Foundations of User Experience(UX) Design by Google

Understanding User Experience

- User experience refers to how a person feels when interacting with a product, which can be a physical item or a digital service.
- A good user experience is characterized by usability, equity, enjoyment, and usefulness.

Importance of Usability and Equity

- Usability involves making products easy to use, as illustrated by the redesign of ketchup bottles for better functionality.
- Equity in design ensures that products are accessible and useful for people with diverse abilities and backgrounds.

Business Impact of UX Design

- Research shows that companies prioritizing good UX design outperform competitors, as satisfied users are more likely to recommend products.
- A positive user experience fosters a favorable opinion of the company, benefiting both users and businesses.

Stages of the Product Development Lifecycle

- **Brainstorm**: This initial stage focuses on generating ideas and understanding user needs through research and interviews.
- **Define**: Insights from brainstorming are narrowed down to concrete goals and specific details about the product and its target audience.

Design and Testing Phases

- **Design**: UX designers develop ideas and create assets like storyboards, wireframes, and prototypes, ensuring they align with user needs.
- **Test**: The product design is evaluated based on user feedback, allowing for refinements and improvements.

Final Stage: Launch

- **Launch**: The completed product is shared with the public, and post-launch, designers may revisit earlier stages to enhance the product based on user experiences and feedback.

Roles in UX Design

- **Interaction Designers**: Focus on how a product functions and the overall user experience, ensuring user needs align with business goals.
- **Visual Designers**: Responsible for the aesthetic aspects of a product, including logos, layouts, and color schemes.
- **Motion Designers**: Concentrate on the transitions and animations within a product to enhance user interaction.

Collaboration in UX

- UX designers often work with other professionals, including UX researchers who gather user insights, UX writers who clarify product language, and UX engineers who implement designs into functional products.
- UX program managers facilitate communication and project management to ensure smooth development processes.

Characteristics of UX Designers

- Successful UX designers come from diverse backgrounds and share common skills such as empathy, curiosity about user behavior, and a strong sense of visual design, even if they lack formal graphic design training.

Three key design approaches: universal design, inclusive design, and equity-focused design, emphasizing the importance of user-centered practices in UX design.

Universal Design

- Universal design aims to create products that accommodate the widest range of users and abilities, often using a one-size-fits-all approach.
- However, this method can lead to ineffective designs that do not meet the specific needs of diverse users.

Inclusive Design

- Inclusive design shifts the focus to addressing the unique needs of different user groups, considering factors like ability, race, and economic status.
- The principle of "solve for one, extend to many" highlights that designing for specific users can benefit a broader audience.

Equity-Focused Design

- Equity-focused design goes further by prioritizing historically underrepresented groups, ensuring their needs are central in the design process.
- It distinguishes between equality (providing the same support to all) and equity (offering tailored support to achieve fair outcomes), aiming to uplift marginalized communities through thoughtful design.

Understanding Assistive Technology

- Assistive technology encompasses a wide range of devices and systems, from high-tech solutions like screen readers and voice control to low-tech items like pencil holders.
- AT not only benefits individuals with disabilities but also improves usability for all users, making everyday tasks easier.

Types of Assistive Technologies

- **Color Modification**: Features like high contrast mode help users with low vision by enhancing screen visibility.
- **Voice Control and Switch Devices**: These tools assist individuals with limited dexterity, allowing them to interact with devices using voice commands or alternative input methods.
- **Screen Readers**: Essential for users with limited vision, screen readers convert on-screen text to speech, providing access to digital content.

Design Considerations for Accessibility

- Designers should incorporate accessibility features from the beginning of the design process to ensure products meet the needs of all users.
- Understanding how people with disabilities interact with products is crucial for creating effective and inclusive designs.

Overall, the content emphasizes the importance of assistive technologies and thoughtful design in promoting accessibility and enhancing user experience for everyone.

Design Thinking: UX Framework Summary

Definition: A **user-centered**, iterative process to solve real user problems through research, creativity, and testing.

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5 Phases (Iterative, not linear)

Phase	Goal	Key Activities
1. Empathize	Understand the user deeply	- User interviews, surveys, observations - Competitor research - Avoid assumptions
2. Define	Focus on the right problem	- Analyze research - Write a **problem statement** - Create a **value proposition**
3. Ideate	Generate many ideas	- Brainstorm with team (no judgment) - Explore all solutions - Narrow down using research/user flows
4. Prototype	Build early models	- Start simple: sketches → wireframes → low-fi → high-fi - Test at **every stage**
5. Test	Validate & improve	- Get user feedback early & often - Iterate based on insights - Test multiple versions or platforms

Key Principles

- **User-centered**: Always start and end with the user.
- **Iterative**: Loop back (e.g., test → empathize → ideate) as needed.
- **Collaborative**: Involve team/stakeholders in ideation.
- **Fail fast**: Test rough prototypes to learn quickly.

Outcome

A refined, usable product that **solves real user problems** and delivers great **UX**.

Use this cycle repeatedly to improve your designs!

Instructions from the **client or organization** that set the foundation for a UX project.

Two Main Parts

Type	What It Includes
Business Goals	- **Target users** (who the design is for) - **Desired outcomes** (what success looks like) - **Vision** for look, feel, and functionality
Business Parameters	- **Budget, timeline, scope** - **Required tools/systems** - **Standards & constraints** (e.g., branding, accessibility)

How They Shape Design Thinking

Design Phase	How Business Requirements Apply
Empathize	Plan user research within **budget & time** (e.g., limit interviews)
Define	Focus on problems that align with **business goals**
Ideate	Generate ideas that fit **scope & technical constraints**
Prototype/Test	Build within **brand guidelines** and **platform requirements**

Real-World Example: Bakery Website

Requirement	Details
Goal	Simple online ordering site (no third-party apps), keeps direct customer connection
Users	Mostly **35–70 years old**, local area
Parameters	Modest budget, short timeline, must be **easy to navigate, maintain, update**, match **existing brand**

→ Designer uses these to **prioritize simplicity, familiarity, and efficiency**.

Key Takeaways

- **Design thinking starts with empathy**, but **projects start with business requirements**.
- UX designers **integrate** goals and constraints **at every phase**.
- Requirements can **evolve** — stay flexible and communicate.

Here are some powerful methods for empathizing with users as a UX designer:

Interviews

Interviews take many forms, but UX designers most commonly use four:

1. Questionnaires/surveys
2. In-person interviews
3. Phone interviews
4. Video interviews

Empathy maps

Once designers have conducted their interviews, they can turn to empathy maps. These are a great tool for processing the information a designer has collected. In a classic empathy map, designers draw directly from interviews to answer five questions about their users:

1. Who exactly **are** the users and what are their situations?
2. What do users **say** about their experiences with the product or similar products?
3. What do users **think** about their experiences?
4. What do users **do** before, during, and after their experiences?
5. What do users **feel** about their experiences?

In the **define phase** of design thinking, designers use insights gathered during the **empathize phase** to identify the most important **user needs and problems** their design should address. This phase helps transform research findings into clear, actionable design goals. To do this effectively, designers commonly use **three tools**:

1. User Stories

A **user story** is a short, one-sentence narrative told from the user's perspective. It helps designers understand what users want and why.

Template:

> As [type of user], I want to [action] so that [benefit].

Example:

> As a long-time customer with a visual impairment and a close connection to the bakery staff, I want to place my orders over the phone so I can order with ease and continue to connect with staff members.

User stories act as a quick reference point to ensure designs align with users' real goals.

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2. **User Journeys**

A **user journey** maps the steps a user takes to achieve a specific goal. It visualizes their experience — from their first interaction to completing a task — including what they think, feel, and do at each step.

Designers often create **two user journeys** for each persona:

- One showing how they interact with the **current system**.
- Another showing how they might interact with the **new product or design** being developed.

This helps identify **pain points**, **gaps**, and **opportunities for improvement**.

Example (Berta's case):

- Current journey: ordering through phone calls or social media messages.
- Future journey: using a website with accessible features that simulate the warmth of phone conversations.

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3. **Problem Statements**

A **problem statement** clearly defines who the user is, what they need, and why that need exists. It's written from the designer's perspective and helps guide ideation and solution-building.

Template:

> [Name of user persona] is a [type of user] who needs [type of user experience] because [benefits of user experience].

Example:

> Berta is an older person with a visual impairment. She is a long-time bakery customer who prefers ordering over the phone. She needs a website and online ordering system that are easy to use, adapt to her vision needs, and mimic the feel and flow of a friendly phone conversation.

Creating problem statements for each user persona ensures that the design addresses diverse needs and not just one type of user.

Purpose of the Prototype Phase

The goal of this phase is **not** to build the final product.

Instead, designers create **early models (prototypes)** to:

- Visualize how the solution might look and function.
- Allow users and stakeholders to **interact** with the idea.
- Gather **feedback** for refinement before full development.

Prototypes range from simple sketches to interactive digital models. They evolve as designers move from low fidelity (lo-fi) to high fidelity (hi-fi) designs.

Key Practices in the Prototyping Phase

1. Information Architecture (IA) and Sitemaps

- **Information Architecture** refers to how content is structured, organized, and labeled in a product (e.g., app or website).
- It determines how users **navigate and find information** easily.

Two main concepts in IA:

- **Hierarchy:** Defines which topics are more important and how subtopics relate.
  - Example: “Shop” → “Denim/Pants” → “Jeans.”
- **Sequence:** Defines the order users move through the product (e.g., Homepage → Shop → Checkout).

Sitemap:

A **visual flowchart** that outlines the structure of the product. It shows pages, sections, and links between them.

Example: For a bakery’s website, the sitemap ensures that a user like **Berta** (an elderly customer who prefers human interaction) immediately sees an option such as **“Place an Order”** on the homepage — replicating the feeling of calling the bakery staff.

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2. Wireframing

Wireframes bring the sitemap to life, showing **page layouts and navigation paths**. They focus on placement of elements, not colors or visuals.

Types of Wireframes:

- **Paper Wireframes:**
  - Hand-drawn sketches using simple shapes (rectangles, lines, boxes).
  - Easy to create and modify quickly.
  - Ideal for early brainstorming.
- **Digital Wireframes:**
  - Made using design tools like **Figma** or **Adobe XD**.
  - Use grayscale, shapes, and placeholder text (e.g., *Lorem ipsum*).
  - Provide a clearer visual structure for each screen.

Wireframes are the **blueprints** of a design.

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3. Low-Fidelity (Lo-Fi) Prototypes

- A **simple, interactive version** of the product that links together wireframes.
- Demonstrates **basic navigation and flow**, not visual polish.
- Useful for **early testing** and **quick iterations**.

Purpose: To test usability, flow, and layout **before** investing time in detailed design.

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4. High-Fidelity (Hi-Fi) Prototypes

- A **realistic and detailed** version of the product.
- Includes:
  - Finalized visuals (colors, typography, content).
  - Full interactivity and navigation.
  - Real or realistic placeholder data.

Purpose:

To simulate how the **final product will look, feel, and behave**, giving stakeholders and testers a near-complete experience.

Example:

For “Tee’s Shirts,” a hi-fi prototype shows the entire shopping flow, clickable buttons, and user interactions — providing detailed feedback on every aspect before development.

Revisiting Earlier Phases

During prototyping, designers constantly **refer back** to earlier stages of design thinking:

- Do the prototypes solve the problems defined in the **problem statements**?
- Would users like **Berta** find it accessible and personal?
- Does the product flow match their needs and preferences?

This reflection ensures **user needs remain central** throughout the process.

Prototyping and Testing Connection

Prototyping and testing are **deeply connected**:

- Prototypes are made **to be tested**.
- Testing provides insights to **improve the prototypes**.
- This cycle repeats until designers reach an effective, user-approved solution.

Key Takeaways

- The **prototype phase** turns ideas into **tangible, testable models**.
- Designers use **information architecture, sitemaps, wireframes, and prototypes (lo-fi & hi-fi)** to visualize the product's structure and flow.
- **Iteration** is key — prototypes evolve with user and stakeholder feedback.
- The ultimate goal is to **test and refine ideas** before final development, ensuring the product meets both **user needs** and **business goals**.

Phase 5: Test — Refining and Validating the Design

After designers have built a **prototype**, the next step is to **test** it with users. Testing is the **fifth and final phase** of the **Design Thinking process**:

> 1. Empathize → 2. Define → 3. Ideate → 4. Prototype → 5. Test

Testing helps designers **understand how real users interact** with a product and whether the design **truly solves the user's problem**.

Purpose of the Testing Phase

The main goals of testing are to:

- **Validate ideas and design decisions** made during the earlier stages.
- **Identify usability issues** (pain points or obstacles users face).
- **Gather user feedback** to make the design more effective and enjoyable.
- **Iterate and improve** the product based on what users think, feel, and do.

Testing is not the end of the process — it's **cyclical**. Designers test → analyze results → make improvements → test again.

Elements of a UX Testing Plan

A well-structured testing plan answers the **who, what, when, where, why, and how** of the testing process.

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1. Who will participate?

- Early stages: friends, classmates, or colleagues.

- Later stages: **real users** matching your **user personas**.

Example:

> Target participants:
>
> - 5 frequent online bakery customers
> - Age range: 25–50
> - Mix of desktop and mobile users

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2. What types of tests will be conducted?

There are several ways to test a prototype:

- **Usability Testing** – Observe users completing key tasks.
- **A/B Testing** – Compare two versions of a design.
- **Surveys & Interviews** – Collect opinions and suggestions.
- **Accessibility Testing** – Ensure the design works for users with disabilities.

Example:

> Type of test: Usability testing for the bakery's website navigation.
>
> *Objective:* Identify if users can easily find and order pastries.

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3. When and where will testing happen?

- **In-person** testing gives direct observation.
- **Remote testing** allows flexibility and diversity in participants.

Example:

> Schedule: Two 30-minute usability tests per day.
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> *Location:* Virtual via Zoom and screen-sharing.

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4. Why are we testing?

To confirm that the prototype:

- Addresses user needs discovered during the **Empathize** phase.
- Functions as intended (no confusing elements or dead ends).
- Provides a smooth, enjoyable experience.

Example:

> Goal: Validate that users can add products to the cart and complete checkout easily.

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5. How will participants engage with the prototype?

- Ensure testing is **inclusive and accessible**.
- Allow users to use assistive technologies (like screen readers).

Example:

> Method: Participants will navigate a clickable high-fidelity Figma prototype.
>
> *Accessibility:* Include alt text and keyboard navigation for users with impairments.

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6. How will feedback be collected?

Designers can collect feedback through:

- **Observation notes**
- **Post-test interviews**
- **Surveys**
- **System data** (e.g., clicks, task completion times)

Example:

> Feedback method:
>
> - Observe user behavior and note hesitation or confusion.
> - Conduct 5-minute interviews post-test.
> - Record audio and screen (with consent).