Lab (User) Study
[Deliver]

"Generate a Pixar style image where a fox - wearing a lab coat and having a clipboard in hand is overseeing a user study where kittens are in front of computer doing stuff. Make the setting inside a lab" ChatGPT

Deliver

Objective: Finalize and implement the best solution, and to evaluate its impact

Method : **Hi-fi prototype**, develop final product, extensive user testing & launch

Class: Figma (hi-fi), Heuristic Evaluation, **User testing**

No need for working product

Outcome: polished, user-validated product, also includes includes post-launch evaluation.

Why do usability testing?

1. Identify problems

2. Uncover opportunities to improve

3. Learn about the (target user's) behavior and preferences
   - Think-aloud study
   - Observation notes

4. Compare with competitor /product
   - AB testing
   - Statistical testing

Caution: Can't prove no problems exist, can only *find* problems

Usability Studies – Empirical

- Empirical – based on data
- Can be Formative or Summative
- Advantages/disadvantages of empirical
  - **+** Greater accuracy in what users really do.
  - **+** You'll get more surprises.
  - **+** Greater credibility of your finding.
  - - More expensive (time, $) than analytical
  - - Usually less info about why you found what you found.

You have a new mobile fitness app designed to help users set fitness goals, follow personalized workout plans, and track their progress over time.

Your Task:

- You are preparing a usability study to evaluate one of the above features.

- What would you need to do? – 5 min (on your own)
  - What would the user tasks be?
  - What data would you collect?

What task will you ask users to complete during your study?
(Design the task in a way that reflects a realistic use case for that feature.)

Which usability goals are you assessing?
(e.g., *Effectiveness* — can they complete the task? *Efficiency* — how quickly? *Satisfaction* — how did they feel about it?)

What types of data will you collect to evaluate usability?
•**Behavioral** (e.g., number of misclicks, time taken, task success)
•**Subjective** (e.g., user confidence, satisfaction survey, perceived effort)
•**Observational** (e.g., signs of confusion, hesitation, navigation loops)

Peer review: 5 minutes

Pair up. Explain your evaluation question and task to your partner. Use this checklist:

- Is the task realistic and user-driven?
- Will the data collected clearly answer the question?
- Are any confounding factors uncontrolled?

Elements of Usability Testing

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

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- Facilitator: Follows a script to avoid bias
- Tasks: Main use cases first, then edge cases
- Participants: Pick diverse users
  - Pick users unlike you
- Product
  - Formative: lo-fi
  - Summative: hi-fi prototype (Figma) or final product

External Monitor

Participant's Laptop

Facilitator's Laptop

Participant

Task Sheets

Facilitator

In this usability-test session, the participant sits on the left, and the facilitator sits on the right. The participant uses a special testing laptop, which is running screen-recording software. The laptop has a webcam to capture the participant's facial expressions and is connected to an external monitor for the facilitator. The facilitator listens to his feedback, administers tasks, and takes notes. The photo captures the moment after the participant's task, when the facilitator is asking him followup questions.

Conducting Usability Study

- How many participants
  - 5 participants find 60-80% problems.

- How to conduct:
  - Test it first (debug the protocol)
  - Be organized!! Have everything ready, …
  - Users do task (one user at a time)
  - Take notes, record

Participant
Realistic user of the product or service being studied

Facilitator
Guides the participant through the test process

- Data is the result (no stats needed for class).

Conducting usability Study: Task Design

- Realistic activities participants might perform
  - Delivered verbally or written
    - If written ask participants to read aloud (ensure they "get" the task)
  - Carefully word the tasks to avoid priming the user
- Can be specific or open-ended
  - Based on your research question
  - Formative vs. summative
  - Qualitative vs. quantitative
- Example
  - *Your printer is showing "Error 5200". How can you get rid of the error message?*
  - *You're considering opening a new credit card with Wells Fargo. Please visit wellsfargo.com and decide which credit card you might want to open, if any.*
  - *You've been told you need to speak to Tyler Smith from the Project Management department. Use the companyApp to find out where they are located. Tell the researcher your answer.*

Tasks
Realistic activities that the participant might actually perform in real life

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

Conducting usability Study: 10 pitfalls in task design

Priming

1. Telling Users Where to Go [words from UI]

Tasks
Realistic activities that the participant might actually perform in real life

- Task goal: Use the location finder tool (labeled Find a Branch)
- Leading user task: Find a branch near you and see when it is open tomorrow.
- Improvement: ?

Conducting usability Study: 10 pitfalls in task design

Priming

1. Telling Users Where to Go [words from UI]

Tasks

Realistic activities that the participant might actually perform in real life

- Task goal: Use the location finder tool (labeled Find a Branch)
- Leading user task: Find a branch near you and see when it is open tomorrow.
- Improvement: When is the bank location that's most convenient to you open tomorrow?

Conducting usability Study: 10 pitfalls in task design

Priming

1. Telling Users Where to Go [words from UI]
2. Telling Users What to Do

Tasks

Realistic activities that the participant might actually perform in real life

- Task goal: Find the price for consulting services
- Overly-structured task: Locate information about consulting services, provide details about yourself and your company, and set up a time to talk to a consultant about pricing.
- Improvement: ?

Conducting usability Study: 10 pitfalls in task design

Priming

1. Telling Users Where to Go [words from UI]
2. Telling Users What to Do

Tasks

Realistic activities that the participant might actually perform in real life

- Task goal: Find the price for consulting services
- Overly-structured task: Locate information about consulting services, provide details about yourself and your company, and set up a time to talk to a consultant about pricing.
- Improvement: Find out how much a consulting project costs.

Conducting usability Study: 10 pitfalls in task design

Priming

1. Telling Users Where to Go [words from UI]
2. Telling Users What to Do

Realism

1. Creating Out-of-Date Tasks (timely)
2. Making Tasks Too Simple
3. Creating an Elaborate Scenario

Sentiments

1. Writing an Ad, not a Task
2. Risking an Emotional Reaction
3. Offending the Participant
4. Trying to Be Funny
5. Asking Rather (how would you..) than Telling

Tasks

Realistic activities that the
participant might actually
perform in real life

How to avoid pitfalls

Consider the _user's end goal_ rather than the task's end goal.

Rather than focusing on the section or the feature you want to test, consider _why people would use that section or feature_. What would they ultimately try to accomplish? – what is their user journey (goal)

Be prepared: Plan and Debug

- Assign roles
  - Hi-fi: Facilitator, observer
  - Lo-fi: Facilitator, observer, computer
- What problems/user behavior to watch for
  - End of session, debrief
- Reporting: keep track of the data
  - Errors made
  - Time taken
  - Where participants were confused, lost, backtracked...
- Debug, debug, debug
  - Sandbox
  - Pilot

Facilitator
Guides the participant
through the test process

Usability testing for different types of prototypes

- Sketches/concepts
  - Quickly uncover problems
  - Facilitator explains the sketch/concept
  - Qualitative
  - 5-10 min

- Paper prototypes

  - Uncover problems, opportunities to improve, understand user behavior
  - Use wizard of oz testing method
  - Qualitative
  - 15-45 min

Usability testing for different types of prototypes

- Working prototypes
  - All: Uncover problems, opportunities to improve, understand user behavior, compare to others
  - (for our class) Figma prototypes;
  - Collect both qualitative and quantitative data
  - 45-60 min

Things to Say (when not doing quantitative)

When user does this:	Say this:
Something surprises them ("Oh!!")	"Is that what you expected to happen?"
Participant tries to get you to give them clues.	"What would you do if you were at home?" (Wait.) "Then why don't you go ahead and try that?" "I'd like you to do whatever you'd normally do." "How do you think it would work?"
Participants says something but you don't know what triggered it.	"Was there something in particular that made you think that?"
Participant suggest that they're not giving you what you need.	"No, this is very helpful."

Think-Aloud

- Participants "*simply verbalize their thoughts as they move through the user interface*" – NN/g
- Most helpful with a working prototype or system,
  - but can also use it for early prototypes/concepts
- Returns a list of behaviors/strategies/ impressions/ thoughts…

- Might need to prompt if participant is silent
  - Often when doing cognitive challenging tasks

Think-Aloud Training (always do this)

- "We are interested in what you say to yourself as you do the task. So we'll ask you to TALK ALOUD CONSTANTLY as you work on the tasks. Say aloud EVERYTHING you say to yourself. **Let's practice talking aloud."**

Think Aloud Practice

In pairs, practice think-aloud while doing this task:

"Set a weekly goal of exercising 3 times a week in a fitness app prototype"

User: think aloud all the steps

Observer: is the user verbalizing, are they skipping any actions?
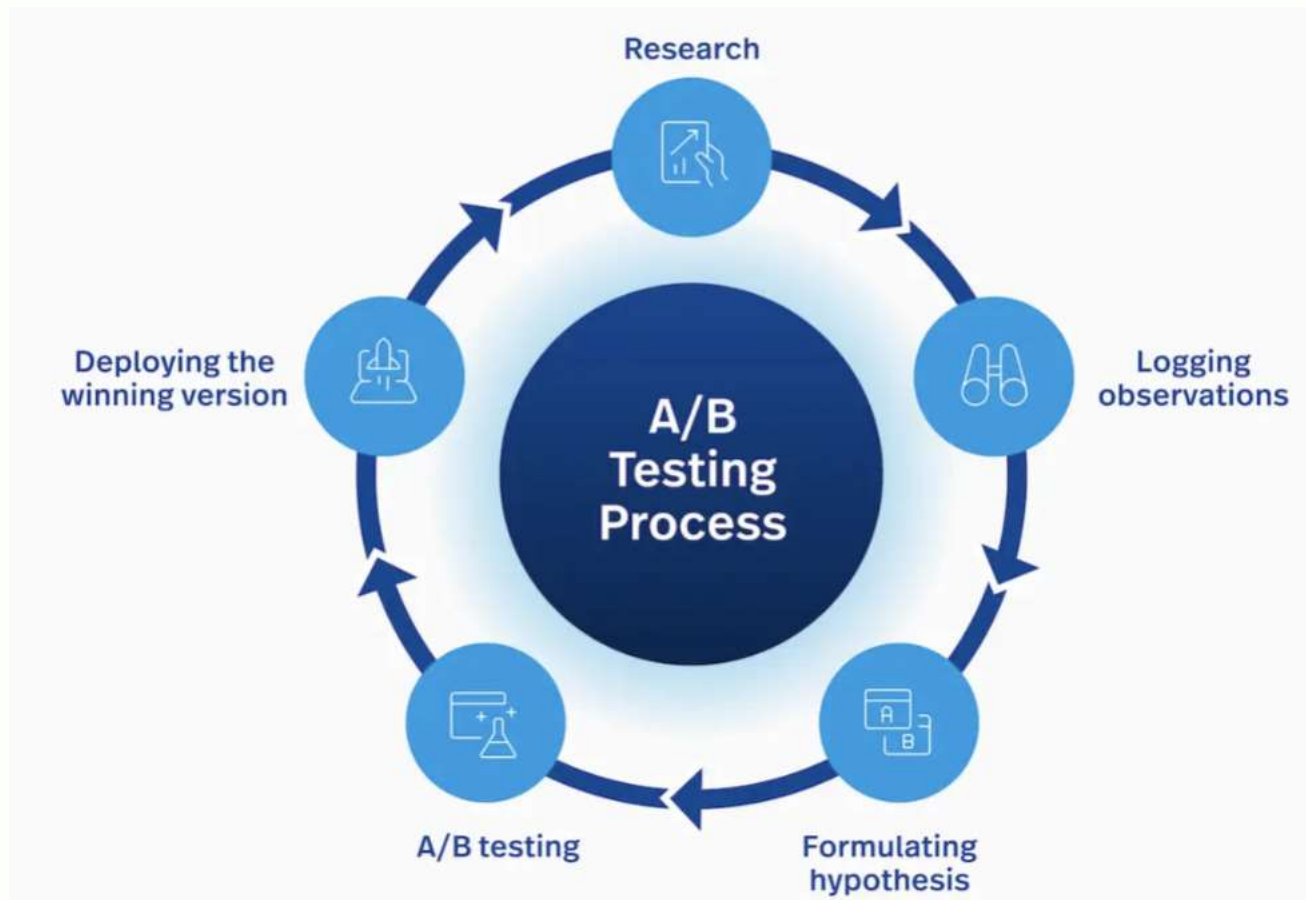
Think-Aloud Pros/cons

- Pros:
  - Cheap
  - Convincing: direct exposure to how users think/face problems
- Cons
  - Extra cognitive load
  - Difficult to justify statistical analyses (esp. time)
 - Biasing user behavior because of prompts

https://www.nngroup.com/articles/thinking-aloud-the-1-usability-tool/

AB Testing

AB testing

- Industry standard/ data driven decision making

https://www.fullstory.com/ab-testing/

AB testing

- Research what data you will evaluate
  - Bounce rate, Video views, Traffic
  - Subscriptions, Downloads
  - Purchases, Average items added to the cart

- Logging infrastructure

- Hypothesis formulation stays same (A vs. B)
  - Much more complicated statistical analysis (multi variate)
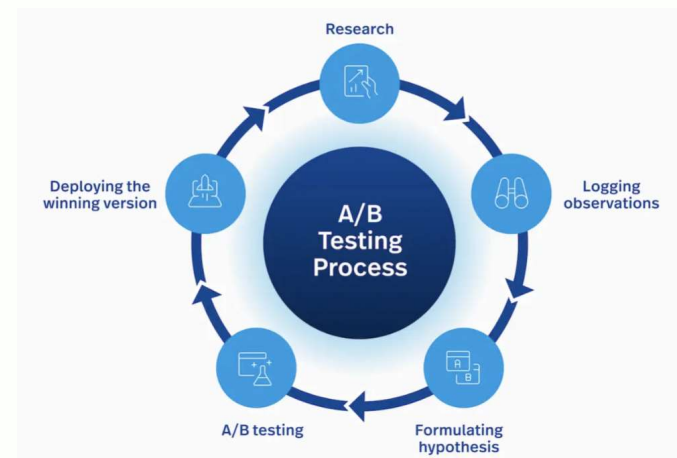
AB testing

- Performing the A/B test
  - Recruitment (1000s)
  - Random assignment of user to product A/B...
    - _____ subjects study design?
  - Lot more fancy allocation exist (dynamic allocation)
  - Hypothesis testing
  - .....Winner.....