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**DECO2500** – Human Computer Interaction Design

Textbook Summary

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## Chapter 1 – What is Interaction Design

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- Explain the difference between good and poor interaction design
- Describe what interaction design is and how it relates to human-computer interaction and other fields
- Explain the relationship between the user experience and usability
- Describe what and who is involved in the process of interaction design
- Outline the different forms of guidance used in interaction design
- Enable you to evaluate an interactive product and explain what is good and bad about it in terms of the goals and core principles of interaction design

### What is Interaction Design

*“designing interactive products to support the way people communicate and interact in their everyday and working lives”*

Interaction design is used in:

- Academic Disciplines
- Ergonomics
- Psychology/Cognitive Science
- Design
- Informatics
- Engineering
- Computer Science/Software Engineering
- Social Sciences (e.g. Sociology, Anthropology)
- Ubiquitous Computing
- Human Factors (HF)
- Cognitive Engineering
- Human-Computer Interaction (HCI)
- Cognitive Ergonomics
- Computer-Supported Cooperative Work (CSCW)
- Information Systems
- Film Industry
- Industrial Design
- Artist-Design
- Product Design
- Graphic Design

### The Process of Interaction Design

1. Establishing requirements
2. Designing alternatives
3. Prototyping
4. Evaluating

### The User Experience (UX)

Nielsen and Norman (2014) define it as encompassing “all aspects for the end-user’s interaction with the company, its services, and its products.” You cannot design a user experience, you can only design for the user experience. There are many aspects of the user experience that can be considered and ways of taking them into account when designing interactive products.

- Usability
- Functionality
- Aesthetics
- Content
- Look and Feel
- Sensual
- Emotional
- Fun

- Health
- Social Capital
- Cultural Identity

## Four Core Threads

McCarthy and Wright propose four core threads that make up our holistic experiences:

- **The sensual thread.** This is concerned with our sensory engagement with a situation and is similar to the visceral level of Norman's model. It can be equated with the level of absorption people have with various technological devices and applications, most notable being computer games, smartphones, and chat rooms, where users can be highly absorbed in their interactions at a sensory level. These can involve thrill, fear, pain, and comfort.
- **The emotional thread.** Common examples of emotions that spring to mind are sorrow, anger, joy and happiness. In addition, the framework points out how emotions are intertwined with the situation in which they arise – e.g. a person becomes angry with a computer because it does not work properly. Emotions also invoke making judgements of value. For example, when purchasing a new cell phone, people may be drawn to the ones that are most cool-looking but be in an emotional turmoil because they are the most expensive. They can't really afford them but they really would like one of them.
- **The compositional thread.** This is concerned with the narrative part of an experience, as it unfolds, and the way a person makes sense of it. For example, when shopping online, the options laid out to people can lead them in a coherent way to making a desired purchase or they can lead to frustrating experiences resulting in no purchase being made. When in this situation, people ask themselves questions such as: What is this about? What would happen if...? The compositional thread is the internal thinking we do during our experiences.
- **The spatio-temporal thread.** This refers to the space and time in which our experiences take place and their effect upon those experiences. There are many ways of thinking about space and time and their relationship with one another: for example, we talk of time speeding up, standing still, and slowing down, while we talk of space in terms of public and personal places, and needing one's own space.

## 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)

## Design Principles

Design principles are used by interaction designers to aid their thinking when designing for the user experience.

- **Feedback:** products should be designed to provide adequate feedback to the users to ensure they know what to do next in their tasks
- **Findability:** the degree to which a particular object is easy to discover or locate – be it navigating a website, moving through a building, or finding the delete image option on digital camera
- **Visibility:** the more visible functions are, the more likely it is that users will be able to know to do next
- **Constraints:** the design concept of constraining refers to determining ways of restricting the kinds of user interaction that can take place at a given moment (e.g. greying a menu item)
- **Consistency:** design interfaces to have similar operations and use similar elements for achieving similar tasks
- **Affordance:** used to refer to an attribute of an object that allows people to know how to use it (e.g. a mouse button invites pushing, in doing so activating clicking, by the way it is physically constrained)

## Summary

### Key points

- Interaction design is concerned with designing interactive products to support the way people communicate and interact in their everyday and working lives
- Interaction design is multidisciplinary, involving many inputs from wide-ranging disciplines and fields
- The notion of the user experience is central to interaction design
- Optimizing the interaction between users and interactive products requires taking into account a number of interdependent factors, including context of use, types of activity, accessibility, cultural differences, and user groups

- Identifying and specifying relevant usability and user experience goals can help lead to the design of good interactive products
- Design principles, such as feedback and simplicity, are useful heuristics for analysing and evaluating aspects of an interactive product

## Examples

### **Marble Answering Machine (Durrel Bishop, 1995)**

Incoming messages are represented using physical marbles. The number of marbles that have moved into the pinball-like chute indicates the number of messages. Dropping one of these marbles into a slot in the machine causes the recorded message to play. Dropping the same marble into another slot on the phone dials the caller who left the message

### **Minuum Online Keyboard**

Easy way of typing using minimal buttons. Similar to Wii remotes where you point to a row of keys and type that way. This is faster to use on a small device, especially with one hand