Prototyping and Tests

1. Introduction

Prototyping plays a pivotal role in the design process, serving as a concrete representation of ideas and facilitating communication between designers, stakeholders, and end-users. Key reasons for the importance of prototyping include:

- **Visualization:** Prototypes bring concepts to life, allowing stakeholders to visualize and interact with a design before full-scale development.
- **User Feedback:** Early prototypes enable designers to gather valuable feedback from users, informing iterations and improvements.
- **Risk Reduction:** Identifying and addressing design flaws early in the process reduces the risk of costly errors during later stages of development.
- **Communication Tool:** Prototypes serve as a shared language, helping designers, developers, and stakeholders align on the vision and functionality of a product.
- **Iterative Improvement:** An iterative prototyping process allows for continuous refinement based on feedback, ensuring the final product meets user needs effectively.

2. Three types of prototypes

A. Low-fidelity prototypes

Simple prototypes, called low-fidelity or lo-fi prototypes, are fast and cheap to make. These can be sketches on paper or quick digital drawings. Although they may not be detailed or polished, they are easy and quick to create.

If you're starting the design process and think you'll be making a lot of changes, a lo-fi prototype helps you get a basic idea without spending a lot of time. This way, you can understand the direction of the design before investing too much time and effort that might be changed later on as you improve and change the design.

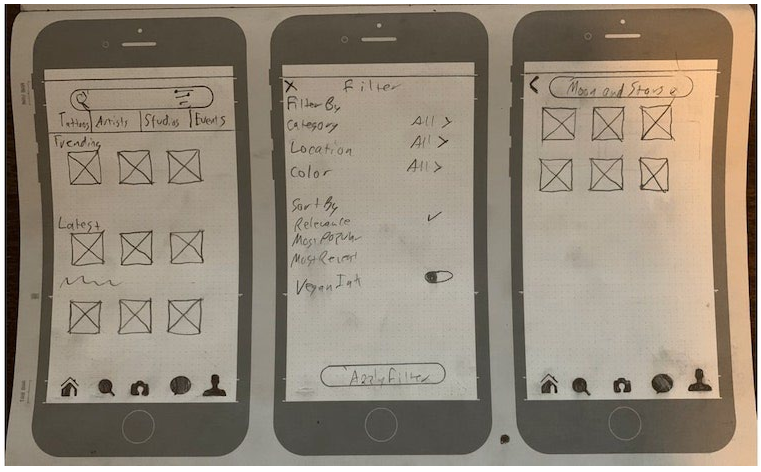

Figure 1 : simple prototype based on paper

B. Mid-fidelity digital prototypes

Now, let's talk about mid-fidelity (mid-fi) prototypes. If you want to work quickly and show yourself or others a clearer picture of how the final design will look, mid-fi prototypes are a good choice. They're fast and relatively easy to create, and there are many free tools available for this purpose.

When you need to find the right balance between adding detail and speed, mid-fi prototypes are your best option. Like lo-fi prototypes, mid-fi ones show only the essential elements on each screen, but they allow users to navigate through an app in a more realistic way.

Mid-fi prototypes include various elements arranged similarly to how they will be in the final design. However, these elements are often placeholders or templates, including images and text on each screen. It's rare to find a mid-fi prototype that accurately reflects the product's brand, such as its values, personality, or color palette.

Figure 2 : Mid-fidelity digital prototypes

C. High-fidelity prototypes

Lastly, we have high-fidelity (hi-fi) prototypes. These prototypes take more time and effort to create because they aim to closely resemble the final product. If you're in the final stages of the design process and anticipate only small changes, a hi-fi prototype might be the way to go. Similar to mid-fi prototypes, hi-fi ones allow users to navigate through an app, but with a level of detail that mimics using the actual product, showing how it will look when it's finished.

Because hi-fi prototypes are often the most refined and impressive, they can be useful when working with stakeholders or clients. You can use them to present the final designs or to get approval, convincing stakeholders that this design option is the best for your users. Here’s an example of a hi-fi prototype

Figure 3 : High-fidelity prototypes

3. Testing

A. An introduction to the fifth stage of the design thinking process

this is the final step in the design thinking process, which is a flexible and repeating approach. The main aim is continuous improvement.

Testing, also known as user testing, is a chance to check if the idea you've developed actually solves the problem. Here's a simplified breakdown of the testing process:

1. **Determine Your Testing Goals:** Decide what you want to find out through testing. Are you checking user interest, preferences, or usability?
2. **Choose Testing Format and Method:** Select the format (in-person or remote) and method (moderated or unmoderated) that suits your needs. Concepts like A/B testing and usability testing will be discussed further.
3. **Define Success Measures:** Decide how you'll measure the success of the test, depending on the method you choose.
4. **Create Testing Tasks:** Develop tasks for users to perform with the prototype. It could be asking for their impressions or having them complete specific tasks.
5. **Recruit Users:** Find users for testing. This could be done in-house or with external help, ensuring a diverse group of participants.
6. **Conduct the Test:** Observe how users interact with your design, focusing on functionality and user experience.
7. **Debrief and Analyze:** Review the results. What did users say and do? Summarize the findings.

After these steps, take a step back and consider the bigger picture. How should you adjust the designs based on what you've learned? What problems need solving in the next iteration? This is when you revisit earlier stages of the design thinking process to benefit your users.

While this may seem complex, it becomes clearer as you understand different testing types and methods, and as you conduct your own prototype test.

B. Four types of user testing

Before we look at specific testing methods, let's consider four broad testing formats: in-person, remote, moderated, and unmoderated.

a. In-person vs. remote

- **In-Person User Testing:** Requires users to visit a specific location to test your prototype. It can be costly and time-consuming, but it offers control over the testing environment. You can observe facial expressions, body language, and interpersonal nuances.
- **Remote User Testing:** More affordable and less time-consuming, users can test the prototype from their own locations. However, you lose control over the testing environment.

b. Moderated vs. unmoderated

- **Moderated User Testing:** Conducted with you or your team present, guiding or observing users during the prototype test. Similar to in-person testing, it allows for real-time observation and interaction but can be time-consuming and costly.
- **Unmoderated User Testing:** Users complete the testing task without your presence. While it's less time-consuming and simpler, you can't ask questions in real-time, although you can record comments, reactions, and expressions for later analysis.

In this course, we recommend the most cost-effective and time-saving approach for your prototype: conducting an unmoderated and remote user test. This method allows users to test the prototype independently from their own locations, reducing the need for your direct presence and streamlining the testing process. It strikes a balance between efficiency and effectiveness, aligning with the goals and constraints of the course

C. Three common user testing methods

While there are a lot more than three user testing methods that designer employ in this stage of the process, we're going to focus on three of the most common:

- Concept testing
- A/B testing
- Usability testing

a) Concept testing

- **Purpose:** Conducted early in the design process to test multiple ideas for solving the same problem and determine which is most valuable to users.
- **Method:** Typically involves a qualitative survey where users provide feedback on their preferences and motivations for liking or disliking a particular idea.
- **Benefits:** Helps explore the viability of an idea early on, although it may challenge your favorite concept. Provides qualitative insights into users' thoughts and feelings.

The downside? You could have your favorite idea derailed and need to reformulate the direction for your project, but this also helps you control some of your own bias in deciding the best solution to a problem. Also, this is qualitative information you're gathering—users' thoughts and feelings—so there will be some that's left to interpretation.

But if you're still a little stuck between two or three of your initial ideas, this might be a great testing method to employ.

b) A/B testing

- **Purpose:** Conducted when you already have a prototype and want to test specific elements or variations to determine which is more effective.
- **Method:** Involves testing two versions (A and B) of the prototype with different elements, and measuring the success based on quantitative data.
- **Example:** Testing variations of a home screen layout to see which version engages users more.
- **Guidelines:** Here are a few important guidelines for effective A/B testing:

1. Don't test more than one key element/difference at a time. If you do, it will likely be unclear why one version of the test "wins" and the other does not.
2. Have a clear measurement for what makes one version more successful than the other. A common measurement, for example, would be the number of people who click on a button to sign up or take the desired action.
3. Make sure you have enough people involved in the test to make the results useful and accurate. Rather than giving you a strict rule for this, we'll simply say that the more people who participate in the test, the more accurate the results are likely to be.

A/B testing is typically done later in the design process, if not with a product that's fully developed and already live. But its basic functions can be applied throughout the design process.

c) Usability testing

Purpose: Essential for effective design, focusing on evaluating the usability of a product with real users.

Feasibility: While not feasible for this course, usability testing is crucial for thinking designers working with mid- to high-fidelity prototypes.

Importance: Understanding usability is integral to being a thinking designer, ensuring that the design is user-friendly and meets users' needs.

Let's break down the concept of usability and delve into usability testing:

What is Usability? Usability is a measure of how easily people can use a product to achieve their intended goals. In simple terms, it evaluates how user-friendly a product is in allowing users to accomplish tasks effectively. For example, a coffee machine that is difficult to use or fails in its basic functions would be considered less usable.

Applying Usability to Digital Products: In the context of digital products, usability is crucial. For instance, if you submit a form on an app or website, and the "submit" button is deactivated or inaccessible, it affects the usability of the product.

Usability Testing: Usability testing is a method employed by designers and other professionals working on digital products to ensure that users can effectively use the product. This type of testing can be conducted through various methods, including in-person or remote sessions, moderated or unmoderated. One of the most common and preferred methods is the user interview. Here's a quick overview of the usability testing process:

1. **Plan Your Test:**
    - Define the usability heuristics you want to measure.
    - Develop effective usability testing questions.
2. **Recruit Test Participants:**
    - Aim for a minimum of five participants.
    - Represent a diverse range of backgrounds, identities, and life experiences.
3. **Schedule and Run the Tests:**
    - Conduct tests in-person or remotely.
    - Ensure participants feel at ease and provide clear instructions and questions.
    - Use various observation and interaction methods.
4. **Analyze the Results:**
    - Gather both qualitative and quantitative data from the testing sessions.

- Synthesize and present the results for your own understanding and for collaboration with team members or stakeholders.

Usability testing is essential for refining and improving digital products, making them more user-friendly and aligned with users' needs. It helps designers identify potential issues and make informed decisions to enhance the overall user experience.

D. Practical task: Conduct a test with your prototype

At this point in the course, you should have a low- to mid-fidelity prototype (hand-sketched is fine!) of at least one screen for your app. In this exercise, you'll use this to conduct a test that's a bit of a blend between a concept test and an A/B test.

What You'll Need:

- Your prototype from phase 4 (low- to mid-fidelity).
- Materials (paper or digital) to create a simple variation of your prototype.
- People to share your ideas with (via social media or casual conversation).

Goal: To share two variations of one screen in your app and gauge which one potential users prefer.

Steps:

1. **Review Your Prototype:**
    - Identify what you like about it and elements that could be swapped for a variation.
    - Consider ideas from your ideation session that could become variations.
    - For example, think about changing a "next" button to a swiping function or moving navigation elements.
2. **Create a B Version:**
    - Ensure the format (paper or digital) and fidelity match the A version.
    - Make the B version different from the A version in one key way.
    - This could be changing a button or trying a different approach based on a Crazy Eights idea.
3. **Create a Social Media Post:**
    - Include context (product details, target users, etc.).
    - Share images of both versions.
    - Add a clear call to action for people to vote on their preferred version.

4. **Wait for Responses:**
    - Observe the responses and interactions.
    - Check comments for qualitative feedback about why a version may have won or lost.
    - Consider ways aspects of one version could be integrated into the other.
5. **Review and Analyze:**
    - Determine the "winning" version based on responses.
    - Extract actionable takeaways for improving the prototype.
    - Consider testing again to ensure alignment with user needs.

Remember: The Design Thinking process is iterative and recursive! It repeats again and again, and not always in a set order. A great design is never a “done” design! It’s a design that evolves with user needs over time.

E. Summary

- The testing stage of the Design Thinking process allows you to check your designs to make sure they’re actually going to work the way you imagine they will. It helps you identify any design flaws in your prototype, and to see if your solution itself creates other problems that need to be addressed before you move forward.
- Testing can be completed in-person or remotely, depending on your needs, what works for test participants, and what will give you the most useful results on a timeline that suits your project.
- Testing can also be moderated or unmoderated—and there are pros and cons to each!
- Three common types of user testing are concept testing (to make sure initial ideas will actually be helpful in solving a user's problem), A/B testing (to see which iteration of the design is most effective and engaging), and usability testing (to ensure that your designs work as seamlessly as possible).