Usability Testing

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Lesson outline

- What does it mean and why?
- Types of testing
- How to plan tests?
- How to conduct tests?
- Best practices
- Testing Tools

What does it mean to test and why we should do it?

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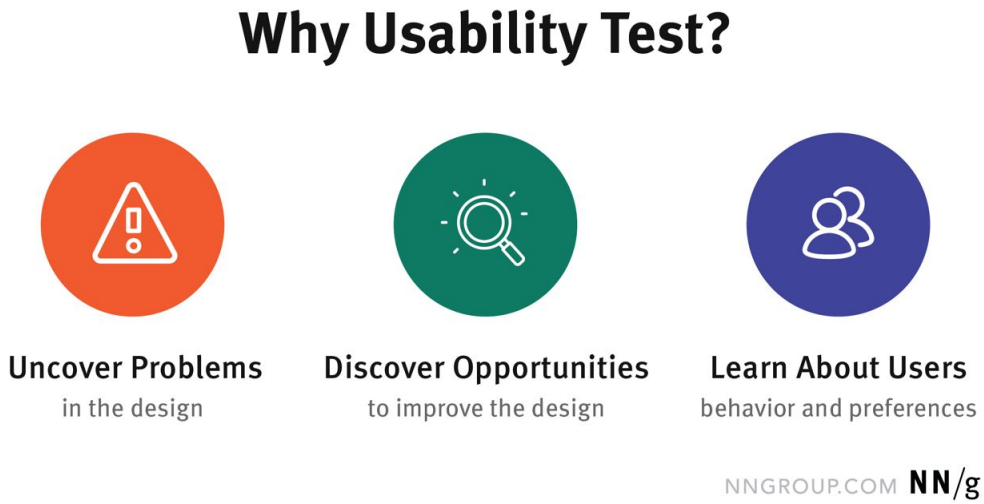
When you have some sort of a prototype what you should want to do is **testing with the users**.

This is the process where you can evaluate a product or service by testing it directly with its intended users.

https://www.nngroup.com/articles/usability-testing-101/

What does it mean to test and why we should do it?

In this way you can identify many (but not all) usability issues, opportunities for improvement, and how your users behave what they prefer.



But what is usability?

Usability is a quality attribute that assesses how easy user interfaces are to use.

Usability is defined by 5 quality components:

- **Learnability**: How easy is it for users to accomplish basic tasks the first time they encounter the design?
- **Efficiency**: Once users have learned the design, how quickly can they perform tasks?
- **Memorability**: When users return to the design after a period of not using it, how easily can they reestablish proficiency?
- **Errors**: How many errors do users make, how severe are these errors, and how easily can they recover from the errors?
- **Satisfaction**: How pleasant is it to use the design?

https://www.nngroup.com/articles/usability-101-introduction-to-usability/

Usability and Utility

Other than usability another key concept in UX design is utility, which refers to the design's **functionality**: Does it do what users need?

Usability and utility are equally important and together determine whether something is useful:

- ➔ It matters little that something is easy if it's not what you want.
- ➔ It's also no good if the system can hypothetically do what you want, but you can't make it happen because the user interface is too difficult.

To study a design's utility, you can use the same user research methods that improve usability.

Usability + Utility

Utility = whether it provides the features you need.

Usability = how easy & pleasant these features are to use.

Useful = usability + utility.

Note that usually you will find mention to usability only: it is not conceptually right but it makes it easier to refer to the type of testing.

User and Usability testing

So, testing is essential in creating products that meet user needs and expectations following the **principles of Human-Centered Design**.

Only discovering usability issues and testing with real users you can create an improved user experience that leads you to higher user satisfaction, and ultimately drive business success.

User and Usability testing

As a user research methodology we define a a usability-testing session when a **researcher** (called a “facilitator” or a “moderator”) **asks a participant to perform tasks**, usually using one or more specific user interfaces.

While the participant completes each task, the researcher observes the participant’s behavior and listens for feedback.

https://www.youtube.com/watch?v=v8JJrDvQDF4

Heuristics evaluation

Heuristic evaluation

Before testing with real users, something else can be done to discover usability issues.

Heuristic evaluation is a method used to evaluate user interfaces based on established usability principles or "heuristics". This evaluation typically involves a small team of evaluators, as the process can be challenging for a single individual to complete. Also, involving multiple evaluators (3-5 are enough) can improve the accuracy of the evaluation.

Although heuristic evaluation does not provide a systematic approach to fixing usability problems or assessing redesigns, it can guide the creation of revised designs based on the violated principles of good interactive systems in a cost-effective way.

Nielsen's 10 Usability Heuristics

1 Visibility *of* System Status

Designs should *keep users informed* about what is going on, through appropriate, timely feedback.

Interactive mall maps have to show people where they currently are, to help them understand where to go next.

2 Match between System and the Real World

The design should speak the users' language. Use words, phrases, and concepts *familiar to the user,* rather than internal jargon.

Users can quickly understand which stovetop control maps to each heating element.

3 User Control *and* Freedom

Users often perform actions by mistake. They *need a clearly marked "emergency exit"* to leave the unwanted action.

Just like physical spaces, digital spaces need quick "emergency" exits too.

Nielsen's 10 Usability Heuristics

4 Consistency *and* Standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. *Follow platform conventions.*

Check-in counters are usually located at the front of hotels, which meets expectations.

5 Error Prevention

Good error messages are important, but the best designs carefully *prevent problems* from occurring in the first place.

Guard rails on curvy mountain roads prevent drivers from falling off cliffs.

6 Recognition Rather Than Recall

***Minimize the user's memory load* by making elements, actions, and options visible. Avoid making users remember information.**

People are likely to correctly answer "Is Lisbon the capital of Portugal?".

Nielsen's 10 Usability Heuristics

7 Flexibility *and* Efficiency of Use

Shortcuts — hidden from novice users — may *speed up the interaction* for the expert user.

Regular routes are listed on maps, but locals with more knowledge of the area can take shortcuts.

8 Aesthetic *and* Minimalist Design

Interfaces should not contain information which is irrelevant. Every extra unit of information in an interface *competes* with the relevant units of information.

A minimalist three-legged stool is still a place to sit.

9 Recognize, Diagnose, *and* Recover from Errors

Error messages should be expressed in plain language (no error codes), precisely indicate the problem, and constructively suggest a solution.

Wrong-way signs on the road remind drivers that they are heading in the wrong direction.

Nielsen's 10 Usability Heuristics

10 Help *and* Documentation

It's best if the design *doesn't need* any additional explanation. However, it may be necessary to provide documentation to help users complete their tasks.

Information kiosks at airports are easily recognizable and solve customers' problems in context and immediately.

Elements of Usability Testing

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Facilitator

Guides the participant through the test process

Tasks

Realistic activities that the participant might actually perform in real life

Participant

Realistic user of the product or service being studied

The Facilitator

The facilitator **guides the participant** through the test process. The facilitator:

- gives instructions,
- answers the participant's questions,
- and asks follow up questions.

The facilitator works to **ensure** that the test results in high-quality, valid data, without accidentally influencing the participant's behavior. Achieving this balance is difficult and requires training.

The tasks

The tasks in a usability test are realistic activities that the participant might perform in real life. They can be very specific or very open-ended, depending on the research questions and the type of usability testing.

A few examples of tasks:

- Your printer is showing “Error 5200”. How can you get rid of the error message?
- Find out articles that uses Cloud technologies to solve a warehouse management problem. Can you find them? How?

The tasks

Task wording is very important in usability testing. Small errors in the phrasing of a task can cause the participant to misunderstand what they're asked to do or can influence how participants perform the task (a psychological phenomenon called priming).

Task instructions **can be delivered** to the participant **verbally** (the facilitator might read them) or can be handed to a participant **written** on task sheets.

If you give them written tasks ask participants to read the task instructions out loud. This helps ensure that the participant reads the instructions completely, and helps the researchers with their notetaking, because they always know which task the user is performing.

The Participant

The participant should be a realistic user of the product or service being studied. That might mean that the user is already using the product or service in real life. Alternatively, in some cases, the participant might just have a similar background to the target user group, or might have the same needs, even if he isn't already a user of the product.

Ideally you should select them starting from the personas you made.

Participants are often asked to think out loud during usability testing (called the "**think-aloud method**"). The facilitator might ask the participants to narrate their actions and thoughts as they perform tasks. The goal of this approach is to understand participants' behaviors, goals, thoughts, and motivations.

Elements of Usability Testing

Types of usability testing

Qualitative vs Quantitative

There are 2 types of usability testing depending on the data you can collect:

Qualitative (qual) data, consisting of observational findings that identify design features easy or hard to use.

Quantitative (quant) data, in form of one or more metrics (such as task completion rates or task times) that reflect whether the tasks were easy to perform.

Qualitative vs Quantitative

Qualitative testing typically involves gathering data through open-ended questions, observations, and user interviews to gain insight into how users interact with a product and what their feelings and opinions are about it.

It is often conducted in the early stages of the design process to help designers understand user needs, goals, and pain points. But it can also be used to validate design decisions and test prototypes before launching a product or service.

Qualitative vs Quantitative

Quantitative testing is a research method that involves **collecting and analyzing numerical data (metrics) to measure user behavior and attitudes** towards a product or service. It typically involves gathering data through surveys, analytics, A/B testing, and other quantitative research methods.

The goal of quantitative testing is to provide designers with statistically significant data that can be used to make informed design decisions. By collecting quantitative data, designers can measure user behavior and preferences in a more objective and systematic way, making it easier to identify patterns and trends.

Quantitative testing can be used throughout the design process, from the early stages of research and discovery to testing and validating design decisions. It can be especially useful for measuring the effectiveness of design changes and improvements over time.

Qualitative vs Quantitative

Both qualitative and quantitative testing are important methods in UX design, and they complement each other well. Qualitative tests can help designers understand the "why" behind user behavior, while quantitative tests can provide a more comprehensive understanding of user behavior and preferences.

	Qualitative Research	Quantitative Research
Questions answered	Why?	How many and how much?
Goals	Both formative and summative: • inform design decisions • identify usability issues and find solutions for them	Mostly summative: • evaluate the usability of an existing site • track usability over time • compare site with competitors • compute ROI
When it is used	Anytime: during redesign, or when you have a final working product	When you have a working product (either at the beginning or end of a design cycle)
Outcome	Findings based on the researcher's impressions, interpretations, and prior knowledge	Statistically meaningful results that are likely to be replicated in a different study
Methodology	• Few participants • Flexible study conditions that can be adjusted according to the team's needs • Think-aloud protocol	• Many participants • Well-defined, strictly controlled study conditions • Usually no think-aloud

How to plan and conduct usability tests

Planning a test - The goals

First of all you have to define the purpose of your research. What do you want to test? What is the end goal in conducting tests?

This will first lead you to understand if you need qualitative or quantitative research.

Planning a test - The format

In lab or in field: consider the location: should it be in-house or at the participant's location?

Moderated or unmoderated: Moderated studies provide richer insights and better access to open-ended comments but cost more and difficult to organize. Unmoderated studies can be cheaper, quicker and may provide better access to hard-to-recruit participants.

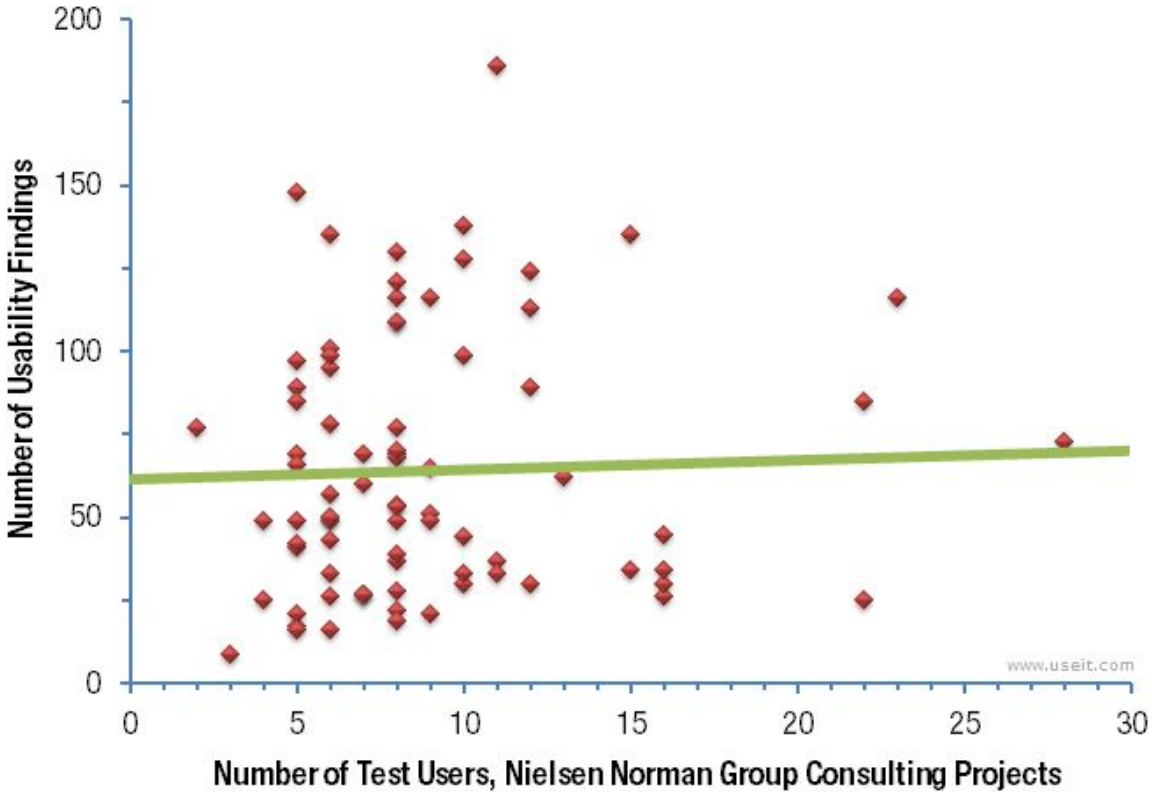
In-person or remote: In-person studies are recommended whenever possible as they allow for more personable interaction and the ability to detect subtle cues, but remote studies can be more accessible and sometimes necessary due to budget or logistical constraints.

Planning a test - number of participants

How many testers?

Jakob Nielsen highlighted that **5** people is a good number **for qualitative studies** as more will not guarantee you many other insights.

However, this will not apply to **quantitative studies**! Here the recommended number is **20**.



Planning a test - Recruit the Right Participants

To get the most valuable insights from user testing, it's important to use representative participants who match the demographics and behaviors of your target users.

Avoid asking proxy users to pretend or imagine scenarios, as this can lead to invalid results. This is especially important for specialized websites and content-rich or B2B sites, where finding exact matches for your target users is crucial.

Planning a test - Write the right tasks

In usability testing, tasks are written as scenarios and should match the study goals. Tasks can be **exploratory** or **specific**:

- exploratory tasks are open-ended and used for learning how people explore information (not suited for quantitative research),
- specific tasks are focused and have a correct answer or end point, and can be used for both qualitative and quantitative testing.

Also, pay attention to the wording of the task! (More on this later)

Planning a test - Rehearse it fist

Before conducting usability testing, **run a pilot study** to refine task wording, determine task order and quantity, and ensure you are recruiting the right participants.

This is especially important for online unmoderated studies where there is no opportunity for clarification or correction during the session.

Catching problems early can prevent issues during the actual testing session.

Planning a test - Decide the metrics (if any)

Qualitative usability studies prioritize gaining design insights over measuring usability, as metrics are unlikely to be representative for the whole user population with few users.

However, in quantitative studies with well-defined tasks and a large number of users, measuring usability is important and common metrics include time on task, satisfaction ratings, success rate, and error rate.

If collecting subjective measurements, decide when to give questionnaires: after each task, at the end of the session, or both.

Planning a test - Write down the plan

Once you've figured out how you're going to conduct the research, document your approach in a test plan and share it. This document serves as a communication tool among team members and a record for future studies. The document doesn't need to be lengthy, but should contain key information such as:

- Name of the product or site being testing
- Study goals
- Logistics: time, dates, location, and format of study
- Participant profiles
- Tasks
- Metrics, questionnaires
- Description of the system (e.g., mobile, desktop, computer settings)

Planning a test - Don't do it alone

Usability studies can **foster collaboration** and buy-in by allowing stakeholders to observe how users respond to the interface design, leading to more efficient communication and design.

Invite stakeholders and team members to observe moderated testing sessions. Traditional or simplified usability labs are ideal, but remote viewing options can also be offered to include team members in different locations.

10 things to avoid when testing

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1. **Telling Users Where to Go**. To avoid priming, remove any words that appear in your interface, so you give yourself a fair chance to see if users can find their way around the site.

2. **Telling Users What to Do.** Don't warn participants about the steps they need to take, such as registering or downloading, to gather valuable feedback about their experience and potential issues that may arise.

3. **Creating Out-of-Date Tasks.** If the task is to find a flight leaving February 20, don’t run that test on February 22. A task about the latest news on a site should be updated the day before or the day of testing to include current content.

4. **Making Tasks Too Simple.** Your goal isn’t to make tasks too simplistic or unnecessarily complex, but to give users a realistic task that requires processing, rather than just locating information.

10 things to avoid when testing

5. **Creating an Elaborate Scenario.** Using scenarios in user testing tasks can provide context and help participants understand the purpose of the task, but should be used with caution as they may add unnecessary complexity and increase the cognitive load for users. Scenarios should be kept simple and not used to justify unusual or unrealistic activities.

6. **Writing an Ad, not a Task.** Make sure your tasks don’t include marketing phrases like “exciting new feature,” business phrases like “thinking outside the box,” or mysterious corporate acronyms. Use user-centric language, not maker-centric language.

7. **Risking an Emotional Reaction.** Part of the responsibility of running a usability test is to ensure the well-being of your participants. Stick to harmless and vague relationships instead - friend, colleague, a friend’s child.

10 things to avoid when testing

8. **Trying to Be Funny.** Don’t joke, use famous names in tasks, or otherwise try to lighten the mood. Doing so can backfire and make some participants feel awkward or, even worse, as though you are making fun of them.

9. **Offending the Participant.** Avoid potentially offensive details in tasks. Societal issues, politics, health, religion, age, and money all have the possibility of offending a participant.

10. **Asking Rather than Telling.** Don’t ask participants “how would you” complete a task — unless you want them to talk you through what they theoretically would do on a site, rather than doing it. The point of usability testing is to see what users do, not to hear what they would do.

For more information and details on usability testing:

https://www.nngroup.com/articles/qual-usability-testing-study-guide/

https://www.nngroup.com/articles/quantitative-research-study-guide/