

# Over view

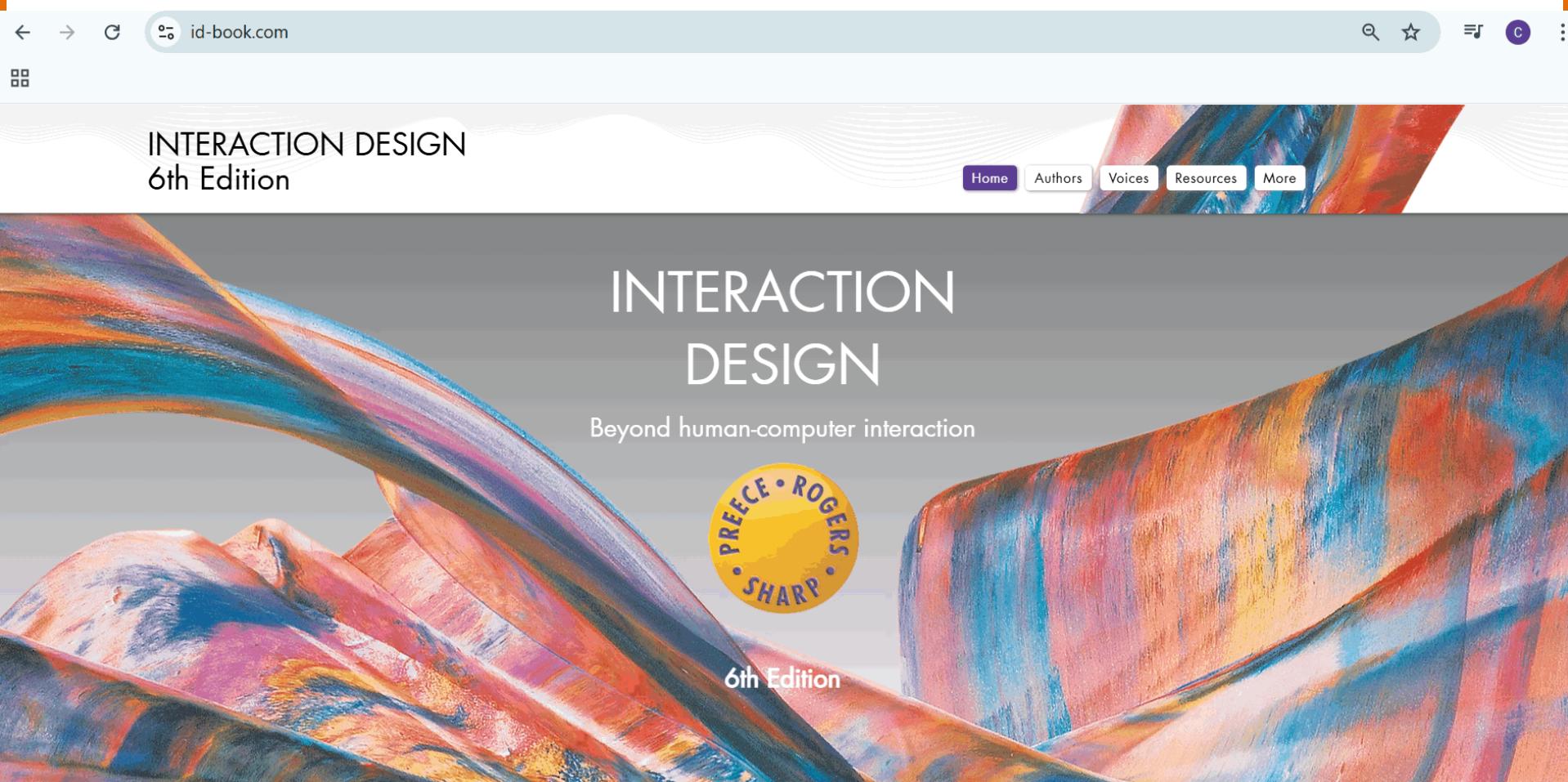
- Subject: Interaction design - ID
- ~7 chapters in 15 weeks
- Learning materials
  - [www.id-book.com](http://www.id-book.com)
  - book: Interaction Design
  - Learning document: QR code
- Keywords
  - TƯƠNG TÁC NGƯỜI MÁY (HUMAN-COMPUTER INTERACTION HCI)
  - FRONT – END vs BACK – END
  - UX/UI



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Material: [www.id-book.com](http://www.id-book.com)



# INTERACTI

# Edition

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## Chapter 1: What

[Chapter Introduction](#) | [Web Resources](#)[Download the overheads for Chapter 1](#) [Go back to previous page](#)

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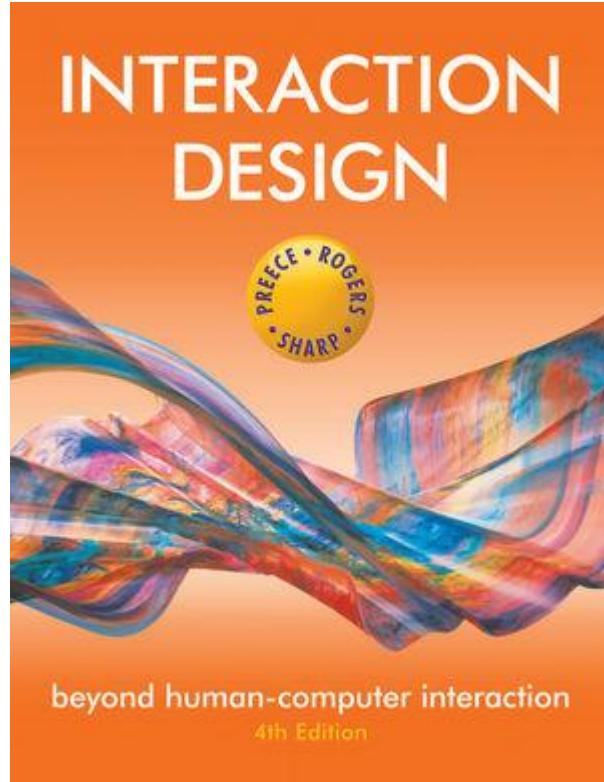
# Over view

- Learning outcomes

| No          | Learning outcome   |
|-------------|--|
| LO1 (Ch2,3) | Giải thích được các đặc điểm chính trong mô hình nhận thức của con người         |
| LO2 (Ch7,8) | Vận dụng được các kỹ thuật biểu diễn dữ liệu thu thập được để phân tích bài toán |
| LO3 (Ch11)  | Vận dụng được một trong các kỹ thuật prototype cấp thấp để thiết kế ý niệm       |

- Evaluation

|             | 20%                  | 30%              | 50%        |
|-------------|----------------------|------------------|------------|
|             | Teamwork<br>in class | Mid-term<br>exam | Final exam |
| LO1 (Ch2,3) |                      |                  |            |
| LO2 (Ch7,8) |                      |                  |            |
| LO3 (Ch11)  |                      |                  |            |



# Chapter 1

# WHAT IS INTERACTION DESIGN?

# Content

**1.1 Introduction**

**1.2 Good and Poor Design**

**1.3 What Is Interaction Design**

**1.4 The User Experience (UX)**

**1.5 The Process of Interaction Design**

**1.6 Interaction Design and the User Experience**

# 1.1 Introduction



*Easy and enjoyable to use*

# 1.1 Introduction



enjoyable to

# Content

1.1 Introduction

**1.2 Good and Poor Design**

1.3 What Is Interaction Design

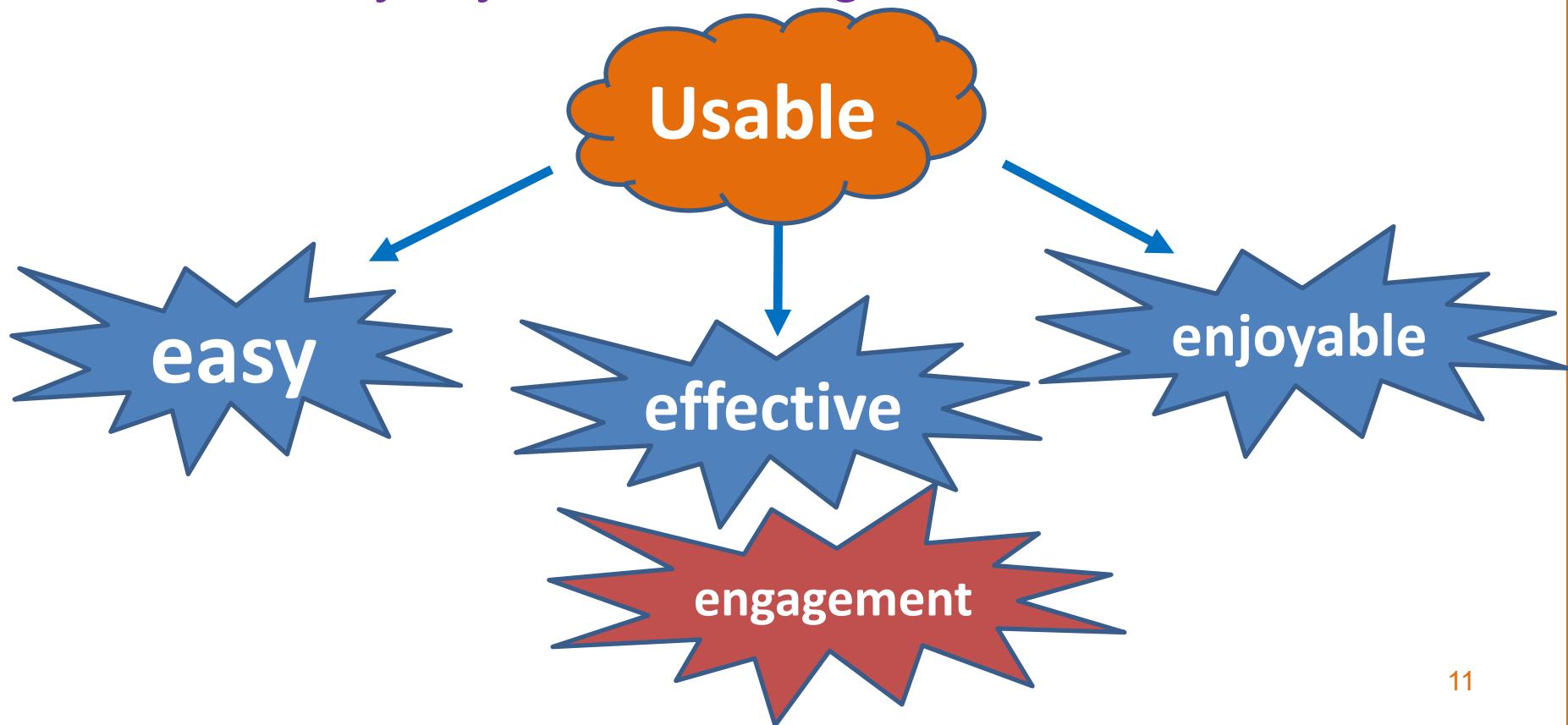
1.4 The User Experience

1.5 The Process of Interaction Design

1.6 Interaction Design and the User Experience

# 1.2 Good and poor design

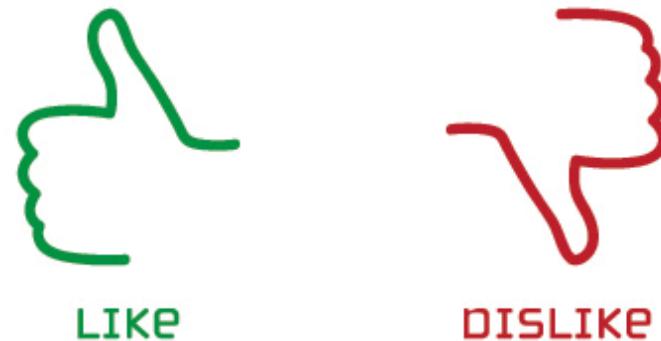
- ID: **designing interactive products** to support the way people communicate and interact in their everyday and working lives.



# 1.2 Good and poor design

**One main aim of ID:**

- to **reduce the negative aspects** (frustration, annoyance) of the user experience
- to **enhance the positive ones** (enjoyment, engagement).



# 1.2 Good and poor design



<http://www.baddesigns.com/elecon.html>

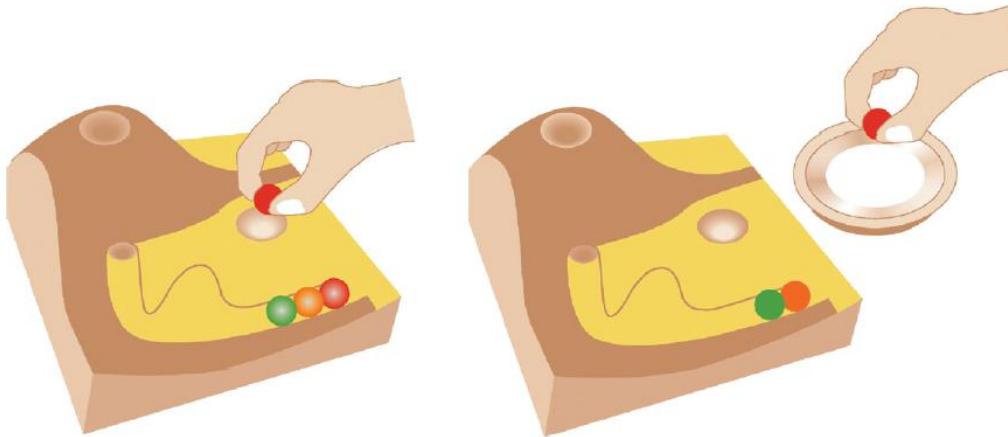


# Vending machine

Reup: <https://youtu.be/-yqZIIJAE-k>

Source: <https://www.youtube.com/watch?v=OuVISqo4aQ0>

# 1.2 Good and poor design



**Figure 1.1** The marble answering machine

Source: Adapted from Gillian Crampton Smith: "The Hand that Rocks the Cradle" *ID Magazine*, May/June 1995, pp. 60–65.

- Marble answering machine (Bishop, 1995)
- Based on how everyday objects behave
- Easy, intuitive and a pleasure to use
- Only requires one-step actions to perform core tasks

SIMON & IMOGEN'S HOUSE

© Durrell Bishop 1992

# Marble answering machine

Reup: <https://youtu.be/eKfYDK20tMM>

Source: <https://vimeo.com/19930744>

# 1.2 Good and poor design



TiVo remote control

# 1.2 Good and poor design

- Why is the TiVo remote so much better designed than standard remote controls?
  - Peanut shaped to fit in hand
  - Logical layout and color-coded, distinctive buttons
  - Easy to locate buttons





<http://minuum.com/who-forgot-the-smart-tv/>

# 1.2 Good and poor design - What to design

- Need to take into account:
  - **Who** the users are
  - **How** the users are going to be used
  - **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**



# Starbucks machine

Reup: <https://youtu.be/nhASRsJiXb0>



# 1.2 Good and poor design - Principles on 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**
- Listen to what people want and **get them involved**
- Use tried and tested **user-based techniques** during the design process



# Content

1.1 Introduction

1.2 Good and Poor Design

**1.3 What Is Interaction Design**

1.4 The User Experience

1.5 The Process of Interaction Design

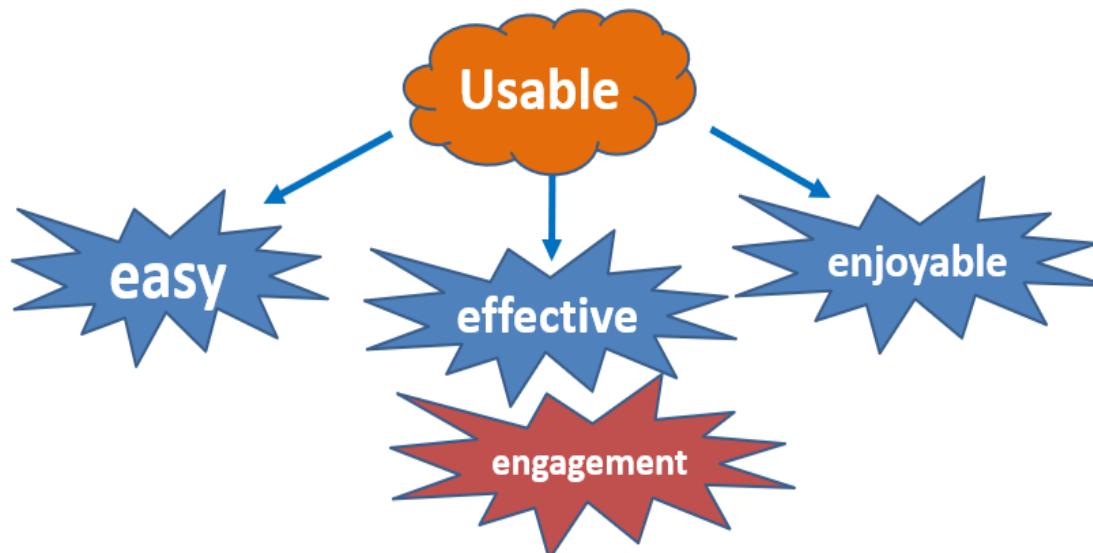
1.6 Interaction Design and the User Experience

# 1.3 What is interaction design?

- “**Designing interactive products** to support the way people communicate and interact in their everyday and working lives.”
  - Preece, Sharp and Rogers (2015)
- “The design of spaces for **human communication and interaction**.”
  - Winograd (1997)

# 1.3 What is interaction design - Goals of interaction design

- Develop usable products
  - Usability means easy to learn, effective to use and provide an enjoyable experience
- Involve users in the design process



# 1.3 What is interaction design - Which kind of design?

- Number of other terms used emphasizing aspects of what is being designed, e.g.
  - user interface design, software design, user-centred design, product design, web design, experience design (UX) and interactive system design
- Interaction design is the umbrella term covering all of these aspects
  - fundamental to all disciplines, fields, and approaches concerned with researching and designing computer-based systems for people

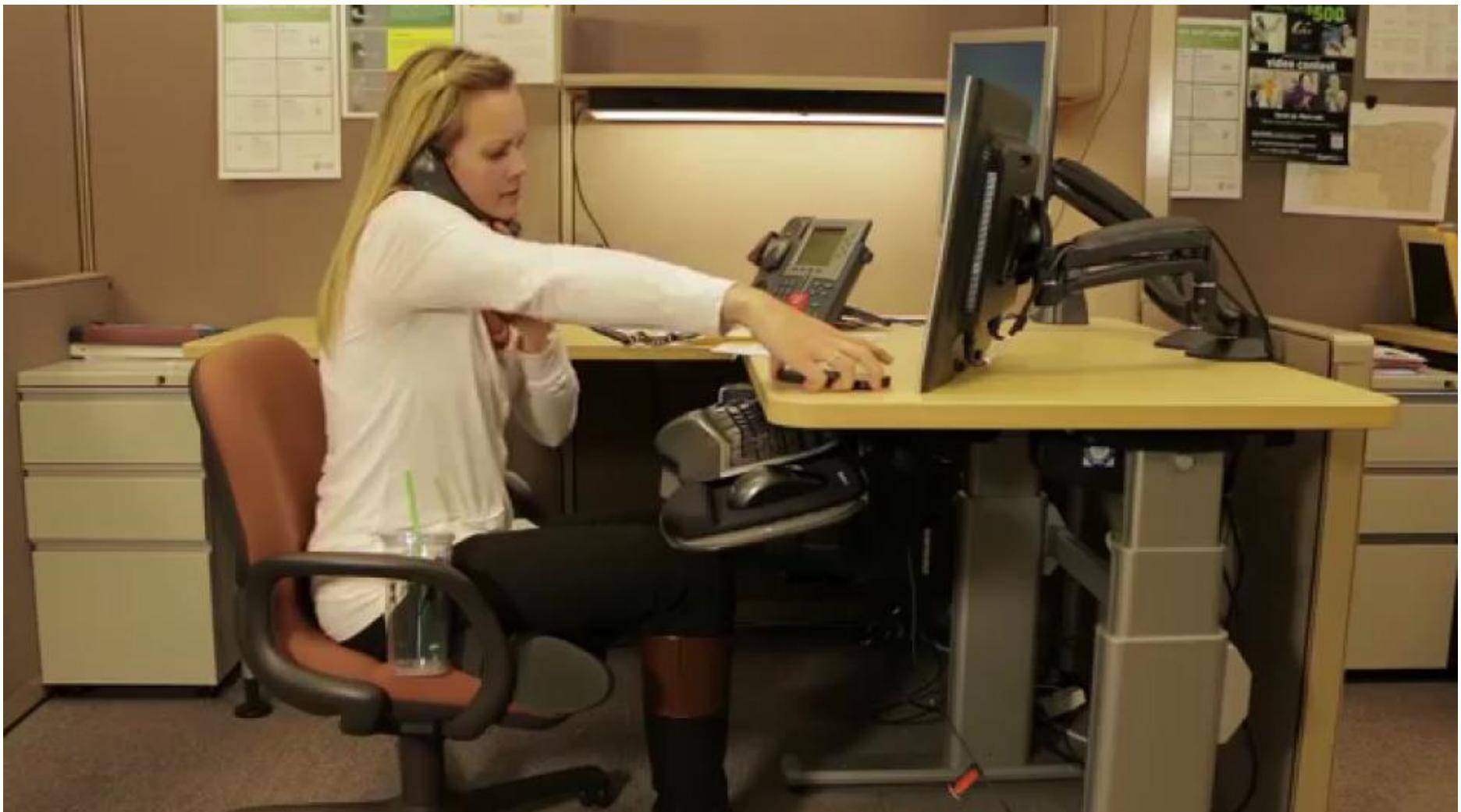


# 1.3 What is interaction design - Relationship between ID, HCI and other fields

Academic disciplines contributing to ID:

- Psychology
- Social Sciences
- Computing Sciences
- Engineering
- Ergonomics Informatics

(<https://www.youtube.com/watch?v=ofnpBtO1-gA>)



# Ergonomics Informatics

<https://www.youtube.com/watch?v=ofnpBtO1-gA>

# 1.3 What is interaction design - Relationship between ID, HCI and other fields

Design practices contributing to ID:

- Graphic design
- Product design
- Artist-design
- Industrial design
- Film industry (see <https://www.sesamestreet.org/>)

# 1.3 What is interaction design - 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 created



# 1.3 What is interaction design - What do professionals do in the ID business?

- **interaction designers** - people involved in the design of all the interactive aspects of a product
- **usability engineers** - people who focus on evaluating products, using usability methods and principles
- **web designers** - people who develop and create the visual design of websites, such as layouts
- **information architects** - people who come up with ideas of how to plan and structure interactive products
- **user experience designers (UX)** - people who do all the above but who may also carry out field studies to inform the design of products

# Activity 1.1

Who do you think should be involved in developing:

1. A public kiosk providing information about the exhibits available in a science museum?
2. An interactive educational website to accompany a TV series?



# Public kiosk

# <https://www.sesamestreet.org/>

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**NEW**

Surfin' on Sesame Street Song

Elmo

Fairy Fun

Rhyme Time!

Elmo's World Games



## My favorite sneakers

Reup: <https://youtu.be/5k61HPeKeSk>

Source: <https://www.sesamestreet.org/videos?vid=25675>

# 1.3 What is interaction design - ID consultants

The screenshot shows the IDEO website homepage. The top navigation bar includes the IDEO logo, a search bar, and a dropdown menu. Below the header, there are three main content cards:

- CASE STUDY GOOGLE ATAP, LEVI'S**: An image of a person's hands on a bicycle handlebar, wearing a denim jacket and a ring.
- CASE STUDY PILLPACK**: An image of various packaging components, including a white rectangular box, a brown cardboard box, a small grey pouch, and a red cylindrical container.
- BLOG ANNETTE FERRARA**: An image of a large globe with colorful continents (yellow, orange, green, blue) and a person's hand interacting with it.

Designing the Levi's Commuter Trucker Jacket with Jacquard by Google

Growing an Online Pharmacy, from Startup to Sale

Why Workplace Culture Matters (And How to Build a Good One)

# Content

1.1 Introduction

1.2 Good and Poor Design

1.3 What Is Interaction Design

**1.4 The User Experience**

1.5 The Process of Interaction Design

1.6 Interaction Design and the User Experience

# 1.4 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, 2010)
  - “all aspects of **the end-user's interaction with the company, its services, and its products.** (Nielsen and Norman, 2014)
- Cannot design a user experience, only design *for* a user experience



The screenshot shows the homepage of The Herald Journal News Examiner. At the top, there are links for "The Herald Journal", "News-Examiner", "The Leader", and "Preston Citizen". Below this is a large, stylized "HJNEWS" logo. Underneath the logo, the words "The News Examiner", "theLeader", and "Citizen" are displayed. A navigation bar below the logo includes links for "FULL MENU", "News", "Sports", "Features", "Milestones", "Obits", "Opinion", "Classifieds", and "Deals". On the right side of the navigation bar are links for "Subscribe", "e-Edition", a search icon, and a user profile icon. The main headline on the page reads "Magic Chef washer \$99. Top loading. Only used 1 year. 20" with a price of "\$99" highlighted. At the bottom of the page, there is a banner for a "Fur-nature on Furniture Pet Photo Contest" featuring a dog.



# 1.4 The User Experience (UX)

- Many aspects of the user experience
  - Usability
  - the functionality
  - the aesthetics (tính thẩm mỹ)
  - the content
  - the look and feel
  - the sensual and emotional appeal (sự hấp dẫn, cảm xúc)

# 1.4 The User Experience (UX)

- Many aspects of the user experience (cont.)
  - fun
  - health
  - social capital (the social resources that develop and are maintained through social networks, shared values, goals, and norms)
  - cultural identity (e.g. age, ethnicity, race, disability, family status, occupation, education)

# Activity 1.2

## The iPod phenomenon

Apple's classic (and subsequent) generations of iPods (e.g. Touch, Nano, Shuffle) have been a phenomenal success. How do you think this happened?



Ipod Nano: <https://www.youtube.com/watch?v=jkfYAzllsfQ>



- Quality user experience from the start
- Simple, elegant, distinct brand, pleasurable, must have fashion item, catchy names, cool, etc.

# Introduction

1.1 Introduction

1.2 Good and Poor Design

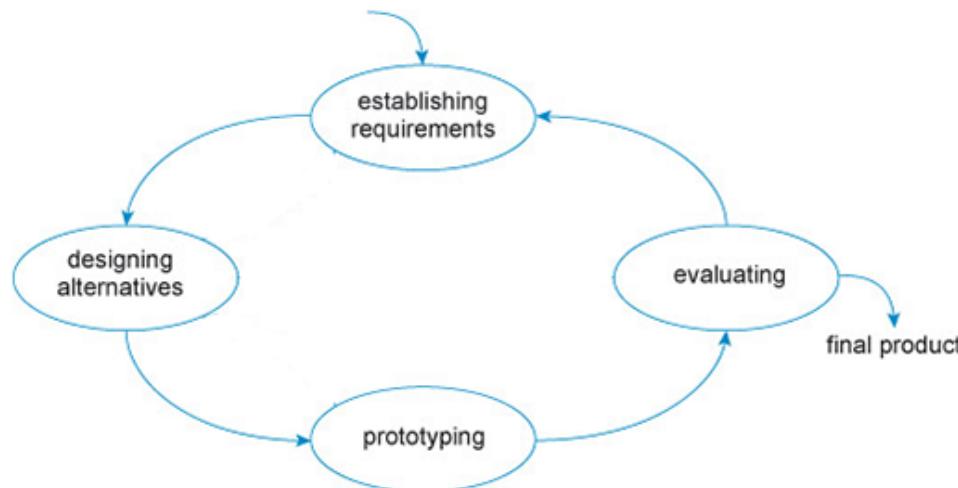
1.3 What Is Interaction Design

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# 1.5 The Process of Interaction Design



## 4 basic activities

- Establishing requirements (chapter 10)
- Developing alternatives (chapter 11)
- Prototyping (chapter 11)
- Evaluating (chapter 13, 14, 15)

## **Chapter 1 - INTRODUCTION**

## **Chapter 2 - UNDERSTANDING AND CONCEPTUALIZING INTERACTION**

## **Chapter 3 - COGNITIVE ASPECTS**

Chapter 4 - SOCIAL INTERACTION

Chapter 5 - EMOTIONAL INTERACTION

Chapter 6 - INTERFACES

## **Chapter 7 - DATA GATHERING**

## **Chapter 8 - DATA ANALYSIS, INTERPRETATION, AND PRESENTATION**

Chapter 9 - THE PROCESS OF INTERACTION DESIGN

## **Chapter 10 - ESTABLISHING REQUIREMENTS**

## **Chapter 11 - DESIGN, PROTOTYPING, AND CONSTRUCTION**

## **Chapter 13 - INTRODUCING EVALUATION**

Chapter 14 - EVALUATION STUDIES: FROM CONTROLLED TO NATURAL SETTINGS

Chapter 15 - EVALUATION: INSPECTIONS, ANALYTICS, AND MODELS

# Core characteristics of interaction design



- **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

# 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

# Are cultural differences important?

- 5/21/2015 versus 21/5/2015?
  - 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?

# 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 other countries, like India, South Africa, or China?

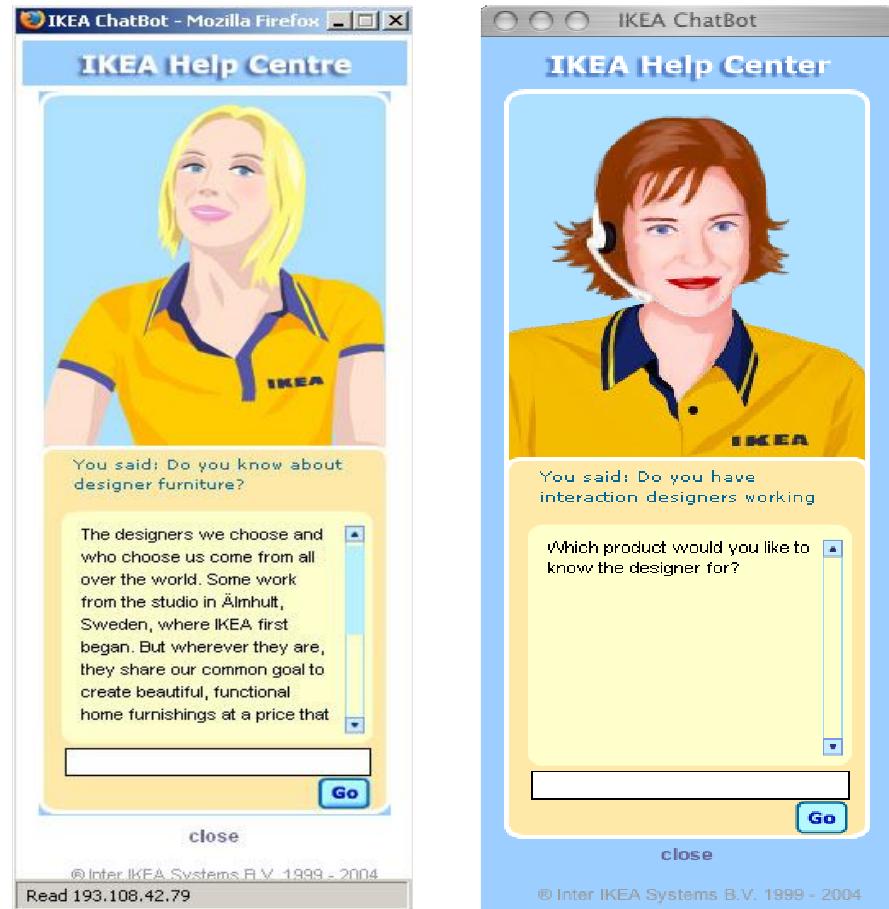


Figure 1.7 Anna the online sales agent, designed to be subtly different for UK and US customers. What are the differences and which is which? What should Anna's appearance be like for other countries, like India, South Africa, or China?

Source: Reproduced with permission from IKEA Ltd.

# Introduction

1.1 Introduction

1.2 Good and Poor Design

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1.4 The User Experience

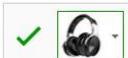
1.5 The Process of Interaction Design

**1.6 Interaction Design and  
the User Experience**

# Usability goals



- effective to use (effectiveness)
- efficient to use (efficiency)
- safe to use (safety)
- having good utility (utility)
- easy to learn (learnability)
- easy to remember how to use (memorability)



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# User experience goals

## Desirable aspects

|              |                       |                        |
|--------------|-----------------------|------------------------|
| satisfying   | helpful               | fun                    |
| enjoyable    | motivating            | provocative (cuốn hút) |
| engaging     | challenging           | surprising             |
| pleasurable  | enhancing sociability | rewarding              |
| exciting     | supporting creativity | emotionally fulfilling |
| entertaining |                       |                        |

## Undesirable aspects

|                        |                           |
|------------------------|---------------------------|
| boring                 | unpleasant                |
| Frustrating (bực bội)  | patronizing (ra vẻ kẻ cả) |
| making one feel guilty | making one feel stupid    |
| annoying               |                           |
| childish (ău trĩ)      | gimmicky (cường điệu)     |

## BOX 1.3

### Beyond usability: designing to persuade

**WiFi Access**

To get online for free, please answer the following questions:

**1 hour Free WiFi**

**3 hour access for only £3.00**

|             |                    |
|-------------|--------------------|
| Title*      | Dr                 |
| Forename*   | Yvonne             |
| Surname*    | Rogers             |
| Email*      | y.rogers@uci.ac.uk |
| Age Group*  | Over 50            |
| Flight No.* | EZY3245            |

I agree to the [Terms & Conditions.](#)\*

To use your free wifi please subscribe to our airport news, offers and travel information.\*

\* Compulsory fields

**Register and Get online**



**Figure 1.9 Dark pattern.** In order to get free WiFi at this airport, you have to subscribe to news, offers, and travel information. The box is already checked and you cannot uncheck it

# 5 most common design principles

- **Visibility** (dễ phát hiện, dễ thấy)
- **Feedback** (phản hồi)
- **Constraints** (ràng buộc)
- **Consistency** (thống nhất, tương tự với những gì người dùng đã biết)
- **Affordance** (có tính gợi ý cao)

# Visibility



[www.baddesigns.com](http://www.baddesigns.com)

- This is a control panel for an 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!

# 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

# What do I do if I am wearing black?

Invisible automatic controls  
can make it more difficult  
to use



Another solution



# Feedback

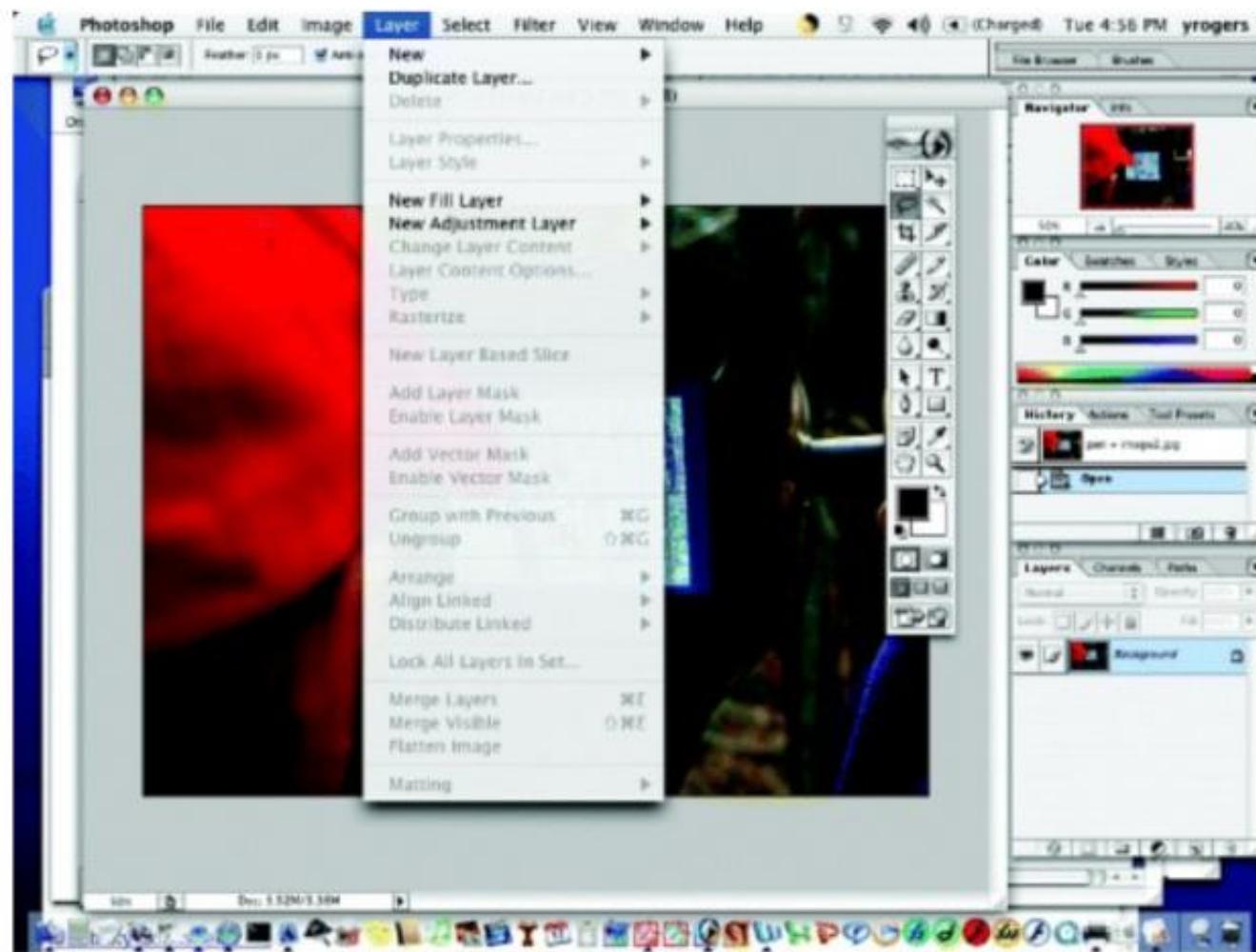
- Sending information back to the user about what has been done
- Includes sound, highlighting, animation and combinations of these
  - e.g. when screen button clicked on provides sound or red highlight feedback:

 → “ccclichhk”

 → 

# 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



**Figure 1.11** A menu showing restricted availability of options as an example of logical constraining. Shaded areas indicate deactivated options

# Logical or ambiguous design?



[www.baddesigns.com](http://www.baddesigns.com)

- Where do you plug the mouse?
- Where do you plug the keyboard?
- Top or bottom connector?
- Do the color coded icons help?

# How to design them more logically



[www.baddesigns.com](http://www.baddesigns.com)

(i) A provides direct adjacent mapping between icon and connector



[www.baddesigns.com](http://www.baddesigns.com)

(ii) B provides color coding to associate the connectors with the labels

# 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 – ctrl+C, ctrl+S, ctrl+O
- Main benefit is consistent interfaces are easier to learn and use

# When consistency breaks down

- What happens if there is more than one command starting with the same letter?
  - e.g. save, spelling, select, style
- 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 burden on user, making them more prone to errors

# Affordance

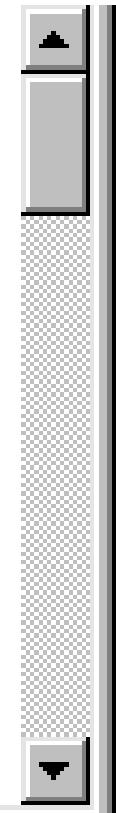
## Virtual affordances

- How do the following screen objects afford?
- What if you were a novice user?
- Would you know what to do with them?

Up Arrow →

Elevator Button

Down Arrow →



# Key points

- Interaction design 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

# Activity 1.4

One of the main design principles for website design is simplicity.

Nielsen proposes that designers go through all of their design elements and remove them one by one.

If a design works just as well without an element, then remove it. Do you think this is a good design principle?

If you have your own website, try doing this and seeing what happens. At what point does the interaction break down?

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02 Tương ... Mua Hàng... Mua Hàng... Inbox - G... chapter1.p... Interaction... ENG 3:56 PM 8/7/2019

# Lớp thứ 2 – tiết 1

- Đã dặn tìm hiểu ý nghĩa màu sắc, cách phối màu
- Tuần 2 sẽ phân công trình bày Bad design