

- <https://cc.acm.org/2023/workshops/>
- <http://ieea.org/submission.html>
- <http://www.iciit.org/date.html>
- <https://2022.acmmm.org/registration/>

Usability Testing- <https://garyperلمان.com/quest/>

HCI-> researchers observe the ways **humans interact with computers** and design technologies that allow **humans to interact with computers in novel ways.**

Computer-supported cooperative work (CSCW)-> is the study of how **people work together** using computing and communication technologies.

Coursera Course - Qualitative Research Method

Qualitative Research consists of -

- Describing
- Interpreting
- Analyzing

Framework Analysis

- A variant of content analysis
- Uses matrix
- Reduces data through summarization & synthesis
- Retains links to original data

5 steps -

1. Familiarization: Involved in data, reading
2. Identify a thematic framework from data.
3. Indexing: Select fragments of data and code them
4. Charting/Summarising: Tell the story of those fragments, create matrix about themes
5. Interpreting/Mapping: Description, topologies(Types of people interviewed, create categories, mapping linkage, develop an explanation

Analytic Induction

- Specify an outcome

- Collect data on a small number of cases with that outcome
- Formulate a hypothesis
- Collect more data
- When stumbling on a deviant case, choose that
- Redefine outcome
- Redefine hypothesis
- Pursue until new cases do not lead to revisions

Grounded Theory

Computer-assisted qualitative data analysis

Key elements

- Constant comparison between data & data, data & concepts, and between concepts
- Strong focus on the research process
 - Sensitizing concepts
 - Testing & searching for deviant cases
 - Writing memos to build theory, create transparency & reflect
- Sampling until theoretical saturation(Theory is so sophisticated that new data creates no refinements) has been reached
- A central goal is the creation of a theory

WRITING , MIXING & ETHICS

Writing-Focus on thoughts, feelings & perceptions

Mixing -is a matter of posing and answering research questions (Where in the research cycle?)

Ethics- codes of conduct

Coursera Course: Evaluating Designs with Users

User Testing:

Is good for how easy it is to use a system, how well the design supports users' task, how do people fail & what causes failure

Not good for what user's need or product is successful.

User testing can't really tell you how people are going to use the system once it's released into the wild. In a user test, you're the one providing the tasks, and all you can really see is how people perform those tasks. In the real world, users are going to be the ones that choose the tasks that they perform, and sometimes, people don't do what you expect.

Basic Idea:

- Find Potential Users
- Ask them to do some stuff(tasks)
- Observe
- Ask some question(debrief)
- Write down what you learned

Different Tests for different Goals. Mostly two types- Summative, Formative

1.Summative

Goal: PROVE A POINT

(this answers the questions, is design A better than design B? Is our product better than our competitors? Is the new version better than the old one, and so forth.) , **quantitative**

Comparative:

- Hypothesis (like $A > B$ in some measurement)
- Control (Usually B with A being the experimental condition)
- Careful Design - conditions vary minimally, only designs differ
- Use statistical method to show that measurements are different (T-test, chi squared, ANOVA)

BenchMark Test

When there are hard task constraints, defined targets for legal and other reasons, no hypothesis, larger **users (10-20)**

- One group performs the task
- Measure performance

- Demonstrate performance meets some criteria

2. Formative

Goal: IDENTIFY PROBLEMS THAT NEED TO BE FIXED

(like what are the biggest problems with our design that we should fix next?)

Users perform tasks who will eventually use the system, Typically **5-7 users** needed, find problems , **qualitative (Interpretive)** , use quantitative data to ground some important stuff

WHAT USERS NEED

Best found by -

- Observation
- Interviews
- Surveys

If you do understand what users need, user testing can tell you if your design meets them

Recruiting Test Participants

Who are you intended Users? (Characteristics, behavior, actually be users of your system, attitudinal) (Diversity, types of users, using proxies & snowballs)

- Characteristic Criteria (Only health carers)
- Behavioral Criteria (Already shopped at least 2 times)
- Attitudinal Criteria (Concerned about online privacy)

Proxy: Someone who gives you access to their social network

TASK DESIGN:

First Ask - What is the purpose of this test

Brainstorm specific actions that the users would perform within the scope of that activity.

- Choose representative tasks
- Be sure what success would look like
- Make the task more realistic & verifiable
- Verify: Can you identify success?
- Open-ended tasks -Sometimes a non-verifiable task can be helpful as they are natural, learning about how users think about things but can not know success in this case
- Don't give clues on how to accomplish the task, not leading

- Progress from easier to harder

Questionnaires:

- They are quantification
- Should be short
- Dimensions of diversity, demography
- What to quantify: Measurable responses - preference, appeal, usability, usefulness
- Don't use free text responses, not easily quantifiable, and too long to fill out
- Use existing questionnaires
- Use SUS= System usability scale (Here perceived usability, not actual usability)

Interview Data:

- Can ask quantifiable qs
- Can used instead of Questionnaires
- Build rapport(Interviewee,interviewer relationship)
- Can also go into details
- Follow up on tasks
- An interviewee can ask qs
- Ask after task performed where they got stuck and how they thought it was to be solved
- Try to know "WHY" they did this, that, their reaction to the system

Problem: Demand Characteristics, Acquiescence Bias, Confirmation Bias

Observing User Tests

Record like screen capture , usability testing software (morae) helps to get some additional features like task timing , mouse clicks

Coursera Course: User Research & Design

Translating User Research to support data

You have gathered data , now what?

Now Analyze data-

Two methods -

- Qualitative (Surveys,interviews, texts, documents) - discover patterns, themes,requirements,concepts
- Quantitative(Structured,numerical) - Statistics,graphs,charts

Then come up with representations of this data - Design,model

REPRESENTATION FOR DESIGN

- Personas - Model Users, cluster users who share common goals, come up with representative users
- Usage Stories- Rich description of system usage,system may not exist
- Tasks - what a user(group) trying to accomplish
- Walkthrough Scenario - How a user can be accomplish in a specific interface

Qualitative Analysis

Applies to any type of data that can be made textual.

Here the method described is Inspired by grounded theory method.

Inductive data driven approach.Don't start with a hypothesis rather than sift through the data to see what insight is available in the data itself. This process also relies on something called constant comparison of open codes, the idea that you identify units of meaning within your data. And then you compare them to each other to identify meaningful clusters and patterns.

Now both of these, the idea of a method being inducted, and data driven, and the idea of constant comparison are key to this grounded theory method

- Prepare data (Convert to text, link with data)
- Open/Initial Coding(highlight,read,short phrase)
- Thematic Clustering(guided by theory or data driven,tool-paper,nvivo,atlas)(coding schema)
 1. One open code per note
 2. Take new note and compare
 3. Place the next note in repetition to the first two and repeat
 4. Adjust and move
 5. Name the clusters

- Final Coding(do a pass through all data into the identified clusters)
- Writing (have coherent story,give next steps and implications for design)

Quantitative Analysis

- Hypothesis driven approach
- Data driven approach

In this case **Hypothesis driven approach** is discussed.

Steps-

1. Form Hypothesis
2. Decide Variables
3. Collect Data
4. Analyze data (Linear regression etc)
5. Interpret & Report results (p value,coefficients,R square)

A rule of thumb is that if the p-value is smaller than 0.05, you can say that the relationship exists.

Hypothesis : Female users spend more time on social network.

Do surveys asking gender and time spent.

Linear Regression : $\text{Time} = \beta_1 * \text{gender}$

PERSONAS:

- They are realistic and specific
- Multiple personas per application. Each represents a key usage pattern.
- Personas include motivations,needs,tasks,goals
- Personas tell a story and describe why people do what they do
- Personas help designers focus; context for design decisions

USE CASES:

Aspirational visions, user research is available linked to personal,motivational (Why are we doing this?)

TASKS AND WALKTHROUGH SCENARIOS

- A specific description of a complete job specific users want to accomplish.
- Detailed
- Complete Job

IMPLICATION FOR DESIGN

Original, accurate , actionable , generate & inspires future work ,original & novel

- Sensitizing concepts (Teasing out an imp an underlying concept designer should keep in mind)
- Abstraction & meta abstraction (Clarify important abstract functionalities without specifying techs & solutions)
- Instantiation (providing a possible design solution)
- Prescription (Specific requirements for a solution to work)

Research to Ideas

Ideation - Generating many solutions

- Defer judgments
- Encourage wild ideas
- Build on other ideas
- Stay focused on the topic
- One conversation at a time
- Be visual
- Go for quantity

Idea selection - Select the best ones

- Cull and combine
- Cluster ideas
- Name and Describe
- Rate based on the implication for design
- Combine rating, discuss, choose