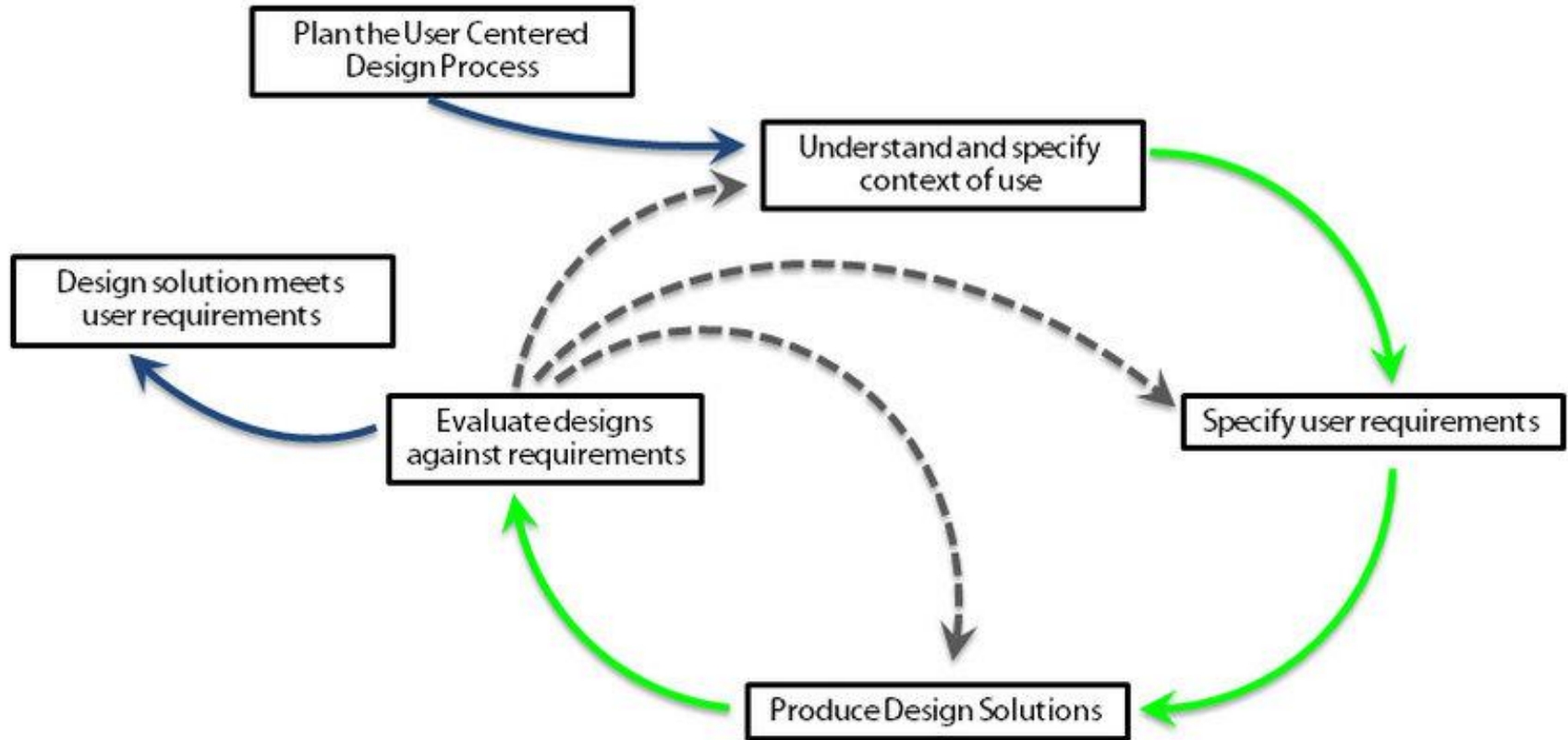


SENG 310

Lecture 5 - May 18th, 2023

RECAP



The HCD Process is:

1

Purposive

Is based on a specific problem or objective

2

Inquisitive

Seeking new knowledge

3

Informed

Conducted from an awareness of people, context, and past research

4

Methodical

Planned and conducted in a disciplined manner

5

Communicable

Generate and explain results that can be understood, tested and verified by others

Types of Research

Based on the Type of Data Collected

Qualitative

Relies on collecting and analyzing non-numerical information such as behaviours, emotions, and actions.

Example questions:

Why do people fail to complete a task?

How do people respond to feature X?

Quantitative

Relies on gathering and analyzing numerical data to answer the research questions.

Examples questions:

How many times do people click on “forget password” button?

How many people like to use the calendar feature in outlook?

How many times do people use feature X compared to Y?

Mixed Methods

This method uses both qualitative and quantitative data to answer the research the research questions.

Examples questions:

How frequently do people switch between physical and digital formats for books and what are the common challenges they face?

Based on the Timeline

Formative

Formative research is typically conducted at the start of a design research project. It's used to find the pain points or problems being faced by people.

Summative

This research is done towards the end of the implementation phase wherein you evaluate to learn if the user needs or goals are met.

Typically you can compare and contrast the formative and summative results to measure the success of your project.

The data collected in formative or summative research can be qual/quant/mixed.

Based on How Information is Gathered

Attitudinal

This is about listening to what people say. This in turn tells us about what people think, feel and want.

Behavioural

In this case, we learn about people's behavior by observing them. This can help us learn about people's mental models and interaction techniques.

People don't always consciously take action, therefore, one has to both listen and observe to understand the WHAT and WHY aspects of people's interaction.

Based on Who Conducts the Research

Primary

Primary research is one where the researchers actively collect data using methods such as observation, shadowing etc.

Secondary

Secondary research refers to the synthesis and analysis of research that has already been conducted typically by others.

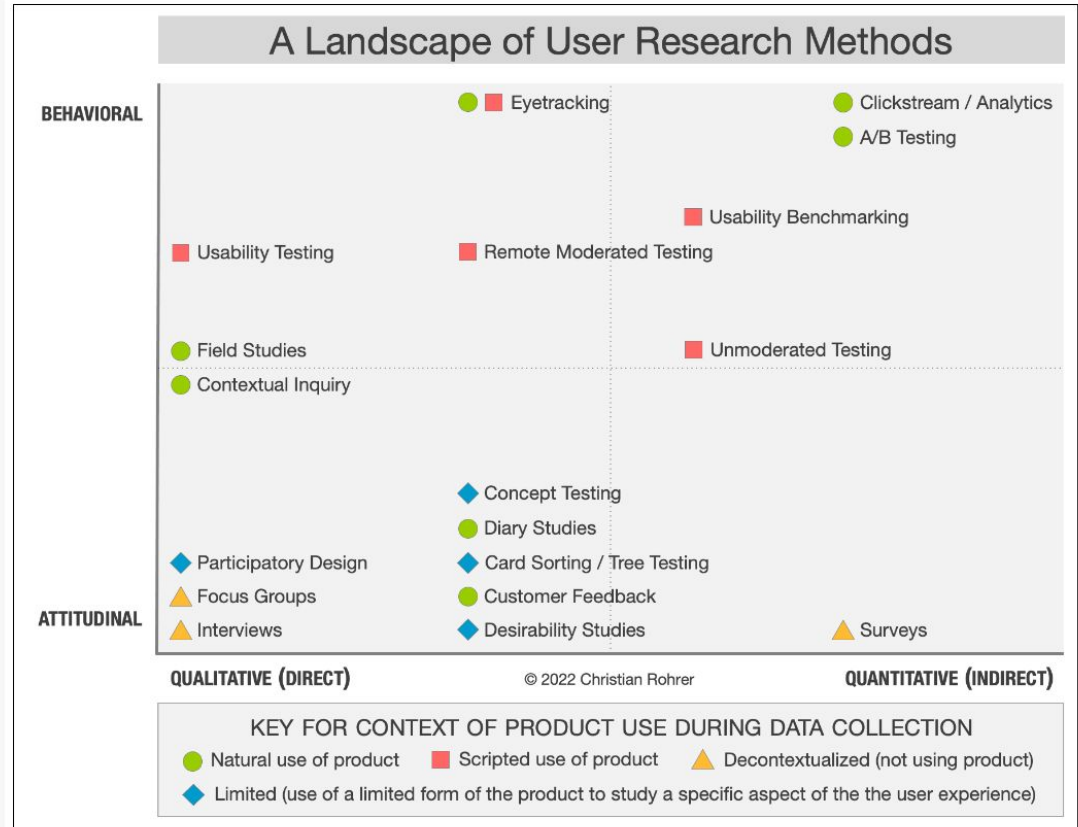
Typically both types of research are involved in HCI projects

Mapping the Landscape of User Research Methods

Primary Research

You will use:

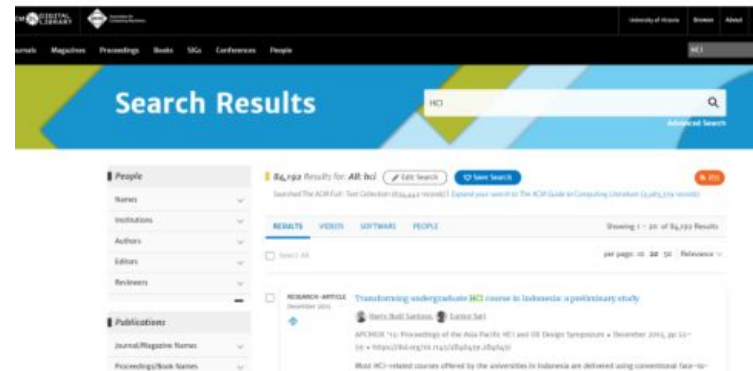
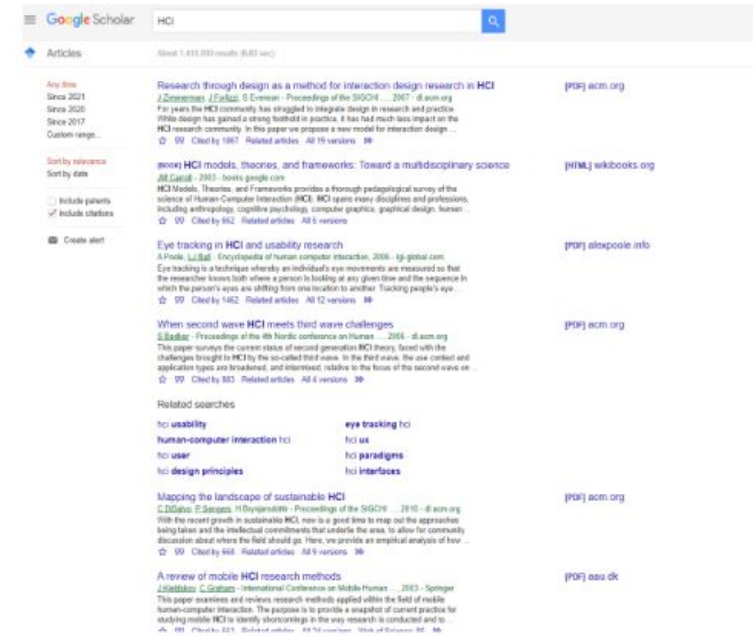
- Interviews
- Ethnography
- Diary studies



Each dimension provides a way to distinguish among studies in terms of the questions they answer and the purposes they are most suited for. The methods placed in the middle of the quantitative–qualitative axis can be used to gather both qualitative and quantitative data.

Secondary Research

- Involves looking at research articles, books, patents, formal reports generated by academic researchers, companies or the government using tools such as Google Scholar, IEEE Xplore & ACM library
- Gain broader insights from similar research conducted in different places with different demographics
- Tweak your methodology by knowing the strengths and weakness of previously conducted research



Ethics of Conducting HCI Research

CONSENT FORM

You need to get **consent** from your participants indicating that they agree to participate in the study. Example consent form in the Ethics Material folder

Consent form tells people about what is involved in the study. **No deception**

Your participants should be 18 and fully capable of giving consent. **Do not force** anybody to participate

There should not be **power-over** relationships

There should be **no risk** (social, physical, economic, emotional) for the participant

Participants can **withdraw and ask to delete** their data at any time

RECRUITMENT EMAIL

Send recruitment letters via email (template in Ethics Material folder) to 3-4 people and then recruit 1-2 based on **first-come-first-serve-basis**

Each team member will recruit 1-2 participants. If you send invites to 4 people but only 1 responded, that's okay, just work with that one participant. **Don't force** others. You will have enough participants as a team eventually.

HANDLING PARTICIPANT DATA

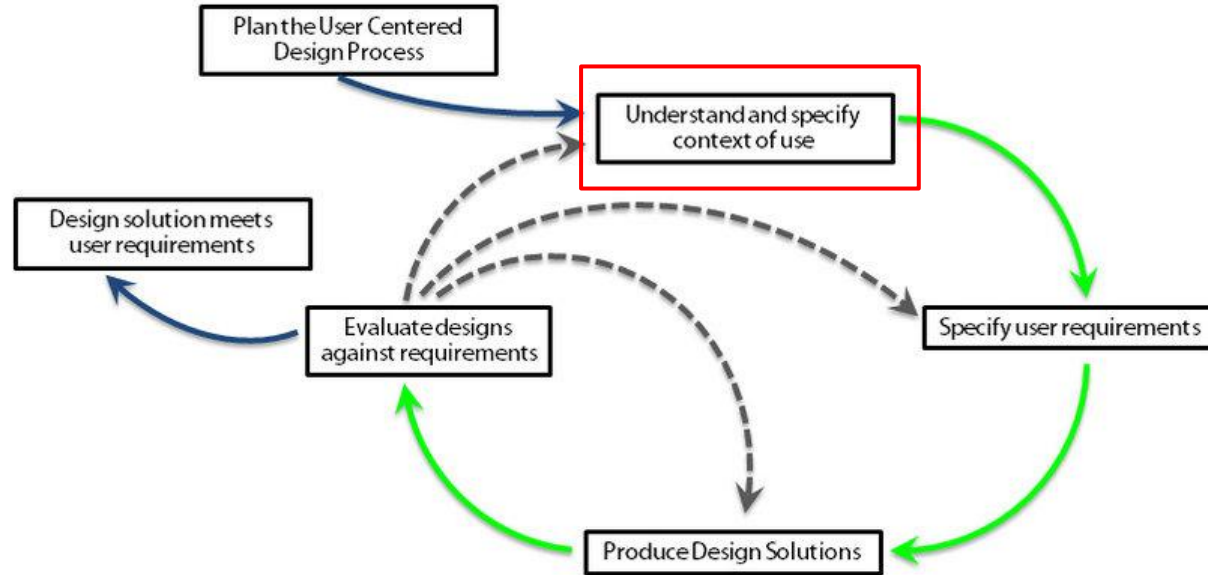
Data will be reported **anonymously**. For example, P1 said.., blur faces

Ensure **confidentiality**. Do not post or share identifying data

Make sure you read the ethics materials (application and consent form) carefully and consult your TA or me when in doubt

Understanding and Specifying Context of Use

PHASE 2: UNDERSTAND AND SPECIFY CONTEXT OF USE



HCD PHASE 2 - METHODS

- Interviews
- Ethnography
- Diary Studies
- Surveys
- Inclusive Design

INTERVIEWS

It is a qualitative method where researchers engage in a conversation with people to learn about their motivations and experiences.



INTERVIEWS

Interview essentials

“An interview should be more like a conversation, and less like an interrogation.”

-Paul Hibbits, SFU

“Conducting a good interview is actually about shutting up.”

<http://alistapart.com/article/interviewing-humans>

INTERVIEWS - TYPES

- Structured – a fixed predetermined list of questions
- Semi-Structured – has predetermined questions and additional questions can be added for further clarification
- Unstructured – informal conversation with no prepared questions.

INTERVIEWS – FIVE WHYS

It's a method used for interview to get to the core of people's reasons and motivations.

- Start by asking a broad overarching question. E.g., how do you manage your annual budget?
- Then narrow down by asking five consecutive five Whys. E.g., why weren't you able to save the amount you wanted?

INTERVIEWS – FIVE WHYS

Problem: The vehicle will not start.

Why? – The battery is dead. (First why)

Why? – The alternator is not functioning. (Second why)

Why? - The alternator belt has broken. (Third why)

Why? – The alternator belt was well beyond its useful service life and not replaced.
(Fourth why)

Why? – The vehicle was not maintained according to the recommended service schedule. (Fifth why, a root cause)

INTERVIEWS – FIVE WHYS

Does it have to be 5?

No!

INTERVIEWS – SOME TIPS

Avoid leading questions. E.g. we have a first class tool we put a lot of effort building. What are your thoughts about our first class tool?

Write down (or audio record) what the person is saying and not what you think they are saying

You can't take everything people say as explicit implications for what you should do in your designs. Observe, read, and listen!

Pilot everything!



Hand Sanitizer



Hampton

ETHNOGRAPHY

Researchers observe or interact with people in their real-life environment for gaining a deeper understanding of people, their context, actions, process etc.

<https://sightandlife.org/blog/why-ethnographic-research/>



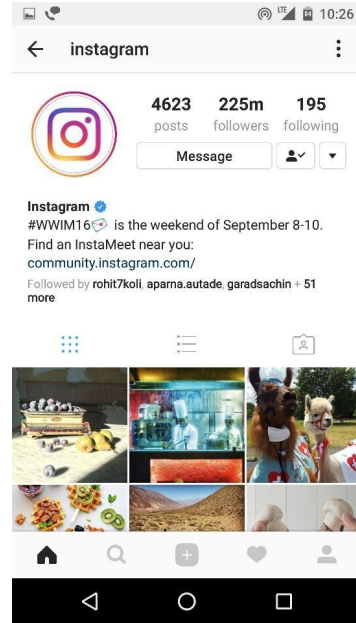
<https://www.spotless.co.uk/insights/ethnography-when-and-how/>

ETHNOGRAPHIC RESEARCH - TYPES

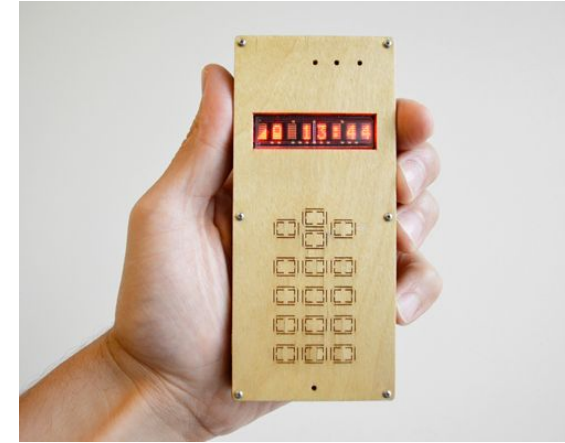
Field



Virtual/Online



Auto/Self



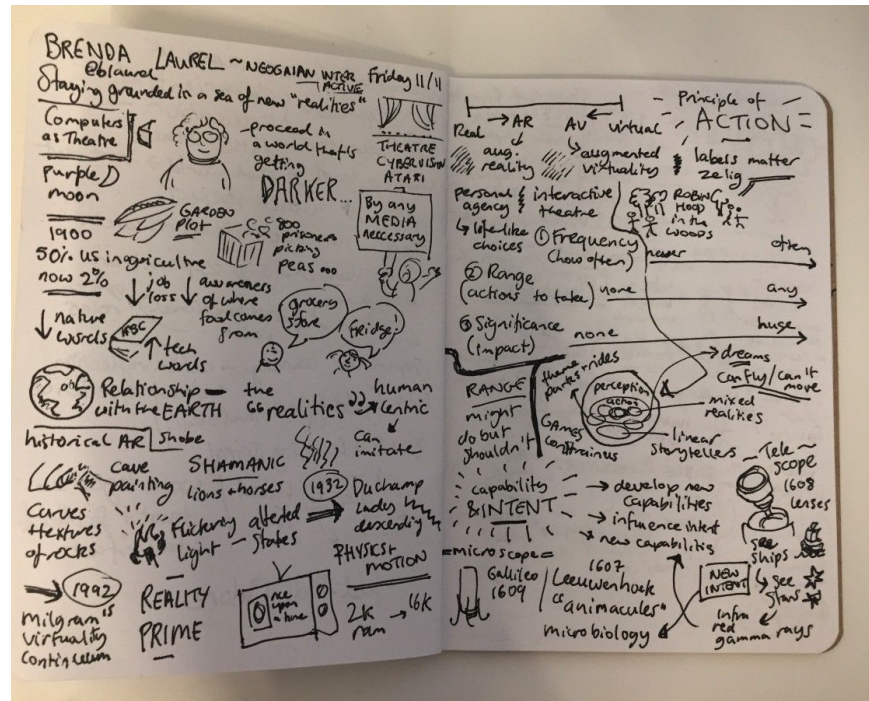
<https://alumni.media.mit.edu/~mellis/cellphone/>

ETHNOGRAPHIC RESEARCH – FIELD NOTES

Taking Field Notes – Example

Observation Protocol Example (Creswell, 2007, p. 137)

Length of Activity: 90 Minutes	
Descriptive Notes	Reflective Notes
General: What are the experiences of graduate students as they learn qualitative research in the classroom?	
See classroom layout and comments about physical setting at the bottom of this page.	Overhead with flaps: I wonder if the back of the room was able to read it.
Approximately 5:17 p.m., Dr. Creswell enters the filled room, introduces Dr. Wolcott. Class members seem relieved.	Overhead projector not plugged in at the beginning of the class: I wonder if this was a distraction (when it took extra time to plug it in).
Dr. Creswell gives brief background of guest, concentrating on his international experiences; features a comment about the educational ethnography "The Man in the Principal's Office."	Lateness of the arrival of Drs. Creswell and Wolcott: Students seemed a bit anxious. Maybe it had to do with the change in starting time to 5 p.m. (some may have had 6:30 classes or appointments to get to).
Dr. Wolcott begins by telling the class he now writes out educational ethnography and highlights this primary occupation by mentioning two books: <i>Transferring Qualitative Data</i> and <i>The Art of Fieldwork</i> .	Drs. Creswell and Wolcott seem to have a good rapport between them, judging from many short exchanges that they had.



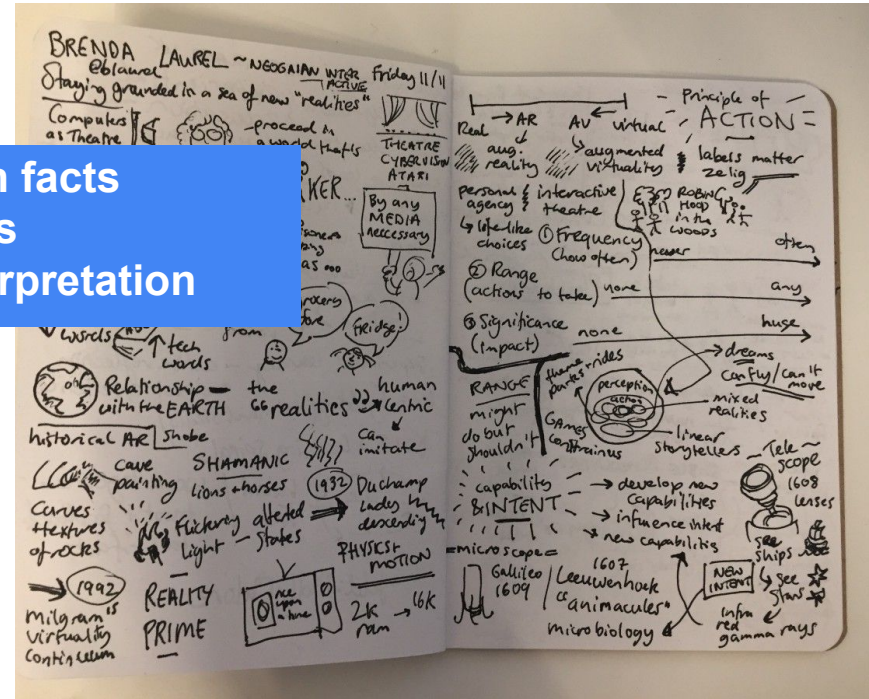
ETHNOGRAPHIC RESEARCH – FIELD NOTES

Taking Field Notes – Example

Observation Protocol Example (Creswell, 2007, p. 137)

Length of Activity: 90 Minutes	
Descriptive Notes	Reflective Notes
General: What are the experiences of graduate students as they learn qualitative research in the classroom?	<div> <div>Distinctive</div> <div>subjective</div> </div>
See classroom layout and comments about physical setting at the bottom of this page.	
Approximately 5:17 p.m., Dr. Creswell enters the filled room, introduces Dr. Wolcott. Class members seem relieved.	
Dr. Creswell gives brief background of guest, concentrating on his international experiences; features a comment about the educational ethnography "The Man in the Principal's Office."	
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Distinguish facts versus subjective interpretation



ETHNOGRAPHIC RESEARCH

- Helps identify and analyze unexpected situations
- Typically provides rich descriptions of how people act in their “natural” environment
- Researchers bring with them certain biases in observation.
 - Initially it's better to note everything without any filtering of data
- Rapid ethnography is what we often end up doing: goal oriented

DIARY STUDIES

It is a method that asks people to take charge of recording their activities and reflections over a certain period of time but with the aim of answering a research question.



DIARY STUDIES

Good for gathering fluid and changing perspectives e.g., emotions and use over time.

Also, helpful to study people's use patterns across multiple technologies and multiple locations.



TYPES OF DIARY

Feedback Diary

As the name suggests it is the diary that collects feedback that researchers will then analyze.

e.g., Test a phone app for 1 week and record feedback regarding usability problems

Elicitation Diary

Are open ended diaries that enable people to record more self-directed reflections

e.g., record your interactions and reflections with your phone over 1 week.

DIARY STUDIES - CHALLENGES

- People not always introspective
- May not follow through and therefore you do not get much feedback
- Can be difficult to find participants who are willing to take part in somewhat long term research and data collection processes
- Difficult to strike a balance between frequent entries and infrequent entries

DIARY STUDIES – SOME TIPS

- Think about who is the audience and what medium would work best for them to collect data.
- Some structured data entry activity is generally helpful as it ensures you will have at least some responses to work with
- Give participants clear guidance and check in to make sure the activity is making sense to the participant in practice

SURVEY

It is a mixed method research technique used to gather information about people's preferences, demographics, and reactions to interactions.

NETFLIX

15%

How would you describe your satisfaction with the movies and TV shows on Netflix?

Select one response per row

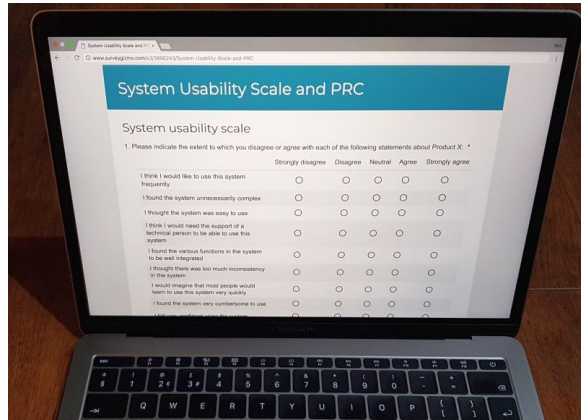
	Not at all Satisfied 1	2	3	4	5	6	Extremely Satisfied 7	Not Applicable
Selection of Netflix Original movies (produced by Netflix)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Selection of Netflix Original TV shows (produced by Netflix)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Selection of movies and TV shows for children available	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Selection of locally produced movies and TV shows	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Selection of movies available	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Selection of TV shows available	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Continue »

13. Tell us about the first time you drank coffee.

SURVEY - OPTIONS

Online/Email



Phone



Face-to-Face



SURVEY – TYPES OF SCALES

Nominal – numbers are used to represent categories.
They are useful only for counting

Could you please select an option from below to describe your hair color.

1-Black

2-Brown

3-Burgundy

4-Auburn

5-Other

SURVEY – TYPES OF SCALES

Ordinal – is an ordered series of numbers that signify ranks

How satisfied are you with our products?

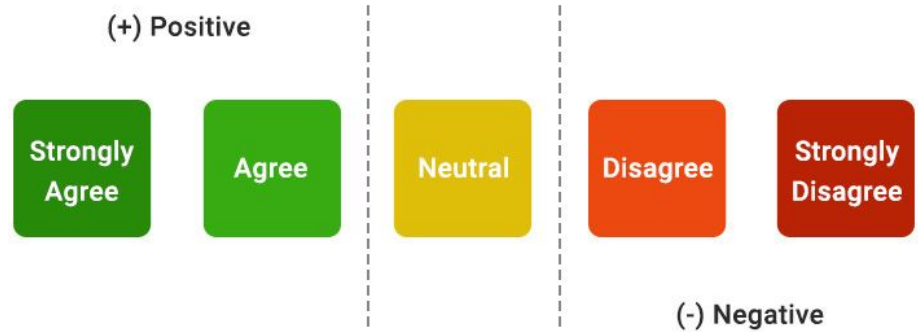
1- Totally Satisfied

2- Satisfied

3- Neutral

4- Dissatisfied

5- Totally Dissatisfied



SURVEY – TYPES OF SCALES

Interval – in addition to the previous two which establish category and rank, interval also tells about the difference between two variables value. But it doesn't allow for ratios.

Examples: date, temperature in Celsius scale

SURVEY – TYPES OF SCALES

Ratio – you get all benefits of nominal, ordinal, and interval, and in addition you get a fixed starting point or true 0.

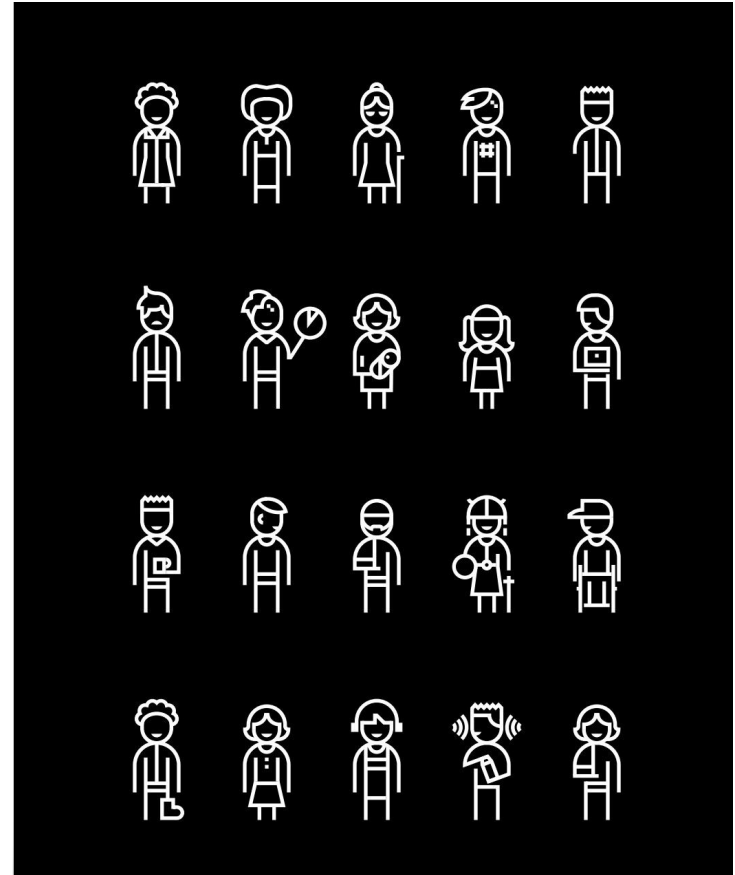
Example: mass, length, angle

If person A is 50 kgs, and person B is 100 kgs; B is twice the weight of A by division

INCLUSIVE DESIGN

Methods that focus on designing **with** rather than designing **for** people

It draws on the full range of human diversity.



PARTICIPATORY DESIGN

It is a collection of methods wherein the participant is positioned as a co-researcher and has an active role in data collection, analysis, synthesis, prototype generation, and final action.



<https://cities.inclusivedesign.ca/ideas/co-design-session-2/>

PERSONA SPECTRUM

Frame | Create a Persona Spectrum

Purpose

To map human abilities on a spectrum to inform solutions that benefit everyone.



Instructions

1. Interview a person(s) with a permanent limit to at least one ability.
2. Ask them about what they like to do and how they go about it.
3. Note those situations in which they experience friction, or limited accessibility.
4. Create a spectrum that illustrates how a similar limitation extends to temporary and situational scenarios.















Materials

The Persona Spectrum support card



Tips













Bear in mind that an accomplishment for this person can be a simple task, or a larger concern. This is a great introductory exercise to understand inclusive design broadly, and also acts as a good check-in exercise during a more granular design process.

	Permanent	Temporary	Situational
Touch	 One arm	 Arm injury	 New parent
See	 Blind	 Cataract	 Distracted driver
Hear	 Deaf	 Ear infection	 Bartender
Speak	 Non-verbal	 Laryngitis	 Heavy accent

INCLUSIVE DESIGN

For more information look at:

<https://www.microsoft.com/design/inclusive>

	Permanent	Temporary	Situational
Touch	 One arm	 Arm injury	 New parent
See	 Blind	 Cataract	 Distracted driver
Hear	 Deaf	 Ear infection	 Bartender
Speak	 Non-verbal	 Laryngitis	 Heavy accent

HCD PHASE 2 - METHODS

- Interviews
- Ethnography
- Diary Studies
- Surveys
- Inclusive Design

TAKEAWAYS

Interview - when you primarily want to **ask** questions

Ethnography – when you want to primarily **observe** and not disturb the people

Diary Studies – when you want to gain deeper insights into **mental models and fluid experiences**

Survey – collect data from **many** people

Inclusive design – include multiple perspectives and **design with** rather than for