated data analysis</li> </ul>
<b>Systematic Sampling</b> <i>Selecting subjects at numbered intervals</i>	<ul style="list-style-type: none"> <li>• Simple to understand</li> <li>• Less expensive</li> </ul>	<ul style="list-style-type: none"> <li>• Every combination of subjects may not have equal chance to be included</li> </ul>
<b>Cluster Sampling</b> <i>Selecting subjects from naturally occurring groups such as geographically</i>	<ul style="list-style-type: none"> <li>• Easy to determine characteristics of groups</li> <li>• May require less time and money</li> </ul>	<ul style="list-style-type: none"> <li>• Difficult to analyze and interpret data</li> </ul>
<i>Non-probability Sampling Methods: Useful for small sample size</i>		
<b>Availability Sampling</b> <i>Selecting subjects based on their availability</i>	<ul style="list-style-type: none"> <li>• Requires less time and money</li> <li>• Easy operational procedures</li> </ul>	<ul style="list-style-type: none"> <li>• Likely to either underrepresent or over represent a population</li> </ul>
<b>Purposeful Sampling</b> <i>Subjects must match inclusion-exclusion criteria of the study</i>	<ul style="list-style-type: none"> <li>• More control over sample selection</li> <li>• Generalizable findings</li> <li>• Low rate of selection bias</li> </ul>	<ul style="list-style-type: none"> <li>• Costly, time consuming</li> <li>• High rate of personal bias</li> </ul>
<b>Quota Sampling</b> <i>Select a specific number of subjects from a subpopulation with certain characteristics</i>	<ul style="list-style-type: none"> <li>• Less error in data collection</li> <li>• Includes members of different subpopulations</li> </ul>	<ul style="list-style-type: none"> <li>• Expensive, time consuming</li> <li>• Important to know the characteristics of groups in advance</li> </ul>
<b>Respondent-Assisted Sampling</b> <i>Asking already recruited subjects to recruit more subjects that match the selection criteria</i>	<ul style="list-style-type: none"> <li>• Useful to recruit hard-to-reach populations</li> </ul>	<ul style="list-style-type: none"> <li>• Subjects' responses may be influenced by the opinions of individuals who recruited them</li> </ul>



# Stage 2 – Phase III Data Analysis

## Select Data Analysis Software Packages

Table 2.3 Comparison of Data Analysis Software Packages<sup>28,29,30</sup>

	Data analysis software	Benefits	Limitations
Quantitative research	SAS (Statistical Analysis System)	<ul style="list-style-type: none"><li>• Useful for an everyday user managing complex data sets</li></ul>	<ul style="list-style-type: none"><li>• Difficult to learn</li><li>• Complicated command structure</li><li>• Expensive</li></ul>
	SPSS (Statistical Package for the Social Sciences)	<ul style="list-style-type: none"><li>• For occasional users</li><li>• Simple to use, point and click interface</li></ul>	<ul style="list-style-type: none"><li>• Expensive to purchase all the modules</li></ul>
	STATA	<ul style="list-style-type: none"><li>• Advances statistical procedure than SPSS</li><li>• Excellent documentation</li><li>• Simple command structure</li></ul>	<ul style="list-style-type: none"><li>• Difficult to manage large data sets as efficiently as SAS</li></ul>
	Excel	<ul style="list-style-type: none"><li>• Easy to understand</li><li>• User-friendly</li></ul>	<ul style="list-style-type: none"><li>• Difficult to work with large data sets</li></ul>
Qualitative research	NVivo	<ul style="list-style-type: none"><li>• Improves accuracy of studies</li><li>• Speeds up the analysis process</li><li>• Useful to analyze multiple transcripts</li></ul>	<ul style="list-style-type: none"><li>• Does not accept all file formats to download audio recordings</li></ul>
	Atlas.ti	<ul style="list-style-type: none"><li>• Time saving</li><li>• Can handle text data, videos, other digital media formats</li></ul>	<ul style="list-style-type: none"><li>• Difficult to learn</li></ul>

# Stage 2 – Phase IV Dissemination

## Template 2.6.A Needs Assessment Report

### Needs Assessment Final Report

Prepared for:

Date:

Prepared by:

#### **Introduction/ Background**

- Provide justification for needs assessment to reach universal design solutions

#### **Methods**

- What types of stakeholders were involved? Why?
- What assessment methods were used? Why?
- How was the data collected and analyzed?

#### **Results**

- Highlight the findings – you can provide a table to visualize the needs of service users and expectations of key stakeholders

#### **Discussion and conclusion**

- Interpretation of findings, Limitations and strength
- Describe roles of each professional on the team and how they promoted each other's knowledge in the needs assessment process – highlight your role as an OT practitioners and document how your knowledge and skills influenced decision at each stage

# Stage 3 Recommend UD Solutions

## Activity Analysis Matrix

Date:

Organization/Client:

Description of Activity:

Steps in performing the activity	Recommended solutions	Alternative solution (1)	Alternative solution (2)	Alternative solution (3)





# Stage 3 Recommend UD Solutions

## Universal Design Decision Matrix

Date:	
Organization/Client:	
Description of Issue or Need:	

[illegible]

# Project Evaluation

## Universal Design Consultation Guide



# Method

- ◆ Design : Qualitative focus group design to identify strengths, limitations, and recommendations to improve the UDC guide
- ◆ Recruitment:
  - ◆ IRB approved email consent to recruit OT doctoral students and OT practitioners
  - ◆ Eligibility criteria: At least a Bachelor's degree in OT
  - ◆ Focus group size: Total 6 participants (five in-person, one via phone)
  - ◆ Participants: two recent OT graduates (2015, 2016), three OT practitioners (20-25 years of experience), other qualifications – gerontologist, mechanical engineer, PhD candidate
- ◆ Data collection:
  - ◆ Focus group guide with open ended questions
  - ◆ Session was audio recorded
- ◆ Data Analysis:
  - ◆ Manual, thematic analysis





# Findings

## Three Themes

- Usability of the guide
- Distinct role of OT as practitioners, advocates, and consultants
- Recognition of OT among other professionals

# Findings (continued)

## 1. Usability of the Guide

### ◆ Strengths:

- ◆ Stage 1 and 2 are very thorough
- ◆ Stage 3 – Universal Design Decision Matrix
- ◆ UD PowerPoint can be useful in classroom teaching
- ◆ Useful in classroom context – comparison of UD and accessibility
- ◆ Can be used for different types of practitioners

### ◆ Suggestions:

- ◆ More example in stage 3
- ◆ Reiterate UD principles at the beginning of the guide



# Findings (continued)

## 2. Distinct role of OT as practitioners, advocates, and consultants

### Knowledge of OT practitioners can contribute to UD process

*OTs are patient facing professionals who really understand the physical limitations, the mental limitations, the architects would not know that.  
(Participant 1)*

*You [OTs] are also representing medical conditions which other professionals might not know about. (Participant 2)*



# Findings (continued)

Advocate to include people with disabilities in a participatory process through their networks

*“They [other professionals] are not necessarily going to have access to people [people with disabilities] you know. You [OT] not only have knowledge about those people but you have access to get their input.”  
(Participant 5)*



# Findings (continued)

## UDC guide serves as an example - Role of OT as a consultant

*When I looked at the framework there isn't very much about consulting, it mentions it but it does not flesh it out. (Participant 5)*

*here is a great example [the UDC guide] on how you can be a consultant. (Participant 3)*



# Findings (continued)

## 3. Recognition of OT among other professionals

UDC Guide – a useful tool to define a stronger position of occupational therapy and help build relationships with other professionals.

*I think my understanding is that every builder and contractor have OT in back pocket and shows we are working together but I don't find it to be true even at this stage. (Participant 4)*

*There are conferences, they study the relationship between OTs and builders and I don't think it has changed much so again you have an audience and certification program there so you can just have this guide which can help bridge the relationship. (Participant 4)*





# Revision to UDC Guide



# Revision to the UDC guide

A Preface elaborating the role of occupational therapy practitioner as a valuable member of universal design team

Activity Analysis Matrix in Stage 3 with example to explain potential role of OT practitioner to reach UD solutions

Development of worksheet for each stage

Compilation of all templates, worksheets, and matrix at the end to use it independent from the guide

# Before

# Preface

## Introduction

### **What is a Universal Design Consultation Guide (UDC guide)?**

The UDC guide provides a stepwise process for occupational therapy (OT) practitioners to consult with clients from diverse contexts, such as housing, healthcare, public spaces to reach targeted universal design solutions to improve the environmental accessibility. It includes recommendations for engaging stakeholders within the organization, such as service providers, service users and other key stakeholders to get buy in and ensure that the solutions meet diverse needs. This guide provides a three-stage stepwise process to reach universal design solutions. It does not provide a prescriptive standard for accessibility but it will enable OT practitioners to think beyond minimum standards while consulting a client about accessibility and universal design.

### **Why do we need a UDC guide when we already have the guidelines and technical standards provided by the different accessibility laws?**

The Americans with Disabilities Act, 1990 is a landmark civil rights legislation, yet it only provides minimum guidelines and regulations on how to make the environment accessible for people with disabilities. Anyone can experience disability due to factors such as injury, illness or the aging process. For example, aging may lead to a hearing or visual impairment, obesity can lead to mobility restrictions and social stigma, or road traffic accidents may lead to physical impairments. The impairments combined with inaccessible environmental features may create barriers for users. Demographic changes towards an aging society and lifestyle conditions require an innovative way of thinking to design environments, services, and products which are accessible not only for people with disabilities but for people with the widest range of abilities.<sup>1</sup> Universal Design is one approach to address environmental barriers and is defined as “the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.”<sup>2</sup>

### **How is this guide useful for me as an occupational therapy practitioner?**

OT practitioners’ training in activity analysis, human structure and function, and application of theories of person-environment fit in different contexts qualify them to provide creative solutions to build an accessible community for all users.<sup>3</sup> Interventions, solutions and innovations should not be limited by regulatory codes and minimum standards required by the law. Thus, the aim of



# Preface

## After

### Definitions Within the UDC guide,

*Clients* are defined as persons, groups, and populations<sup>2</sup>; and are divided into six categories – individual, families, groups, communities, organizations, and populations<sup>3</sup>.

*Environmental barriers* include barriers created by built environment, natural environment, cultural environment, social interaction, and social and economic system<sup>4</sup>.

*Participation* is defined as involvement in a life situation by creating opportunities to engage in meaningful occupations<sup>2</sup>.

*Team Members:* Professionals from different disciplines such as occupational therapy, architecture, human factors engineering, urban planning – it may vary depending on the project.

### Occupational Therapist: A Valuable Team Member

Inter-professional collaboration is important to address environmental barriers through universal design approach<sup>5</sup>. Occupational therapists' distinct value to the universal design process stems in part from their specialized knowledge of human functioning, disability, occupational performance, person-environment interaction which is supplemented by their skills in occupational analysis and environmental adaptation. These are areas of professional knowledge, skills, and abilities that other professionals, such as designers, architects, and builders lack. This creates an opportunity for occupational therapy practitioners to assume roles as valuable members of the inter-disciplinary universal design teams.

Occupational therapy practitioners' goal setting skills, among other skills, brings a unique perspective to approach universal design solutions. The ultimate goal of occupational therapy intervention is to achieve participation so, for example, participation for clients in their role as students is achieved by engaging in classroom activities and other services provided by the school. OT practitioner breaks down the ultimate goal through an activity analysis process which includes entering the school building, locating the classroom, communicating with peers and teachers, accessing information and teaching materials provided in the classroom, and socializing with friends in cafeteria during lunch hour. In this example, OT practitioners are not only looking at the physical environment, but also the social environment (i.e. communication), which leads to an inclusive environment.

The universal design philosophy is based on concepts of providing equal opportunities and aiming for inclusion, which is consistent with client-centered practice in occupational therapy. OT practitioners might not have technical knowledge of design as architects or other design professionals, however, their knowledge of person-environment interaction and ultimate aim of participation can be helpful to evaluate usability of the design.

# Stage 3 UD solutions with example<sub>(continued)</sub>

## Activity Analysis Matrix

EXAMPLE	
Organization/Client:	A school administrator
Description of Activity:	Using restrooms facility in school by all potential users – each restroom has two stalls

As an occupational therapy practitioner, you may want to use your skills in breaking down this activity into different steps. For each step, all team members can brainstorm recommended and alternative solutions. The solutions then can be rated against design criteria, user criteria, and other criteria in Universal Design Decision Matrix.

Steps in performing the activity	Recommended solutions	Alternative solutions (1)	Alternative Solution (2)	Alternative Solution (3)
<b>Accessing Restrooms</b>				
Locate the restroom	White-on-Blue color, tactile with braille, Acrylic	Printable restroom signs – stick on walls		
Open the door				
Enter the restroom				
Close the door				
<b>Accessing stalls</b>				
Open the door				
Close the door from inside				
Space to put or hang school bags				
Getting on and off of commode				
Open the door from inside				
Come out of the stall				
<b>Use the sink to wash hands</b>				
<b>Dry hands with hand dryers or paper towel dispenser</b>				
<b>Open the restroom door and exit</b>				

# Stage 3 UD solutions with example (continued)

## Universal Design Decision Matrix

[illegible]



# Development and Compilation of Worksheets

## Stage 2 Conduct Needs Assessment

### Phase II and Phase III

Consider referring to tables provided in Phase II and Phase III to guide you to select the most appropriate data collection, sample selection, and data analysis software for the needs assessment for your project. Complete Worksheet 3 to document your decisions.

#### Worksheet 3 – Assessment Process

	<b>Which method is appropriate for your project? Which method did you select for your project?</b>	<b>Provide rationale for selecting this method</b>	<b>What was your role as an OT practitioner in this process</b>
<b>Level of Engagement</b>			
<b>Data Collection Method</b>			
<b>Sample Selection Method</b>			
<b>Data Analysis Software/ Manual coding</b>			

# Discussion

- ◇ Current literature – Role of OT in universal design (more conceptual with a few case studies) – lack of standardized assessment and tools
- ◇ Goal of the project – Develop UDC guide based on participatory approach
- ◇ UDC guide is flexible – can be applied to different contexts, involves different stakeholders
- ◇ Occupational therapy's distinct value as a member of the inter-disciplinary participatory design team.
- ◇ Promotes OT Framework - Provides an opportunity for OT practitioners to take up multiple roles
- ◇ Documentation is important



# Strengths and Limitations



1. Flexible
2. 6 participants in the focus group – good range
3. Participants with various amount of experience and training
4. A tool to systematically document role of OT practitioners at each stage



1. Requires critical reasoning to choose different methods
2. Needs to be tested in various contexts
3. Nature of the document – can't provide all the information
4. Requires more case studies in Stage 3

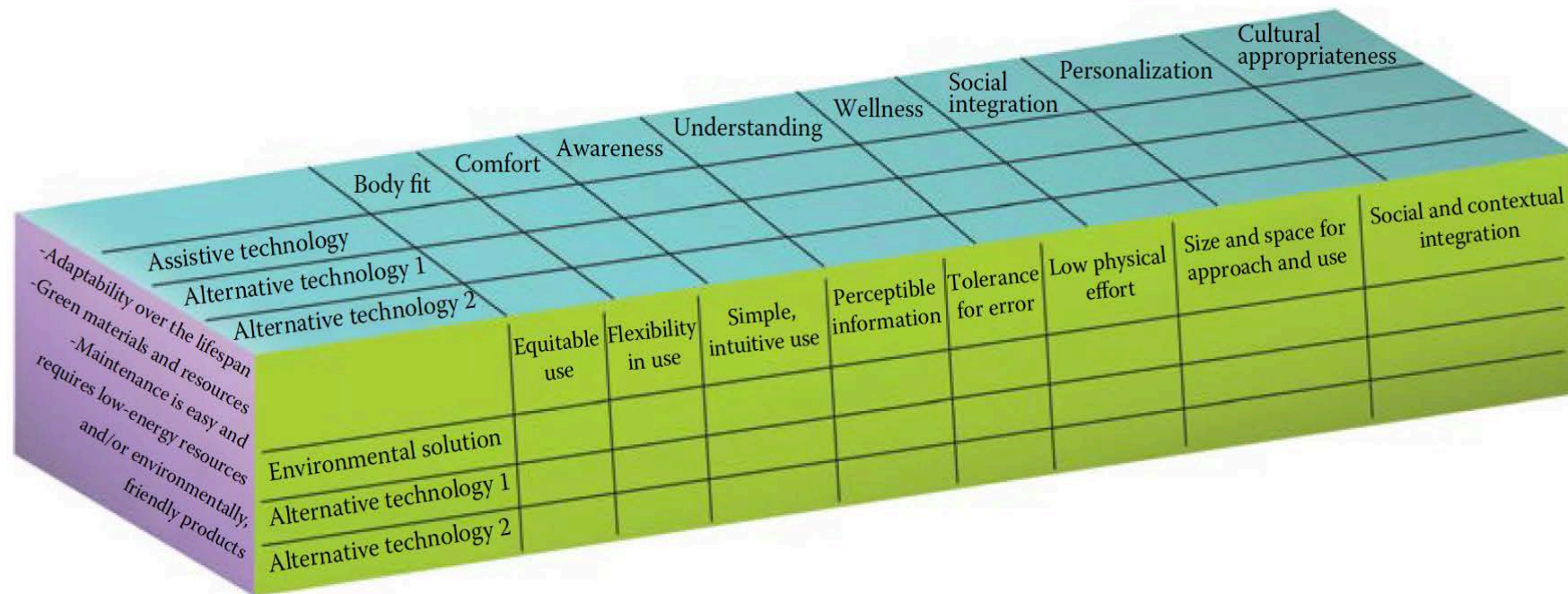




# Achievement

UD Decision Matrix adapted and published in:

Mirza, M., Zakrajsek, A., & Gohil, A. R. (2018). Assessment of the environment of AT use: Accessibility, universal design, and sustainability. In S. Federichi, M.J. Scherer (Ed.) Assistive Technology Assessment Handbook, Second edition. CRC Press



			Body fit	Comfort	Awareness	Understanding	Wellness	Social integration	Personalization	Cultural appropriateness
Assistive technology	Alternative technology 1									
	Alternative technology 2									
Environmental solution			Equitable use	Flexibility in use	Simple, intuitive use	Perceptible information	Tolerance for error	Low physical effort	Size and space for approach and use	Social and contextual integration
	Alternative technology 1									
	Alternative technology 2									

**FIGURE 4.4**

Assistive technology and environmental solution decision matrix. (Adapted from Gohil, A. R. 2016. Universal design consultation guide, version 1.0. OTD thesis, University of Illinois at Chicago.)



# Future Development

More research is required to provide evidence about the role of OT practitioners in UD

Universal design concept should be introduced to entry-level occupational therapy students

OT students should be trained in applying laws in various contexts – helpful to promote role of OT at a community level

Development of interdisciplinary curriculum and training on UD



# Thank you

Questions? Comments?

