

# ITEC 101: HUMAN-COMPUTER INTERACTION

## Week 4-Interaction Design & Prototyping

### Introduction to Interaction Design

#### Definition

Interaction Design (IxD) is the practice of designing interactive digital products, systems, and services. It focuses on creating meaningful relationships between users and technology through well-designed interfaces and interactions.

#### Importance

- Enhances user experience (UX) by making systems intuitive and efficient.
  - Ensures users can achieve their goals with minimal frustration.
  - Bridges the gap between design and development, guiding product functionality.
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### 1. Interaction Models

Interaction models define how users engage with digital interfaces. Understanding these models is crucial for designing intuitive user experiences.

#### 1.1 Direct Interaction Model

- Users interact with digital elements in a **natural and immediate** way.
- Examples: Touching buttons on a smartphone, dragging files on a desktop.
- **Advantages:** Intuitive, provides instant feedback.
- **Disadvantages:** Requires precise actions (e.g., small touch targets can be problematic).

#### 1.2 Indirect Interaction Model

- Users interact through an intermediary device such as a mouse, keyboard, or game controller.
- Examples: Clicking a dropdown menu, using keyboard shortcuts.
- **Advantages:** Allows for precision and is often more comfortable for long usage.
- **Disadvantages:** Can introduce a learning curve for new users.

#### 1.3 Multi-Touch Interaction Model

- Enables users to interact using **multiple touchpoints** simultaneously.
- Examples: Pinching to zoom, swiping between pages.
- **Advantages:** Enhances user engagement and provides more control.
- **Disadvantages:** Requires gesture familiarity and can have accessibility limitations.

**Reference: "Don't Make Me Think" – Steve Krug (Chapter 5)** discusses how intuitive interactions are key to good usability, supporting direct and multi-touch interactions.

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## 2. Wireframing and Prototyping

### 2.1 Wireframing

- A **blueprint** of a digital interface, outlining basic structure and layout.
- Focuses on **functionality**, not visual design.
- Used early in the design process to plan page elements, navigation, and content hierarchy.

#### Low-Fidelity Wireframes

- Simple sketches, either on paper or digital.
- Represents the **basic structure** without details.
- Example tools: **Balsamiq, Sketching on Paper.**
- **Advantages:** Quick, cost-effective, easy to modify.
- **Disadvantages:** Lacks interaction and detailed visualization.

#### High-Fidelity Wireframes

- More detailed, often including real content and branding.
- Example tools: **Figma, Adobe XD, Axure.**
- **Advantages:** Provides realistic previews and interactions.
- **Disadvantages:** Takes more time and effort to create.

### 2.2 Prototyping

- A working model of a system used for testing and refinement.
- **Types:**
  - **Low-Fidelity Prototype:** Paper mockups, simple clickable screens.
  - **High-Fidelity Prototype:** Fully functional designs, interactive animations.

#### Comparison:

Feature	Low-Fidelity	High-Fidelity
Detail Level	Basic	Realistic
Speed to Create	Fast	Time-consuming
Interactivity	Minimal	Full interaction

### 3. Storyboarding and Scenario-Based Design

#### 3.1 Storyboarding

- A **visual narrative** that describes how a user interacts with a product step by step.
- Helps designers **empathize** with users by illustrating their experience.
- Typically consists of a **series of sketches or images** showing user actions.

**Example Use Case:** A storyboard for an **online food ordering app** could show:

1. A user searching for nearby restaurants.
2. Selecting a dish and adding it to the cart.
3. Checking out and making a payment.
4. Receiving a confirmation and estimated delivery time.

#### 3.2 Scenario-Based Design

- Focuses on **real-world situations** in which users interact with a system.
- Scenarios describe a **user's goal, actions, and outcomes**.
- Used in **UX research, usability testing, and user journey mapping**.

**Example Scenario:**

- **User:** A busy professional ordering lunch through an app.
- **Task:** Find a restaurant, order a meal, and pay within 5 minutes.
- **Challenges:** Limited time, unfamiliar interface.
- **Expected Outcome:** A smooth, efficient ordering process with clear feedback