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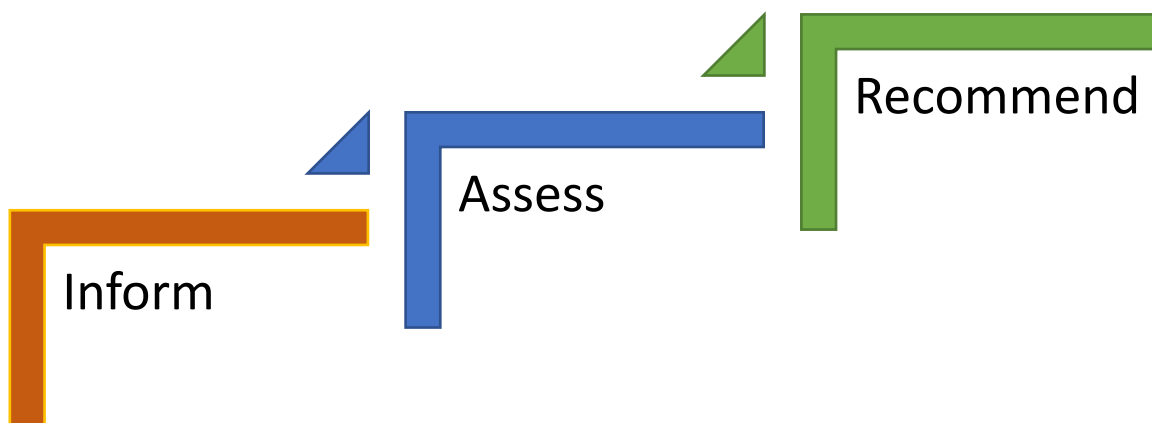


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# UNIVERSAL DESIGN CONSULTATION GUIDE

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For Occupational Therapy Practitioners



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2016, version 1.0





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## PREFACE

The *Universal Design Consultation Guide, v1.0* (hereinafter referred to as “*the UDC guide*”), is intended 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 identify and prevent environmental barriers in order to provide opportunities for full participation of all potential users. The UDC guide provides a three-stage stepwise process to reach universal design solutions instead of providing prescriptive standards for accessibility. It includes recommendations for engaging multiple 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.

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>

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. Interventions, solutions and innovations should not be limited by regulatory codes and minimum standards required by the law. Thus, the aim of the evidence-informed Universal Design Consultation Guide is to enable OT practitioners to think beyond minimum standards while consulting and engaging different stakeholders (at the individual, family, community and population levels) about accessibility to create inclusive environments.

### 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.



## Before you start

Before you decide on consulting your client and move on to Stage 1, it is important that you determine the purpose of your client's visit. You may use Template 1 to document client's information. Please remember that universal design consultation can be provided at an individual, family, community and population level. You can use this guide to consult with an individual who is considering building his/her own house based on universal design concepts or with community level projects where a school, hospital, private and government organizations' representatives may approach you to make their facilities and services accessible to as many as users as possible. The template may be customized to meet your specific consultations needs.

### Template 1

## Universal Design Consultation

### Client Information

Client's Name	
Address	
Telephone Number	
Fax Number	
E-Mail Address	
Date of Consultation	

### Purpose of Consultation

Describe the purpose of your client's visit (For example, the client is a hospital administrator and seeks consultation on providing accessible services for all users). *The initial purpose may evolve throughout the consultation stages*

--

# STAGE 1 Provide Information

## Section 1.1 Overview of Universal Design

### 1.1.A Purpose

The purpose of Stage 1 is to help you educate your client on the concept of Universal Design (UD) and applicable accessibility laws. When clients seek consultation, they may have a very little or no understanding about UD concepts. The first step is to provide information to your client in order to help them understand what is UD, how it expands on the concept of accessibility, and the application of accessibility laws.

### 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



## Section 1.2 Policy Analysis

### 1.2.A Purpose

To create a basic understanding about the applicability of the four main accessibility laws in the United States. It will help OT practitioners to understand how the different accessibility laws work together to create accessible environments for people with wide range of functional needs and capacities.

Please remember that accessibility and UD are distinct concepts but having knowledge about the law will help you set the stage in the consultation process with your client. You can explain the minimum requirement under the law to help your client understand to think beyond minimum and make it accessible for different types of users.

This section provides a basic comparison of different accessibility laws followed by a case study. The purpose of the case study is to show which laws will apply in this scenario.<sup>6</sup> For details about each law and technical guidelines, please refer to U.S. Access Board website – [www.access-board.gov](http://www.access-board.gov).

Please read through some terms and facts provided in the side bar to apply the law to different scenarios.

Universal Design “is a process that enables and empowers a diverse population by improving human performance, health and wellness, and social participation.”<sup>1</sup>

\*If environment is accessible as per the law, does not mean it is always usable.

### Important Terms to Know<sup>6</sup>

#### Accessible

A site, building, facility, or service that complies with the law.

#### Addition

An expansion, extension, or increase in the floor area or height of a building or facility

#### Alteration

A change to a building or facility that affects or could affect the usability of the building or facility or portion thereof.

*Alterations* include, but are not limited to, remodeling, renovation, rehabilitation, reconstruction, historic restoration, etc.

Normal maintenance, reroofing, or painting z, or changes to mechanical and electrical systems are not *alterations* unless they affect the usability of the building or facility.

### Interesting Facts<sup>6</sup>

- States follow ADA accessibility codes and State Accessibility codes
- Federal facilities do not have to comply with state building codes
- Federal facilities are subject only to ABA standards
- Fair Housing Act: The landlord should allow reasonable access related modifications but the land lord is not required to pay for the changes

## 1.2.B Analysis of Accessibility Laws

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

<b>The Architectural Barriers Act (ABA 1968)</b>	<b>Section 504 of the Rehabilitation Act (1973)</b>	<b>The Fair Housing Act (1988)</b>	<b>The Americans with Disabilities Act(ADA 1990)</b>
<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>

Requires accessible built environment for post-offices, Social Security Offices, Federal Court Houses, Prisons, National Park, non-federal building if built or altered with federal funds	Requires reasonable accommodation for employees with disabilities, program accessibility, effective communication with people who have hearing or vision disabilities	Covers a wide variety of housing such as rental apartments, condominium, dormitories, assisted living projects	Covers state and local government, private businesses and public places
Follow ABA Accessibility Standards		Design and construction environments apply to multi-family housing projects with four or more units built for first occupancy on or after March 31, 1991	Title 2 and Title 3 must comply with 2010 ADA standards for accessible design  Any facilities built or altered on or after March 15, 2012 must comply with Title 2 (for state and local government) and Title 3 (Private entities) by following 2010 ADA standards.
		Does not apply to renovations or alterations	Does not apply to multi-family housing except housing for social services

## 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

1. Is it a government or a private entity? It is a private entity (Title III of the ADA)
2. 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.

#### **Note**

In some cases, it is possible that more than one law is applicable to a public or private entity.

#### **TO DO**

At the end of Stage 1, please complete

- ✓ Worksheet 1 – Understanding of Universal Design Concept and Accessibility Laws

## Worksheet 1 - Understanding of Universal Design Concept and Accessibility Laws

Ask yourself	Yes	No	If Yes	If No
<ul style="list-style-type: none"> <li>Does the client have a clear understanding of the difference between accessible and universal design?</li> </ul>			<ul style="list-style-type: none"> <li>✓ Explain your client the long term benefits of applying universal design concept</li> </ul>	<ul style="list-style-type: none"> <li>✓ Ask your client if they have any questions.</li> <li>✓ Try to give more examples</li> </ul>
<ul style="list-style-type: none"> <li>Do you know what laws apply to your client's facilities, programs, and services in order to call it accessible?</li> </ul>			<ul style="list-style-type: none"> <li>✓ List the law/s here.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Refer to Table 2.1 and <a href="http://access-board.gov">access-board.gov</a> website for more information</li> </ul>
<ul style="list-style-type: none"> <li>Are your client's facilities, programs, or services compliant with different accessibility laws and technical standards?</li> </ul>			<ul style="list-style-type: none"> <li>✓ Explain to your client that these are minimum guidelines and it may not include all the users</li> <li>✓ Explain the wider scope of universal design and long term benefits</li> </ul>	<ul style="list-style-type: none"> <li>✓ Explain to the client which laws have been violated.</li> <li>✓ Grab this opportunity to explain the long term benefits of applying universal design concept.</li> </ul>

# STAGE 2 Conduct Needs Assessment

## Section 2.1

### Background

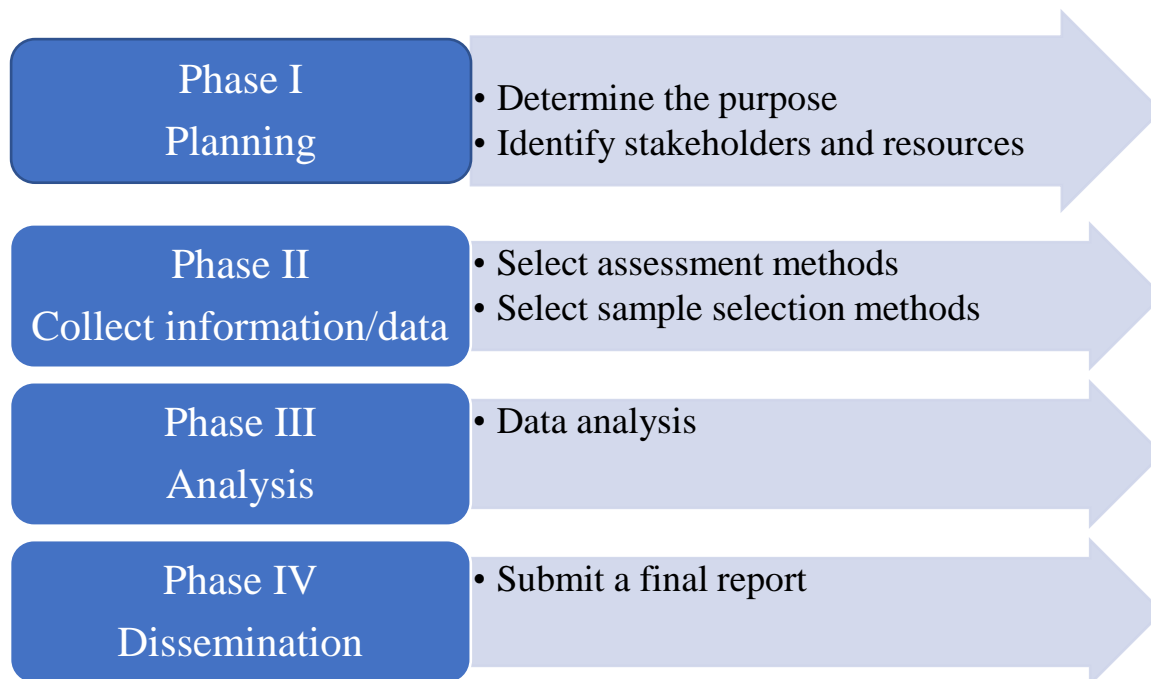
Needs assessment is a systematic process of gathering information from different stakeholders to identify and prioritize needs in order to implement changes to improve an organization's programs and services.<sup>7</sup> Need is defined as “the gap or discrepancy between a present state (what is) and a desired state, future state, or condition (what should be). The need is neither the present nor the future state; it is the gap between them”.<sup>8</sup>

Needs assessment emphasizes on the goals to be achieved rather than the solutions to meet those goals.<sup>8</sup> For example, an effective patient-provider communication for deaf patients can be one of the goals to improve a hospital's services for this population and appointing a medical sign language interpreter could be one of the suggested solutions.

## Section 2.2

### Purpose

The aim of Stage 2 is to identify different stakeholders who will affect and will be affected by the project, to identify and prioritize their needs for universally designed services, programs, products, and built environment through a systematic needs assessment process.



**Figure 2.** Needs Assessment Plan



## Section 2.3 Phase I - Planning

Once you have educated your client about universal design, it should be cleared that universal design is applicable not only to people with disabilities but it applies to a wide range of users. The aim of the planning phase is to define the purpose of needs assessment, identify stakeholders and resources to conduct a needs assessment.

### 2.3.A Purpose of Needs Assessment

The first step is to determine the purpose of the needs assessment. Template 2.3.a provides an example and a few guiding questions to determine the goals of needs assessment.

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

Define the Purpose	Guiding Questions
<b><u>Example</u></b>  <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.</b>	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?

## 2.3.B Identify and Prioritize Stakeholders

### Background

A stakeholder is "any group or individual who can affect or is affected by the achievements of the organization's objective"<sup>9</sup> and includes people or groups who are not directly related to the organization but consider themselves as a part of it.<sup>10</sup>

Stakeholder theory asserts that an organization should take into account interests of and create values for all of its stakeholders to deliver successful services. For example, a consumer may value quality and timely services whereas a provider may value reputation and profit of the organization. Understanding relationships among different stakeholders can help to understand different mindsets of each stakeholder which may lead to effective organizational activities.<sup>11</sup>

### Identify stakeholders

Identifying different stakeholders is important because neither one person or organization can solve a problem nor affected by the problem.<sup>12</sup> Involving numerous groups of people can bring different perspective to the problem, help build realistic and achievable goals, and may also suggest creative solutions. You can either brainstorm with your team, your clients, or with experts who have experience in dealing with accessibility issues for a particular setting. You can also review some literature to identify different types of stakeholders. Refer to template 2.3.B to identify and list all relevant stakeholders. To start off you can divide them into service providers<sup>13</sup> and service users<sup>14</sup> categories. You can categorize service users further into primary users and secondary users.<sup>15</sup>

## Important Terms

### Stakeholder<sup>9</sup>

"Any group or individual who can affect or is affected by the achievements of the organization's objective."

### Service Providers<sup>13</sup>

Organization, business or individual which offers service to others in exchange for payment.

### Service Users<sup>14</sup>

Entity that has authority to use an application, equipment, facility, process, or system, or one who consumes or employs a good or service to obtain a benefit or to solve a problem, and who may or may not be the actual purchaser of the item.

Primary users<sup>15</sup> use products or services in intended way (e.g. a patient in a hospital) Secondary users<sup>13</sup> use or handle products and services some other way (e.g. a visitor or caregiver of that patient).

## 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. - Doctors - Nurses - Rehabilitation professionals 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?			
Who may be in favor of and against accessible services?			

### Prioritize stakeholders

Once you list all the potential stakeholders, the next step is to prioritize stakeholders. It might not be necessary or possible to involve all the stakeholders depending on the resources available and requirements of the project. In this case, you can use Power versus Interest grids (Figure 2) to visualize all the different stakeholders and discuss the implications of involving a particular stakeholder with your team. Keep reassessing until you have a final list of stakeholders. The information will be helpful to determine your motivation to involve one stakeholder over the other.

#### Power versus Interest grids

It is a matrix with two axes – Power and Interest, where stakeholders are identified depending on their ability to influence the organization's decision and their interest in the issue at hand.<sup>12</sup>

The involvement and role of stakeholders may vary depending on the stage of the project. For example, a community center wants to make its offices and services universally designed for all the users. Let's divide the project into design stage and decision-making stage. In the design stage, the users of the services, i.e. customers and employees may fall into high interest and high power quadrant because they are the ones who will help to generate knowledge about the functionality of the environment or services. But, users may fall into high interest and low power quadrant at the decision-making stage because very often decisions are taken by the administrators or funders. Please note that universal design is a process and it involves more than one group of stakeholders to reach and implement solutions.

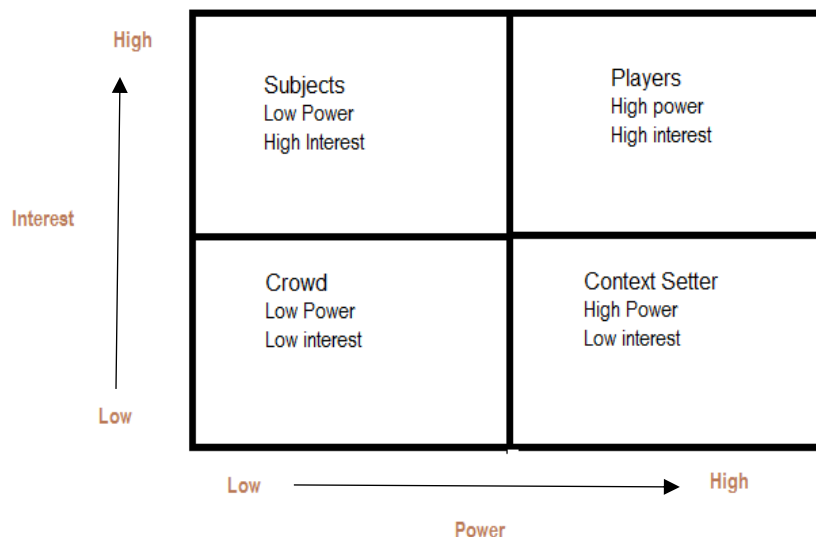


Figure 2. Power versus Interest grids<sup>16</sup>

## Template 2.3.B2 Final List of Stakeholders

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

**Tip:** When you list people with disabilities, for example, people with physical disabilities as your users, don't just stop there. Go ahead and subcategorize them (see Figure 3 for example). The aim is to list as many types of users as possible.

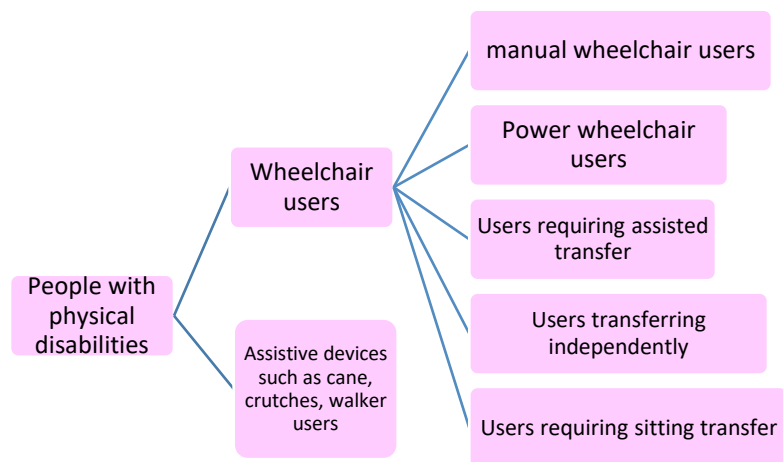


Figure 3: Types of Wheelchair Users

### 2.3.C Identify Available Resources

This step is helpful to determine what financial and human resources are available to conduct a needs assessment.<sup>5</sup> The information obtained here will be helpful to remain realistic in your approach to reach achievable outcomes.

#### 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>

#### TO DO

At the end of Stage 2- Phase I, please complete

- ✓ Worksheet 2 – Final list of all stakeholders and resources available

---

## POINTS TO REMEMBER BEFORE STARTING PHASE II

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- There is no standardized assessment or procedure to reach universal design solutions; you may have to use a combination of data collection methods.
- Please document your rationale for selecting each data collection method, the procedure to recruit participants, procedure for data analysis, and characteristics of participants (for example, if you have people with disabilities as your participants then document what type of disabilities they had).
- Selecting different types of users will influence the outcomes of your project and involving key stakeholders will increase the likelihood of implementation of solutions.

## Section 2.4 Phase II – Engage Stakeholders

### 2.4.A Determine the Level of Engagement

The International Association for Public Participation has designed the Public Participation Spectrum to establish clear communication regarding the intent of engaging different stakeholders<sup>17</sup> as shown in figure 4. It will assist to select data collection methods depending on the goal of stakeholder involvement.

Level of Public Impact <span style="float: right;">➔</span>				
	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

Figure 4 Source: Adapted from the International Association for Public Participation Spectrum of levels of public participation.<sup>17</sup>



### 2.4.B Select Data Collection Methods

Selecting the appropriate methodological approach for your needs assessment will depend on variety of practical and scientific factors. The table 2.4B outlines the benefits, limitations, and factors to consider to choose the most suitable assessment method and other consultation techniques depending on the level of engagement to meet the purpose of your project. You may have to combine these methods depending on your project.

Table 2.4.B Data Collection Methods<sup>7,18</sup>

Methods	Benefits	Limitations	Things to Consider
<b>Secondary data/existing data</b>	<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> <li>✓ Timeline</li> <li>✓ Staff availability</li> <li>✓ Professional expertise</li> <li>✓ Access to members of target population</li> </ul>
<b>Surveys</b>	<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>	
<b>Semi-structured Interviews</b>	<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>	
<b>Expert interviews<sup>19</sup></b>	<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>	

<b>Focus groups</b>	<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> <li>✓ Multidisciplinary team</li> <li>✓ Reasonable accommodations for participants with disabilities, e.g. providing sign language interpreter for deaf participants in focus groups or interviews</li> </ul>
<b>Participatory Action Research</b> <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>	<ul style="list-style-type: none"> <li>• Difficult to gather information</li> <li>• May provide irrelevant information</li> </ul>	
<b>Co-design</b>	<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>	<ul style="list-style-type: none"> <li>• Needs careful planning</li> </ul>	
<b>Field trips/on-site tours</b> <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>	
<b>Observation</b> <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>	
<b>3D virtual environment models</b> <sup>25</sup>	<ul style="list-style-type: none"> <li>• Useful to evaluate built environment before the construction process starts</li> </ul>	<ul style="list-style-type: none"> <li>• OTs might not be familiar with the technique; it is used by design engineers</li> </ul>	

### 2.4.C Choose Sample Selection Methods

There are different types of sample selection methods. The aim is to gather information from individuals who are representative of the target group.

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>

## Section 2.5 Phase III – Analysis

### 2.5.A Data Analysis

Accurate data analysis requires skills and professional expertise to analyze and interpret the results. Table 2.3 gives information about a few widely used computer based data analysis software packages. The comparison might be helpful to choose the most suitable data analysis software for your project. It is possible to analyze needs assessment data without purchasing expensive and specialized software. These tools do, however, let you manage large amounts of data with relative ease (once you are familiar with how to use it).

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>

## TO DO

At the end of Stage 2- Phase II and Phase III, please complete

- ✓ Worksheet 3 – Assessment Process

## Section 2.6 Phase IV – Dissemination

### 2.6.A Submit a Final Report

Some stakeholders prefer only summary of the report to quickly glance through the report due to time constraints, whereas others may demand a more comprehensive report. You may follow the following template to prepare your final report.

#### Template 2.6.A Needs Assessment Report

Needs Assessment Final Report	
Prepared for:	Date:
Prepared by:	
<b>Introduction/ Background</b>	
<ul style="list-style-type: none"><li>• Provide justification for needs assessment to reach universal design solutions</li></ul>	
<b>Methods</b>	
<ul style="list-style-type: none"><li>• What types of stakeholders were involved? Why?</li><li>• What assessment methods were used? Why?</li><li>• How was the data collected and analyzed?</li></ul>	
<b>Results</b>	
<ul style="list-style-type: none"><li>• Highlight the findings – you can provide a table to visualize the needs of service users and expectations of key stakeholders</li></ul>	
<b>Discussion and conclusion</b>	
<ul style="list-style-type: none"><li>• Interpretation of findings, Limitations and strength</li><li>• 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</li></ul>	

**TO DO:** At the end of Stage 2- Phase IV, please complete Worksheet 4

# STAGE 3

## Universal Design Solutions

### 3.1.A Recommending Universal Design Solutions

Universal design is a process that aim is to make the services, products, and physical environment accessible and inclusive for as many users as possible through different ideas.

At present, there is no ready-to-go checklist or standardized assessment available for universal design. You may want to involve professionals from other disciplines such as urban planners, human factor engineers, and architects depending on your project.

As OT practitioners, you may want to use your activity analysis skills to ensure that design of built environment, programs, and services is usable by different types of users.

The purpose of the Stage 3 is to help you brainstorm alternative solutions and choose the best solution for your client. The final decision may depend on many factors. The Activity Analysis Matrix and Universal Design Decision Matrix is created to provide guidelines for assessing different universal design solution against three criteria:

1. Design criteria (7 principles of universal design),
2. User criteria (include as many types of users as possible)
3. Other resources (money, time, personnel)

Discuss the recommended solutions and alternative solutions with your client to ensure the solutions are achievable and can be implemented.

## Guiding Questions

### Design Criteria

- ✓ Do solutions meet seven principles of universal design?
- ✓ Are the solutions limited to meeting accessibility standards only?
- ✓ Do the solutions reflect users' suggestions and experiences?
- ✓ Do I require guidance from other design professionals such as architects, design engineers etc.?
- ✓ Is language, cultural, and aesthetic factors taken into consideration?

### User Criteria

- ✓ Do the solutions satisfy needs of all the users identified in the project?
- ✓ Are the solutions beneficial for some users but creating barriers for other users?
- ✓ Is the trade-off of solutions for one user over the other justifiable?

### Other criteria

- ✓ Are the suggested UD solutions affordable?
- ✓ Are the solutions achievable in the given time line?
- ✓ Do we have access to required personnel to implement the changes?

## 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>				

## Universal Design Decision Matrix

### EXAMPLE

Organization/Client:  
Step of the Activity

A school administrator  
Locate the restroom

	Design Criteria							User Criteria		Other resources		
	Equitable use	Flexibility in use	Simple, intuitive use	Perceptible information	Tolerance for error	Low Physical Effort	Size and space for approach and use	Meets needs of primary users	Meets needs of secondary users	Cost	Time	Personnel
<i>Recommended solution</i> <i>White-on-Blue color,</i> <i>tactile with braille,</i> <i>Acrylic</i>	x		x	x	x			x	x	Ex pen siv e		
<i>Alternative solution 1</i> <i>Printable restroom</i> <i>signs – stick on walls</i>						x				Ch eap er		
<i>Alternative solution 2</i> <i>(Briefly describe)</i>												
<i>Alternative solution 3</i> <i>(Briefly describe)</i>												



### TO DO

At the end of Stage 3, please complete -

- ✓ Activity Analysis Matrix, Universal Design Decision Matrix, and Worksheet 5

Occupational therapy practitioners are encouraged to use the UDC guide at individual, groups, organizations, and community level; and document their role at each stage of the process to reach universal design solutions. Documenting OT's role in universal design process in different contexts will help to generate more examples and evidence base as a distinct member of a multidisciplinary team of universal design. It will also create awareness among other design professionals about how OT practitioner's knowledge of person-environment interaction can promote designers and architects' design knowledge.

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# Templates, Worksheets, and Matrix

Universal Design Consultation Guide, v 1.0

# Stage 1 Provide Information

## Template 1 - Understanding of Universal Design Concept and Accessibility Laws

Ask yourself	Yes	No	If Yes	If No
<ul style="list-style-type: none"> <li>Does the client have a clear understanding of the difference between accessible and universal design?</li> </ul>			<ul style="list-style-type: none"> <li>✓ Explain your client the long term benefits of applying universal design concept</li> </ul>	<ul style="list-style-type: none"> <li>✓ Ask your client if they have any questions.</li> <li>✓ Try to give more examples</li> </ul>
<ul style="list-style-type: none"> <li>Do you know what laws apply to your client's facilities, programs, and services in order to call it accessible?</li> </ul>			<ul style="list-style-type: none"> <li>✓ List the law/s here.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Refer to Table 2.1 and access-board.gov website for more information</li> </ul>
<ul style="list-style-type: none"> <li>Are your client's facilities, programs, or services compliant with different accessibility laws and technical standards?</li> </ul>			<ul style="list-style-type: none"> <li>✓ Explain to your client that these are minimum guidelines and it may not include all the users</li> <li>✓ Explain the wider scope of universal design and long term benefits</li> </ul>	<ul style="list-style-type: none"> <li>✓ Explain to the client which laws have been violated.</li> <li>✓ Grab this opportunity to explain the long term benefits of applying universal design concept.</li> </ul>

## Worksheet 1 - Understanding of Universal Design Concept and Accessibility Laws

Ask yourself	Yes	No	Briefly describe your experience: Document how your role as an OT practitioner influenced the way UD and accessibility concepts were presented.
<ul style="list-style-type: none"> <li>Does the client have a clear understanding of the difference between accessible and universal design?</li> </ul>			
<ul style="list-style-type: none"> <li>Do you know what laws apply to your client's facilities, programs, and services in order to call it accessible?</li> </ul>			
<ul style="list-style-type: none"> <li>Are your client's facilities, programs, or services compliant with different accessibility laws and technical standards?</li> </ul>			

# Stage 2 Conduct Needs Assessment

## Phase I

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

Define the Purpose	Guiding Questions
<b><u>Example</u></b>  <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.</b>	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?



### 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. - Doctors - Nurses - Rehabilitation professionals 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?			
Who may be in favor of and against accessible services?			

### Template 2.3.B2 Final List of Stakeholders

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

### 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>

## Worksheet 2 – Final List of all Stakeholders and Resources Available

<u>Purpose of needs assessment</u>						
<u>Stage of the project</u>						
<u>Describe your role as an OT practitioner in identifying different stakeholders</u>						
Name of stakeholders	Players	Subjects	Context setter	Crowd	Rationale/ motivation for involving each stakeholder (Why is it important to involve this stakeholder?)	List of Available Resources

# 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>			

# Stage 2 Conduct Needs Assessment

## Phase IV

### 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 decisions at each stage

## Worksheet 4 – Final Report

Needs Assessment Final Report

Prepared for:

Date:

Prepared by:

**Introduction/ Background**

**Methods**

**Results**

**Discussion and conclusion**

## 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)



## Universal Design Decision Matrix

Date:

Organization/Client:

Description of Issue or Need:

	Design Criteria							Types of Users		Other resources		
	Equitable use	Flexibility in use	Simple, intuitive use	Perceptible information	Tolerance for error	Low Physical Effort	Size and space for approach and use	Meets needs of primary users	Meets needs of secondary users	Cost	Time	Personnel
<i>Recommended solution (Briefly describe)</i>												
<i>Alternative solution 1 (Briefly describe)</i>												
<i>Alternative solution 2 (Briefly describe)</i>												
<i>Alternative solution 3 (Briefly describe)</i>												

### Worksheet 5: Role of OT practitioner in universal design solutions

Please describe:

1. How did your skills as an OT practitioner influenced design decisions in this project?
2. How did your knowledge of person-environment interaction promote knowledge of the designers?
3. What were your overall strengths and limitations during the whole project as an OT practitioner?