Chapter 1

What is Interaction Design?

INTERACTION DESIGN

beyond human-computer interaction
4th Edition

By: Mamoun Nawahdah (PhD)
2018

BIRZEIT UNIVERSITY
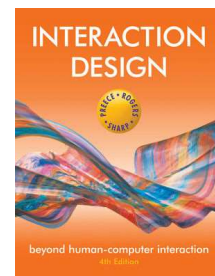
Good and Bad Design?

❖ What is wrong with the remote on the right?

❖ Why left remote so much better designed?

- Peanut shaped to fit in hand.

- Logical layout and color-coded, distinctive buttons.

- Easy to locate buttons.

APEX

2

Dilemma

Which is the best way to interact with a smart TVs?

❖ Standard remote device?

❖ Apple slimline remote control?

❖ Minnum's new keyboard?

The
minwm
Keyboard

3

What to Design

❖ Need to take into account:
- **Who** the **users** are.
- **What activities** are being carried out.
- **Where** the **interaction** is taking place.

❖ Need to **optimize** the interactions users have with a product.
- So that they **match** the users' activities and needs.

4

Novel Interface

5

Understanding Users' Needs

❖ Need to take into account **what people are good and bad at**.

❖ Consider **what might help people** in the way they currently do things.

❖ Think through **what might provide quality user experiences (UX)**.

❖ **Listen to what people want and get them involved**.

❖ Use tried and tested user-centered methods.

6

Activity

❖ How does making a call differ when using a:
- Cell phone?
- Public phone box?

❖ Consider the kinds of user, type of activity and context of use.

7

What is Interaction Design (ID)?

Designing **interactive** products to **support** the way people communicate and **interact** in their everyday and working lives.
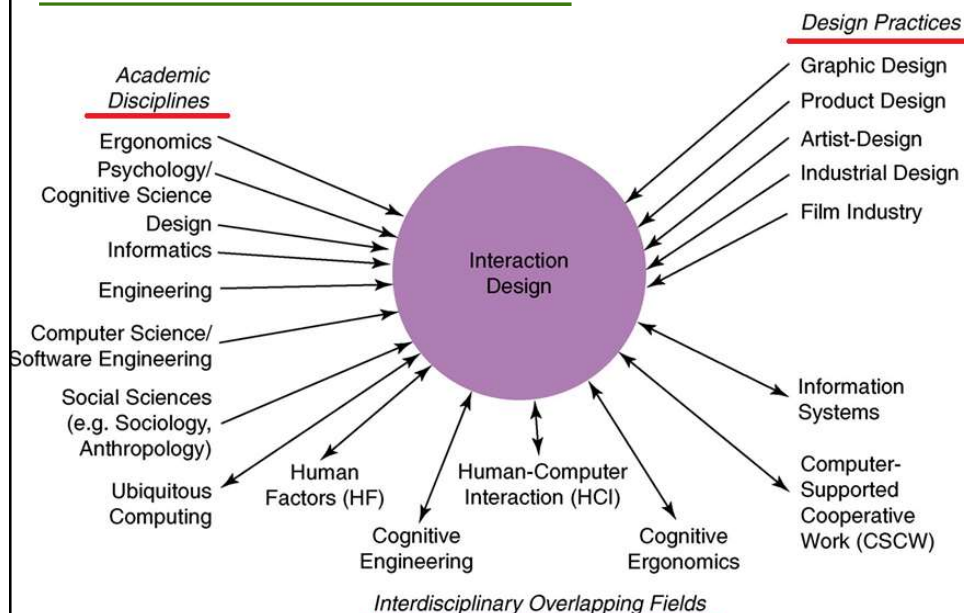
8

Goals of ID

❖ Develop **usable** products.

❖ Usability means: **eee**

- **easy** to learn

- **effective** to use

- provide an **enjoyable** experience

❖ Involve users in the design process.

9

HCI and ID

Design Practices

Graphic Design
Product Design
Artist-Design
Industrial Design
Film Industry

Academic Disciplines

Ergonomics
Psychology/ Cognitive Science
Design
Informatics
Engineering
Computer Science/ Software Engineering
Social Sciences (e.g. Sociology, Anthropology)
Ubiquitous Computing

Interaction Design

Human Factors (HF)
Cognitive Engineering
Human-Computer Interaction (HCI)
Cognitive Ergonomics

Information Systems
Computer-Supported Cooperative Work (CSCW)

Interdisciplinary Overlapping Fields

Working in Multidisciplinary Teams

❖ Many people from different backgrounds involved.

❖ Different perspectives and ways of seeing and talking about things.

❖ **Benefits**: more ideas and designs generated.

❖ **Disadvantages**: difficult to communicate and progress forward the designs being create.
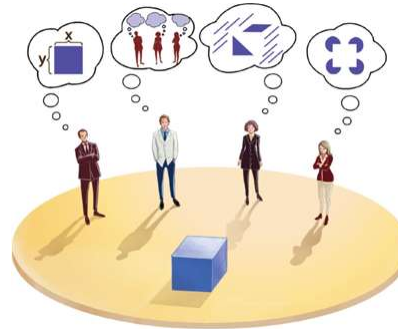
11

The User Experience (UX)

❖ How a product behaves and is used by people in the real world.

- The way people feel about it and their pleasure and satisfaction when using it, looking at it, holding it, and opening or closing it.

- "every product that is used by someone has a user experience: newspapers, ketchup bottles, reclining armchairs, cardigan sweaters." (Garrett, 2003).

❖ Cannot design a user experience, only design *for* a user experience.
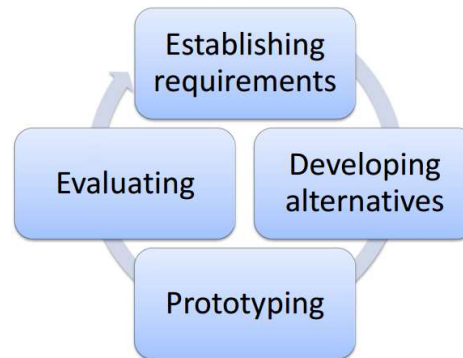
12

The iPod Nano Touch

Why was the iPod UX such a success?

❖ Quality UX from the start.

❖ **Simple**, **elegant**, **distinct brand**, **pleasurable**, must have **fashion item**, **catchy names**, **cool**, etc.

14

What is involved in the process of ID

❖ Establishing requirements

❖ Developing alternatives

❖ Prototyping

❖ Evaluating

15

Core Characteristics of ID

❖ Users should be involved through the development of the project.

❖ Specific **usability** and **user experience** goals need to be identified, clearly documented and agreed at the beginning of the project.

❖ Iteration is needed through the core activities.

16

Why go to this length?

❖ Help designers:

- Understand how to design interactive products that fit with what people want, need and may desire.

- Appreciate that one size **does not** fit all.

  e.g., teenagers are very different to grown-ups.

- Identify any incorrect assumptions they may have about particular user groups.

  e.g., not all old people want or need big fonts.

- Be aware of both people's sensitivities and their capabilities.

17

Are Cultural Differences Important?

3/5/2018   versus   **5/3/2018**   ?!?

- Which should be used for international services and online forms?

❖ Why is it that certain products, like the iPod, are universally accepted by people from all parts of the world whereas websites are reacted to differently by people from different cultures?

18

Accessibility

❖ Degree to which a product is usable and accessible by as many people as possible.

❖ Focus on disability:

- Have a mental or physical impairment
- This has an adverse affect on their everyday lives
- It is long term

19

Anna, IKEA online sales agent

❖ Designed to be different for **UK** and **US** customers.

❖ What are the differences and which is which?

❖ What should Anna's appearance be like for our country?

20

Usability Goals

❖ **Effective** to use.

❖ **Efficient** to use.

❖ **Safe** to use.

❖ Have good **utility**.

❖ Easy to **learn**.

❖ Easy to remember how to **use**.

21

Activity on Usability

❖ How long should it take and how long does it actually take to:

- Using a DVD to play a movie?

- Use a DVD to pre-record two programs?

- Using a web browser tool to create a website?

22

UX Goals

❖ **Desirable aspects:**

satisfying	helpful	fun
enjoyable	motivating	provocative
engaging	challenging	surprising
pleasurable	enhancing sociability	rewarding
exciting	supporting creativity	emotionally fulfilling
entertaining	cognitively stimulating	

❖ **Undesirable aspects:**

boring	unpleasant
frustrating	patronizing
making one feel guilty	making one feel stupid
annoying	cutesy
childish	gimmicky

23

Usability and UX Goals

❖ Selecting terms to convey a person's feelings, emotions, etc., can help designers understand the multifaceted nature of the UX.

❖ How do usability goals differ from UX goals?

❖ Are there trade-offs between the two kinds of goals?

  ▪ e.g. can a product be both fun and safe?

❖ How easy is it to measure usability versus UX goals?

24

Design Principles

❖ Generalizable abstractions for thinking about different aspects of design.

❖ The **do's** and **don'ts** of interaction design.

❖ What to provide and what not to provide at the interface.

❖ Derived from a mix of theory-based knowledge, experience and common-sense.

25

Visibility

- This is a control panel for a hotel elevator.
- How does it work?
- Push a button for the floor you want?
- Nothing happens. Push any other button? Still nothing. What do you need to do?

It is not visible as to what to do!

From: www.baddesigns.com

26

Visibility

❖ You need to insert your room card in the slot by the buttons to get the elevator to work!

❖ How would you make this action more visible?

- Make the card reader more obvious.

- Provide an auditory message, that says what to do (which language?)

- Provide a big label next to the card reader that flashes when someone enters.

Make relevant parts visible

Make what has to be done obvious

27

Feedback

❖ Sending information back to the user about what has been done.

❖ Includes sound, highlighting, animation and/or combinations of these.

▪ e.g. when screen button clicked-on provides sound or red highlight feedback:

Previous ⟶ "ccclichhk"

Previous ⟶ Previous

28

Constraints

❖ Restricting the possible actions that can be performed.

❖ Helps prevent user from selecting incorrect options.

❖ Physical objects can be designed to constrain things.

  ▪ e.g. only one way you can

  insert a key into a lock.

29

Logical or Ambiguous Design?

❖ Where do you plug the mouse?

❖ Where do you plug the keyboard?

❖ Top or bottom connector?

❖ Do the color coded icons help?

From: www.baddesigns.com

30

15

How to design them more logically

A provides direct adjacent mapping between icon and connector.

B provides color coding to associate the connectors with the labels.

From: www.baddesigns.com

31

Consistency

❖ Design interfaces to have similar operations and use similar elements for similar tasks.

❖ For example:

▪ Always use **ctrl** key plus first initial of the command for an operation –e.g. **ctrl+C, ctrl+S, ctrl+O**.

❖ Main benefit is: consistent interfaces are **easier to learn and use**.

32

When Consistency Breaks Down

❖ What happens if there is more than one command starting with the same letter?

- e.g. **s**ave, **s**pelling, **s**elect, **s**tyle.

❖ Have to find other initials or combinations of keys, thereby breaking the consistency rule.

- e.g. **ctrl+S, ctrl+Sp, ctrl+shift+L**.

❖ Increases learning task on user, making them more prone to errors.

33

Internal and External Consistency

❖ **Internal consistency** refers to designing operations to behave the same **within** an application.

- Difficult to achieve with complex interfaces.

❖ **External consistency** refers to designing operations, interfaces, etc., to be the same **across** applications and devices.

- Very rarely the case, based on different designer's preference.

34

Keypad Numbers Layout

❖ A case of external inconsistency:

(a) phones, remote controls   (b) calculators, computer keypads

35

Affordances: to give a clue

❖ Refers to an **attribute** of an object that allows people to know **how to use it**.

  ▪ e.g. a mouse button invites pushing, a door handle affords pulling.

❖ Norman (1988) used the term to discuss the design of everyday objects.

❖ Since has been much popularised in ID to discuss how to design interface objects.

  ▪ e.g. scrollbars to afford moving up and down, icons to afford clicking on.
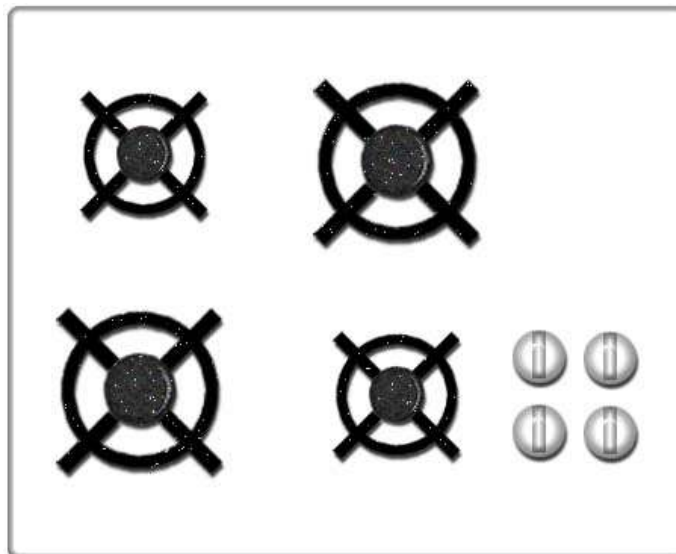
36

Mapping
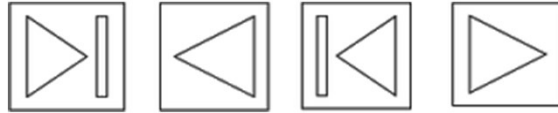
❖ Why is this a poor mapping of control buttons for the sequence of actions of fast rewind, rewind, play and fast forward?
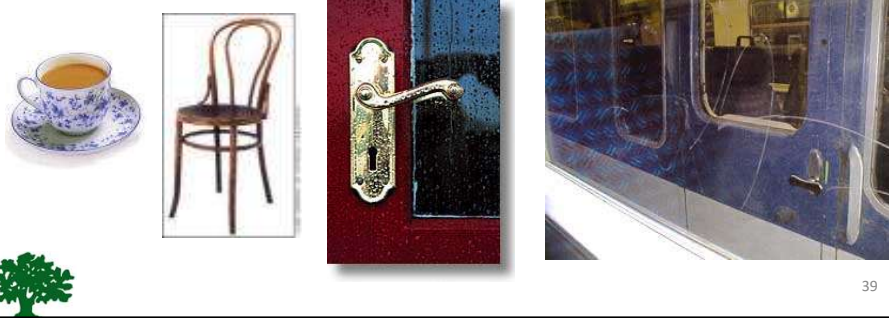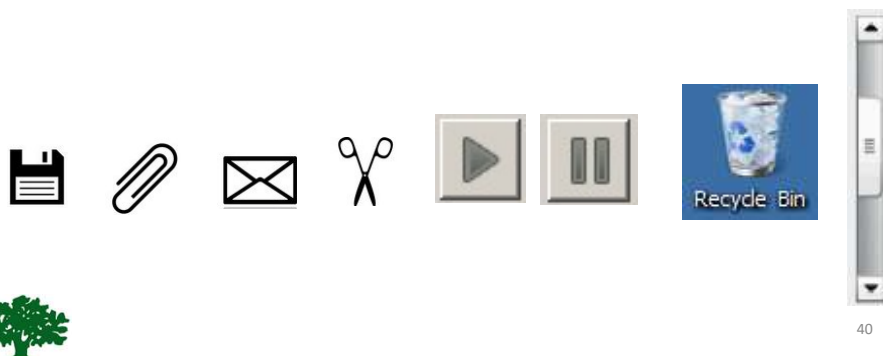
37

Mapping

38

Activity

❖ Physical affordances:
 ▪ How do the following physical objects afford?
 ▪ Are they obvious?

39

Activity

❖ Virtual affordances:
 ▪ How do the following screen objects afford?
 ▪ What if you were a novice user?
 ▪ Would you know what to do with them?

40

Key Points

❖ ID is concerned with designing interactive products to support the way people communicate and interact in their everyday and working lives.

❖ It is concerned with how to create **quality** user experiences.

❖ It requires taking into account a number of interdependent factors, including context of use, type of activities, cultural differences, and user groups.

   ❖ It is multidisciplinary, involving many inputs from wide-reaching disciplines and fields. 41