



Notes on UX Research Methods & Usability Testing (Nielsen Norman Group)

The original YouTube playlist can be found [here](#).

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User Testing

- You (the software engineer or the business) are never the user → you know too much.
- Cheap → can be done in a few days with just five users.
- Convincing.
- How to do user testing:
 - Get representative users
 - Get users to perform realistic tasks - they need to try and accomplish something with the intended design.
 - Shut up and let the users do the testing

Discovery: Common misconceptions

- Not a synonym for user research: learning about all aspects of a problem to understand it and frame it appropriately
- Discovery needs user research: If no research, you might end up stating what you already know or think you already know.
- Discovery is not a one-person job: Can't always work on technology and business requirements while user research is still in progress. This way, only one person understands the problem space.
- Not a validation exercise: Discovery is to learn something you don't know. Don't validate solutions via users.
- Discovery is not a design sprint: Workshopping and ideating is not a discovery. Also, the goal of discovery is not to produce a high-fidelity prototype.
- A real discovery:
 - Involves user research
 - Explores available technologies
 - Defines the problems to be solved
 - Uncovers successful outcomes
 - Involves a multidisciplinary team
 - A mindset that we don't know all the answers

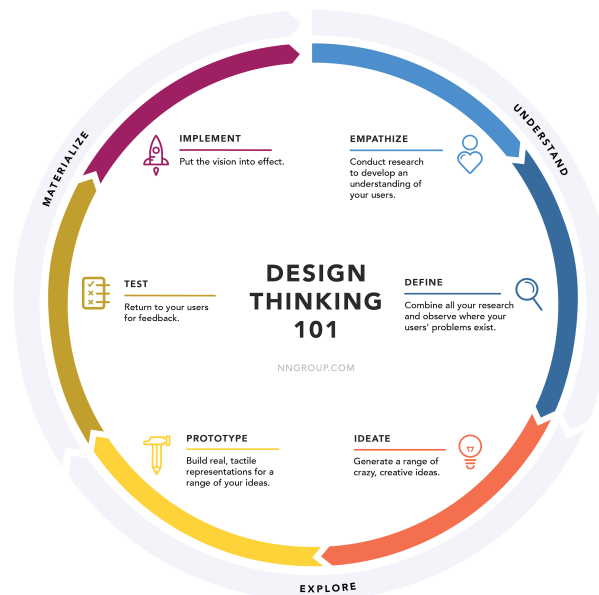


Remote moderated usability testing.

- User unmoderated testing:
 - Give users tasks and wait for data to be collected.
 - Faster, easier, and cheaper than in-person testing
 - The testing tool does the job of the facilitator - administers tasks to a user.
 - But does not capture reactions, nor can we ask probing questions.
- User moderated testing uses a facilitator to run the session:
 - Higher quality and more detailed testing

Formative vs. Summative Usability Evaluation

- Formative: Tells you what aspects of your design work and don't work and tells you why
 - Heuristic reviews, cognitive walkthrough, usability testing
 - The goal is to understand what precisely is working and not working, and why?
 - Used frequently to support iterations through the design process:



- Use early on in the design process
- Summative: Tells you overall how your design works - compared to your competitors and benchmark
 - Carried out when you have a complete design or a shipped product
 - Customers use systems without assistance and grade it
 - Metrics, e.g., Satisfaction, ease of use, net promoter score
 - How usable or satisfying your UX is
 - It tells you how iterations compare to each other
 - Need a large representative sample
 - Isn't helpful if you want to evaluate your product quickly



5 Steps for Effective Diary Studies in Customer Journey Research

1. Planning and preparation
 - Recruit customers to record their experiences.
2. Pre-study brief - explain to customers what type of data you need.
3. Logging period - monitor insights as they come in to fully understand the context of their experience
4. Post-study interview
5. Analyze findings - look for points of friction, find opportunities to improve
 - This helps find contextual information about the consumer journey.

Usability Testing with Five users

- Not going to learn much more with subsequent users.
- But there are some types of research like quantitative usability studies:
 - Where the goal is to drive metrics
 - Need large n to get a good statistical significance
- Find the number of users based on the best ROI:
 - How good you are at deriving insights and design recommendations from observations of user behavior.
 - in a situation where it's relatively easy to understand what the user is doing - can get away with a smaller number of users
 - How efficient is your team at taking in these recommendations and designing a new product to work on
 - If in a slow-moving organization, then you need to be certain with your insights → a larger number of users
 - A fast-moving team (with paper prototypes, etc.) can do with fewer users.
 - Aim to keep getting test users until some form of generalization/repeated behavior is observed among users → no new/limited insights
- Information foraging: "hunt" for more insightful feedback once you're done with one iteration of feedback (for a prototype)
 - Leads to the discovery of new and exciting problems with contemporary designs

UX Research Cheat Sheet

- Discovery: Validate and discard assumptions
 - Field studies
 - Diary studies
 - User Interviews
 - Stakeholder interviews
 - Constraint inventory
- Explore: Understand the user space and how you can satisfy your user's needs
 - Competitive Analysis
 - Persona Building
 - Journey Mapping



- Design reviews
- Task analysis
- Card sorting
- Testing: Make sure the systems we design work well for the user
 - Qualitative testing
 - Benchmark testing
 - Accessibility evaluation
- Listening:
 - Surveys
 - Analytics Reviews
 - Search log reviews
 - Usability bug reviews
 - FAQ reviews

How to Test Visual Design

- Assess both opinion and behavior
- Comparing multiple versions of the design to increase the test's sensitivity and makes it easier to understand the differences and what caused them.
 - A/B test
 - Usability testing

User Testing Facilitation Techniques

- Echo: Clarify what the users meant if he/she says something incoherent or unclear
- Boomerang: If users ask a direct question, deflect it back to them - this avoids assisting the user too much
- Columbo: Ask partial questions, e.g., "You swiped here..."

Pillars of usability testing

1. Typical users:
 - Recruit people similar to your target users
 - Exclude those who aren't a good fit. E.g., users that have something against your brand.
2. Appropriate tasks
 - Set the stage for how they're going to navigate through the interface
 - Match tasks to research goals
 - Don't give too many details.
 - Write user-centered tasks without telling them how to accomplish them and without giving cues about the interface.
 - Add a brief context
3. Skilled facilitator
 - Stays out of the user's way
 - Doesn't bias the user's way of thinking.



- Only probes to get a user to articulate further
- Talks minimal
- Make sure that the user is feeling comfortable.
- Capacity to analyze and interpret results

Open vs. Closed Questions in User Research

- Closed-ended
 - Good for quantitative research
 - Gives us metrics and scale
- Open-ended
 - Accepts a variety of answers
 - difficult to quantify
 - Great for exploratory studies
 - Gives us new and detailed insights

A/B Testing vs. Multivariate Testing for Design Optimization

- Multivariate testing:
 - Split live traffic to different design variations to test their impact
 - Measure conversions
 - But every new combination = new variation to test
 - Multi-variate testing = usually better to refine a testing page.

Between-Subject vs. Within-Subject Study Design in User Research

- Between-subjects study design: different people test each condition to only be exposed to a single user interface. (e.g., rent a car only on Hertz)
- Within-subjects study design: the same person tests all the conditions (i.e., all the user interfaces). (e.g., all subjects rent a car on Hertz and Alamo)

Thematic Analysis of Qualitative User Research Data

- Identify common themes among participant data.
- E.g. Group responses from interviews into themes



Analytics vs. Quantitative Usability Testing

- Analytics:
 - Seeing what your users do in the wild
 - E.g., google analytics
 - inexpensive
- Quantitative:
 - Experimental
 - Can control conditions
 - Expensive
 - Get a richer picture of the usability of the website

Eyetracking Shows How Task Scenarios Influence Where People Look

- Users choose what to read based on patterns they've seen.
- Make page layout predictable and consistent.

Open vs. Closed Card Sorting

- Get insight into how users expect content to be organized on a website.
- Use open card sorting to learn how users group content and the terms or labels they give each category.
- Closed Card Sort:
 - Participants are asked to sort topics from content within your website into pre-defined categories.
 - People need to understand what they're going to get entirely based on labels

Turning Analytics Findings Into Usability Studies

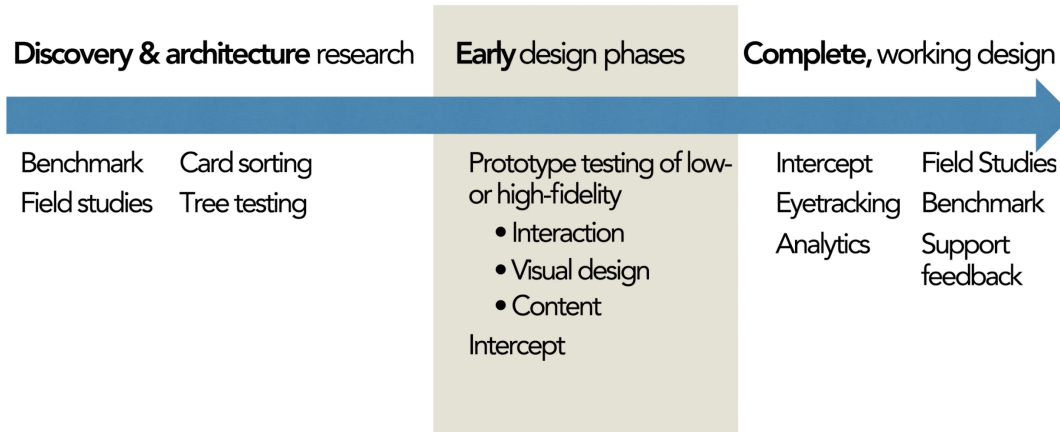
- Analytics data only tells you what behaviors are occurring on your site or app
- Why users are confused = need qualitative data
- Replicate your tasks as closely as possible to reflect the analytics data
- E.g., based on analytics users starting an interaction flow but fail to finish it → convert this into a task for a usability study



When to Use Which UX Research Method

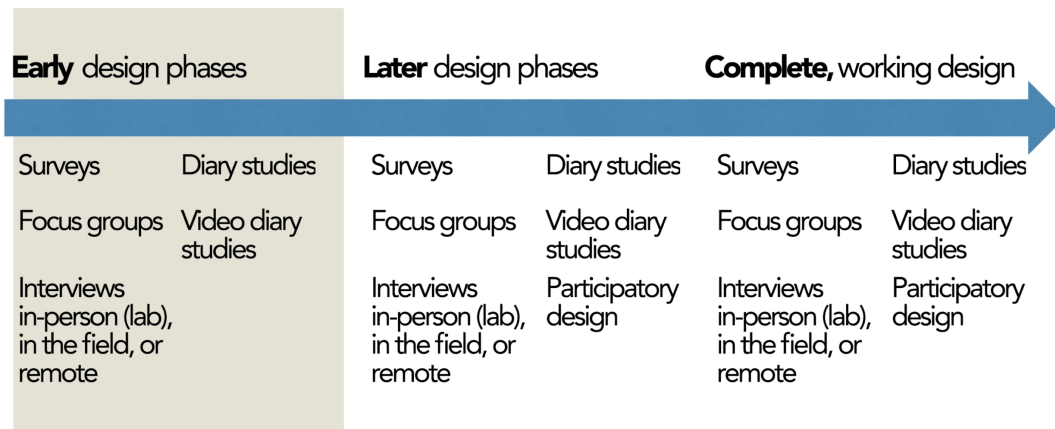
- Watch users do things - observed by researchers → behavioral study
 - Test whether the design process is:
 - Discoverable
 - Findable
 - Understandable
 - Usable

Behavioral: Observe to learn



- Tempting to ask user directly what they think during the prototyping phase → try and avoid this
- Instead, direct the user to try and do something
- Ask users questions - self-reported by users → attitudinal study
 - Interested in what people have to say - whether they'll like to dislike something
 - Self-reported methods can be used:
 - Interviews
 - Surveys
 - Focus groups

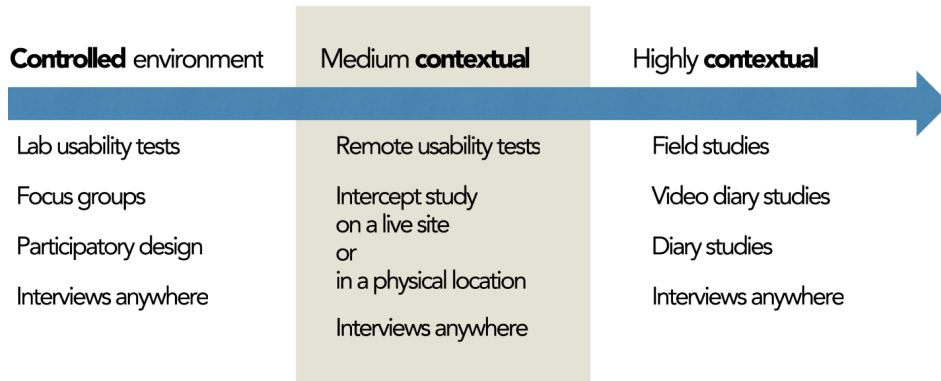
Attitudinal: Ask and listen to user responses





- Quantitative: metrics and numbers
 - Answers “How many” and “How much”
 - Goals include:
 - Determine priority or scale of the problem
 - Compare alternative design options
 - Benchmark user services
 - Compute expected cost savings from design changes
 - E.g.
 - Cart sorting
 - Tree testing
 - Eyetracking heatmaps
 - Quantitative usability tests
- Qualitative: stories, events, and examples
 - Answers “What” and “Why”
 - Goals include:
 - Discovery problems
 - Investigate why
 - Learn how to fix
 - Used in very early prototypes usability tests
 - E.g.
 - Field studies
 - Diary studies
- Controlled or contextual user environment

Controlled or contextual user environment





How to avoid bias in card sorting

- Choose a sample of content for sorting.
- Remember the content and size of the samples impact the groupings the customers will make.
 - E.g. broccoli, apples, scones, and muffins would be split into two categories - produce and baked goods
 - E.g. broccoli, apples, scones, banana, carrots, and muffins would be split into two new categories - fruits and vegetables and baked goods
- The more items you include, the more likely people are to make a new standalone category.
- Ensure cards that proportionally represent your content - but keep in mind these are based on your preconceived notion of what a card sort is
- Pilot test your card sort
- Good idea to follow up card sort with tree test → ask users to use the categories you selected to find content on your site.

How to Maximize User Research Insight (Jakob Nielsen keynote)

- Reliability: the probability of getting the same number if running the same test twice
- Validity: Do findings translate into the real world?
 - If we make a business decision with this result, is it going to make us more money?
- Studies in UX might be stale.
- Diversification in research:
 - Different demographics, behavioral → different personas
 - Study diversity → Test different designs, tasks, and methods
 - Use different testing methods.

Contextual Inquiry: Leave Your Office to Find Design Ideas

- semi-structured interview method to obtain information about the context of use, where users are first asked a set of standard questions and then observed and questioned while they work in their own environments.
- Early stages - helps see things you won't anticipate
- Helps shape things like requirements, personas, user flows, architecture, and content strategies
- Provides insights for new features
- Find illogical processes

How Can We Study Website Credibility? (Katie Sherwin)

- Observe users rather than ask them whether the site is credible
- Asking questions influences their answers and/or behavior (while doing the tasks)
- Look for signs where they question information on the site.



4 Steps to Field Studies with Users

- In Situ: in the natural or original position or place
 - Gain real insights
 - See social situations to see how to fit products and services into users' daily lives.
- 1. Screen for participants
- 2. Schedule participants - try and not tell them what you're looking for (as this can influence their behavior)
- 3. Plan your setup
- 4. Conduct the visit

User Testing with Sensitive Data

- Hide sensitive/mask data
- Provide company credit card instead of making them use their own
- Make clear the purpose of the session and the type of information that will be collected.
- Steps to use protect their privacy
- Follow through with the data retention policy.
- Take notes if a recording isn't possible.
- Take screenshots and redact personal information.

The 3 Types of User Interviews: Structured, Semi-Structured, and Unstructured

- Structured:
 - Carefully scripted questions
 - Lots of closed questions with predetermined options
 - Do not probe the user with questions.
 - Not used in the early stages of the project.
 - Used when interviewing a lot of people and want to compare responses
- Semi-Structured:
 - Few questions prepared
 - also known as open-ended guide
 - Generally open-ended questions
 - Will ask probing questions
 - Can change the ordering of questions as well - depending on insights user is generating
 - Looking for answers about specific areas
- Unstructured
 - No questions prepared
 - Instead have a list of topics to cover
 - Conducted when we know nothing about the domain
 - But hard to think of good non-leading questions on the spot



5 Qualitative Research Methods

- User interviews
 - One-one conversions
 - Learn first-hand stories
 - Structured, semi-structured, unstructured
 - In-person or over the phone
- Field Studies
 - Takes place in the user's context
 - (A) Direct observation
 - Used to understand user vocabulary
 - Used to better understand what users do
 - Discover common workarounds
 - (B) Contextual inquiry
 - Semi-structured
 - Ask a standard set of questions, then observe the user and ask questions while the user performs processes
- Diary study
 - Longitudinal method
 - Collect:
 - Habitual Usage - primary tasks and routines
 - Change in attitude - brand perception and loyalty
- Focus groups
 - Users come together to understand issues and concerns

Survey Response Biases in User Research

- Acquiescence Bias
 - A tendency to agree or say yes
- Social desirability bias
 - The tendency to overreport socially desirable behavior
 - And underreport socially undesirable behavior and characteristics.
- Recency bias
 - Respondents will give more weight to recent experiences.
- Surveys measure user perception and not objective performance.
- Response bias is why we need a large sample size - cancel out random variations.

Tree Testing to Evaluate Information Architecture Categories

- Give participants menu structures and give them tasks to find specific information.
- Can also test structure of a competitor
- Trying to find what % of users were able to find the content they were looking for



Incentives for Participants in UX Research

- Monetary:
 - usually meant for research conducted on the weekdays
 - These users have taken time off their work to take up this interview
 - Considerations:
 - Job category
 - Study location
 - Session length
 - Task complexity
- But don't overemphasize incentive when looking for people - will lead people to exaggerate their qualifications
- Non-monetary
 - Usually for internal employees

Running a Remote Usability Test

- Send out day-of reminders:
 - Time
 - Equipment
 - App installed
 - How to join
 - Good wifi
 - Quiet place
- Bring in observers and participants.
- Introduce the session:
 - Welcome and thanks
 - Confirm the name pronunciation
 - Mention observers
 - Collect consent
 - Tell them you're starting the recording.
 - Ask them to share their screen.
- Optional: Short interview
 - Ask some behavioral questions, e.g., what kind of apps do you use when shopping online.
 - Gives you context about the participant's experiences and preferences
- Administer tasks
 - Participants should have a written copy.
- Reassure the participant
- Close the session
 - Final questions
 - Thank participant + give the gift
- Discuss and Reflect



How to Do User Research Within Constraints

- Create a low fidelity artifact instead of high fidelity to avoid unnecessary silos and handoffs
- The time you save = can be spent on research.
- Get your team into research.
- Carve out time in existing meetings to discuss UX research rather than setting up new meetings

Using usability-test participants multiple times (Kara Pernice)

- Can you use the same persons more than once in a usability study?
 - Usually no, since the person is already aware of the tasks he/she needs to undertake.
 - Post-interview questions and debrief gives them a better understanding of the study itself and no longer makes them a “user.”
 - But can make them design partners.
- How to find new users?
 - Use recruiting agencies
 - Social media
 - Build a database of people
 - Friends and family + ask them to ask their friends and families.

5-Second Usability Test

- Show web page to user and then ask them to recall what they’ll see.
- Used to gauge users first responses to a screen or design
- Don’t tell users that you’ll be asking them to recall what they’ll see before you start the test
- Not used for user preferences but only to draw out first impressions and gut reactions.

Paper Prototyping 101

- Used to get feedback quickly
- Can test:
 - Information architecture
 - Content
 - Structure
 - Task flows
 - Interaction designs
- Should be a collection of screens - one screen per page
- Include a loading indicator
- Under construction page
- Show printed or written list of tasks.
- Use a blank paper to draw out improvements between tests.



Top Tasks for UX Design: How and Why to Create Them

- Tasks a user should be able to do or else your design has failed.
- Helps maintain balance in research.
- Use as a guide for heuristic evaluation.
- Collect data from previous methods to create tasks
- Can use an open-ended survey to find some top tasks

Intentional Silence as a Moderation Technique

- In periods of silence, participants often offer poignant information.
- Can break a participant's train of thought if a facilitator rushes into the next question
- Use body language to provide space:
 - Maintain eye contact or focus
 - Don't speak nor nod your head.
 - Wait patiently, relax, and wait for the other person to speak.
- Tricks:
 - Count silently to 7 before speaking
 - Take a sip of water

Usability Testing with Minors

1. Determine age-appropriate incentives
2. Prepare a variety of tasks
 - make tasks engaging
 - Write more tasks than you think you need as kids tend to focus mainly on completing a task rather than completing it correctly
3. Don't look or act too authoritative.
 - Remind them that they're not being tested - no right or wrong answer
 - Respond since kids look for responses - encourages confidence

Catching Cheaters and Outliers in Remote Unmoderated User Studies

- Cheaters = only interested in getting paid and may not even try to perform the tasks
- Outliers = whose behavior and performance is very different from the rest of your user population
- Qualitative:
 - Watch the recordings
- Quantitative
 - Spot-check the videos
 - Time on task:
 - Check the distribution for times that are too long or too short.
 - Mark this as outliers but don't throw this data away
 - Investigate further. E.g. if task duration is too short and there are few successes, then this might be a "cheater"



- Task successes per participant
- Look at multiple platforms.

Doing Field Studies Remotely

- Have users take photos of their environment beforehand
- Allow extra time for technical issues.
- Turn off your webcam during the observational part of the study.
- Ask them to think out loud - better to do this during remote (not recommended in-person)
- Observe for environmental cues.
- Keep sessions short and try follow-ups.