D'source Project

Open Design School

MoE's Innovation Cell

Usability Studies, Iteration, Final Design

Design Thinking & Innovation Tools

Section: T14, Week 14

Design Thinking & Innovation (DT&I)

Section: T14

Week 14

Design Thinking & Innovation (DT&I)

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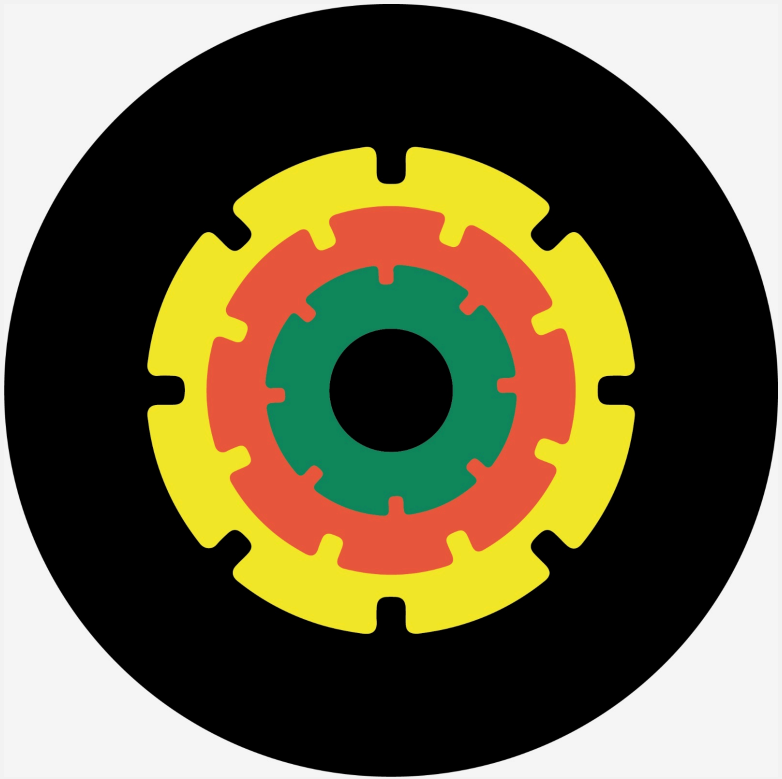


DT&I Tools

T14 Module T14:
Usability Studies, Iteration, Finalise Design

T14.1

What is Observation?

What is Observation?

Observation is a method of collecting data/information about the designed solution.
Observation can be by the **Designer** or by the **Users.**

Observation by Designer:
Observation can be done by the designer **watching the user interact with the designed solution**.
.

Documentation: It is best to take notes or video/photo record while doing the observation.

Examples: Designer observes and documents Children playing with a newly designed toy / Elderly operating a mobile phone designed for them.

What is Observation . . .

Observation by the User:
Observation can be done by the user – both before using the product as well as while using the designed solution.
Observation before using the design in progress can identify its characteristics such as aesthetics, affordance, readability, feeling of comfort, its expression, etc.
Observation while using the designed solution can reveal its usefulness, ease of use, comfort while using, skills required for using, interactivity, human factor considerations, etc.

Documentation: Its best for the designer to take notes or video/photo record while the user is doing the observation.
Examples: User observes is trying out the newly designed sustainable food container/ controls for solar powered fan.

Observation . . .

Steps in Usability Studies through Observation:

1. Finalise the prototype of Product/Workspace/Service

2. Give the prototype to the user for observation before using it

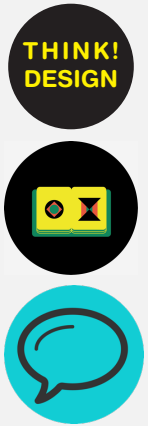
Observe the prototype for its physical features

3. Observe the prototype while it is being used

can reveal its usefulness, ease of use, comfort, skills for using, human factor considerations

4. Document the feedback before using and while using the prototype

Document while giving the feedback



T14.2

What are Conversations?

What is Conversation?

Conversation is a simple method of collecting data/information about the designed solution by conversing with the user.

Conversation is done by the **Designer** with the **User** discussing various aspects of the design solution.

It is helpful to make a list of issues that the designer would like a response from the user while the user is interacting with the design solution. Cue cards can be helpful in this regard (refer to week 6: T6.2-011).

Conversation and not Interview:

Do note that we use the word Conversation instead of Interview. The main reason for this that the designer needs to get responses that are:

a. Spontaneous

b. Narrative (describing the sequence of interactions)

c. Natural exchange of experiences

What is Conversation . . .

Conversation with the User:
can be done before using the solution, while using the solution and after using the solution.

Conversation before using the design
in progress can identify its characteristics such as aesthetics, affordance, readability, feeling of comfort, its expression, etc.

Conversation while using the designed solution
can reveal its usefulness, ease of use, comfort while using, skills required for using, interactivity, human factor considerations, etc.

Conversation after using the designed solution
can reveal its overall characteristics and an overview of the solution.

Documentation:
Its best for the designer to take notes or video/audio record while conversing with the user.

Examples:
Converse with the user while trying out the newly designed Bamboo Easy Chair/ controls for Solar powered Insecticide Sprayer.

Conversation . . .

Steps in Usability Studies through Conversation:

1. Finalise the prototype of Product/Workspace/Service

2. Give the prototype to the user for conversation before using it

Converse with the users about the prototype and its physical features

3. Converse with the user while the prototype is being used

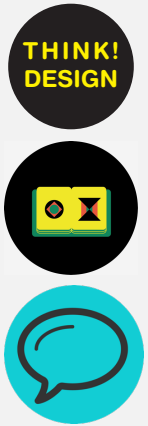
Can reveal its usefulness, ease of use, comfort, skills for using, human factor considerations

4. Converse with the user after using the prototype

Can reveal its overall characteristics and an overview of the solution

5. Document the Conversations

take notes or video/audio record while conversing with the user



T14.3

Think Aloud Protocol?

What is Think Aloud Protocol?

Think Aloud Protocol is a method of collecting data/information about the designed solution where the user speaks aloud about the interactions while interacting with the solution.

The Thinking aloud is done by the **User** describing various aspects of the design solution while performing the tasks in using the solution.

Who introduced Think Aloud Protocol:

Think Aloud Protocol was described by Clayton Lewis and this method was based on the work on Protocol Analysis by K. Ericsson and Herbert A. Simon

What is Think Aloud Protocol . . .

Think Aloud Protocol:

The designer needs to request the user to think aloud about the prototype.

This can be done before using the solution, while using the solution and after using the solution.

The user says aloud about the interaction that he has about the solution.

The designer can prompt the user to do certain tasks or actions such that the use of the product is described by the user.

The designer documents the verbiage of what the user says while using the prototype.

Think Aloud Protocol method can reveal its usefulness, ease of use, comfort while using, skills required for using, interactivity, human factor considerations, etc.

Documentation:

Its best for the designer to take notes or video/audio record while the user is thinking aloud.

Examples:

User thinks aloud while trying out the newly designed music system/ controls for a smart bedroom.

Think Aloud Protocol . . .

Steps in Usability Studies through Think Aloud Protocol:

1. Finalise the prototype of Product/Workspace/Service

2. Give the prototype to the user before using it and request to talk about it

Converse with the users about the prototype and its physical features

3. Request the user to talk about it while the prototype is being used

Can reveal its usefulness, ease of use, comfort, skills for using, human factor considerations

4. Request the user to talk about it after using the prototype

Can reveal its overall characteristics and an overview of the solution

5. Document the Conversations

take notes or video/audio record while the user is thinking aloud

THINK!
DESIGN

T14.4

What is Usability Testing?

What is Usability Testing?

Usability Testing is a method to evaluate and measure the characteristics of the prototype.

It involves requesting the **users to use the product and complete specified tasks, while their reactions are being documented and measured.**

Usability Testing needs careful observation and documentation over a period of time by having different users perform similar tasks. The results can be compared, analysed to identify issues and problems in the present prototype.

This could be in terms of **its Function, Ease of Use, Interactivity, Human Factors, Comfort, Aesthetics, etc.**

Usability Testing . . .

Usability Testing:
What aspect or characteristics of the prototype needs to be tested for usability will depend on the nature of the design solution.

For example:
- a new Chair needs to be tested for comfort over a period of time
- a new mobile application needs to be tested for ease of use, navigation, understanding the interface elements, etc.
- a new newspaper design needs to be tested for readability and navigation

Documentation:
Its best for the designer to take notes or video/Photo while the user is being tested.

The recording can be played back to measure timings, navigation, ease of use, etc.

The results can be compared, analysed to identify issues and problems in the present prototype and recommendations for improvement can be taken up for redesign.

Usability Testing:

Usability Testing could be used for any of the following:

Knob of Door:
- Test it out for use by a child, elderly or a person with disability

Wayfinding Signage:
- Test it for visibility and readability at different distances

Medicine Instructions:
- Test it for readability and

Mixer-Grinder:
- Test it for ease of use by requesting the user to grind something

Mobile for Elderly:
- Test it for use of use as well as interactivity by requesting them to complete certain tasks

Insecticide Sprayer:
- Test for ease and comfort while using by moving it in the field

Usability Testing. . .

Steps in Usability Studies through Testing:

1. Finalise the prototype of Product/Workspace/Service

2. Give the prototype to the user and request him to perform a given task
the user is observed while performing the task

3. Measure variables (could be quantitative or qualitative) while the user is performing the task
the different variables will depend on the characteristic of the prototype – it could be readability, comfort level, navigation, comprehension, etc.

4. repeat the user testing with other users
The number could vary from 3 to 10 depending on the diversity of the users

5. Compare and analyse the measurements
the recommendations can be taken up for implementing it in the prototype

Usability Testing Evaluation Matrix:

Shown below are 3 final concepts evaluated through Total Scores vs Weighted Average scores (in brackets) in a rated scale of 1 to 5. The weighted scores are based on how important are the factors relatively.

Factors- 1-5 scale (% weights)	Ease of Use (15%)	Look and Feel (15%)	User Friendly (20%)	Fewer steps (20%)	Use of New Technology (30%)	Total
Concept 1	5 (.75)	4 (.6)	3 (.6)	3 (.6)	3 (.9)	18 (3.45)
Concept 2	3 (.45)	5 (.75)	5 (1.0)	4 (.8)	5 (1.5)	22 (4.5)
Concept 3	2 (.3)	2 (.3)	4 (.8)	3 (.6)	5 (1.5)	16 (3.5)

Final Concept 2 has scored the highest score in both Total Scores (22) and weighted scores (4.5). Final Concept 1 has scored 2nd in Total scores and 3rd in weighted scores and Final Concept 3 has scored 3rd in Total scores and 2nd in weighted scores.

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T14.5

How many Users?

How many Users?

For qualitative study: the recommended number is between 5 to 10
and,
for Quantitative study: the recommended number is between 10 to 20 or many .

Which user?
Real or potential primary users should be the first ones to be involved in user studies.
Do refer to the User Participant Mapping in Week 4: T4.1-003

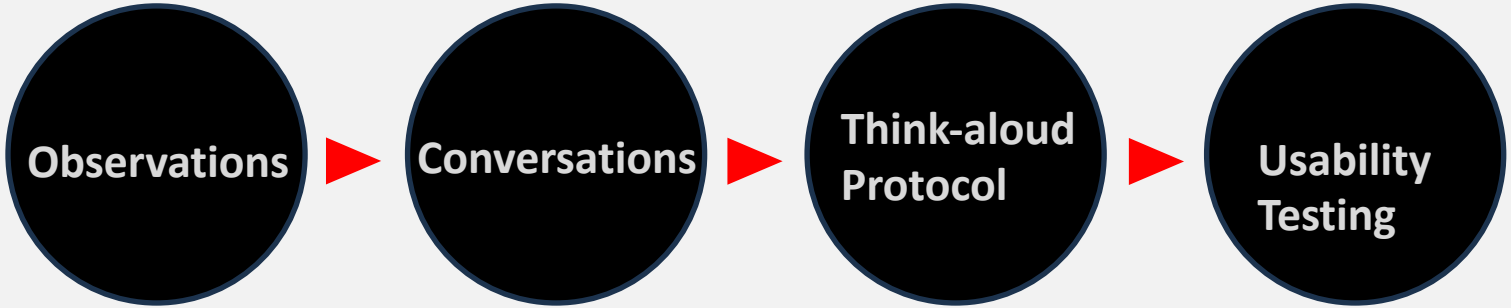
T14.6

Usability Studies

Usability Studies:

(Observations > Conversations> Talk –aloud Protocol> Usability Testing)

Here are a few suggested methods:



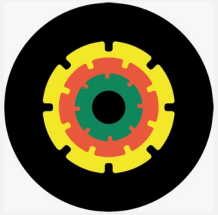
Thanks for Listening

DT&I Tools
Section: T14
Week 14

DT&I Course – Week 14:

DT&I Process
(20%)

> **Usability Studies, Feedback and Iterations**
> Make use of user feedback and iterate
> Methods of getting User Feedback
> Finalise Design



DT&I Tools
(20%)

Usability Studies
> Observation
> Conversations
> Think-aloud protocol
> Usability Testing
> Iterate
> Finalise Design

DT&I Project
(50%)

Apply
> Usability Studies
> Iterate and Finalise

DT&I Cast Study
(10%)

> Case Study Project: **Redesigning a Solar Powered Cookstove**

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Supporting Organizations:

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Credits:

Camera & Editing:
Santosh Sonawane

Credits:

Think Design Animation:
Rajiv Sarkar

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Graphic Icons:
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