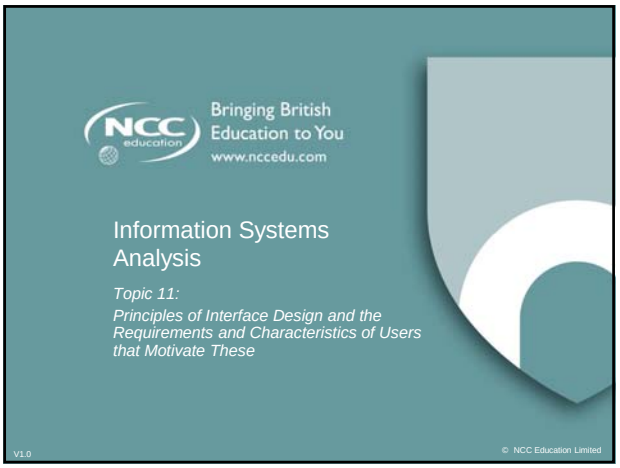
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Information Systems Analysis
Topic 11:
Principles of Interface Design and the Requirements and Characteristics of Users that Motivate These
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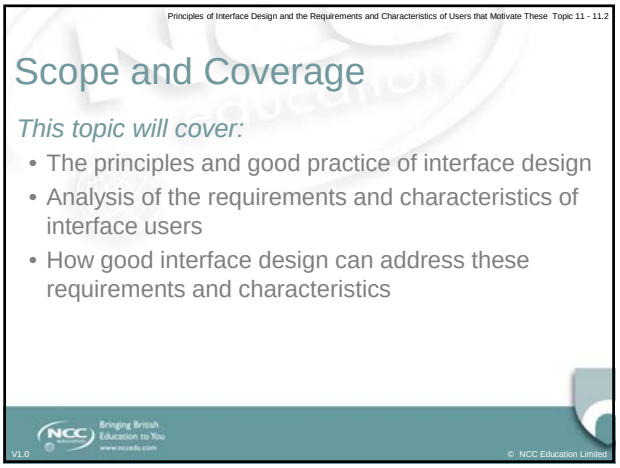
Principles of Interface Design and the Requirements and Characteristics of Users that Motivate These Topic 11 - 11.2
Scope and Coverage
This topic will cover:
• The principles and good practice of interface design
• Analysis of the requirements and characteristics of interface users
• How good interface design can address these requirements and characteristics
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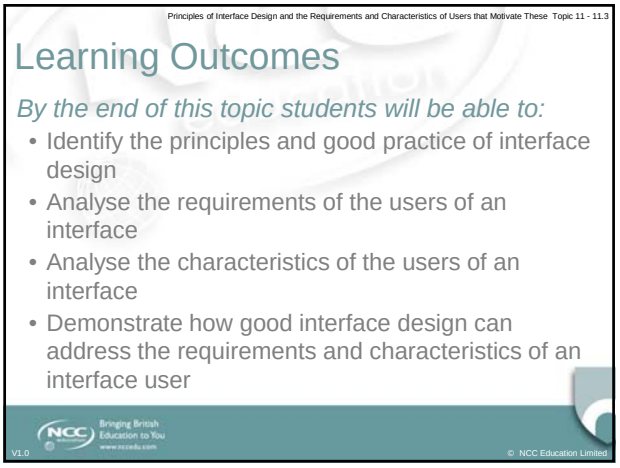
Principles of Interface Design and the Requirements and Characteristics of Users that Motivate These Topic 11 - 11.3
Learning Outcomes
By the end of this topic students will be able to:
• Identify the principles and good practice of interface design
• Analyse the requirements of the users of an interface
• Analyse the characteristics of the users of an interface
• Demonstrate how good interface design can address the requirements and characteristics of an interface user
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Terminology

- Terminology will be explained in the lecture, seminar and tutorial and you should take notes.
- Ask questions if there is anything that you don't understand.

HCI and Information Systems Analysis - 1

- Whatever analysis methodology an analyst uses, he or she needs to ensure that they work through the following tasks when analysing and specifying the requirements for the development of a human computer interface:
  - Problem statement definition
  - User analysis
  - Task analysis

HCI and Information Systems Analysis - 2

- Requirements specification (including a usability specification)
- Modelling the interface
- Design
- Evaluation

Problem Statement Definition

- The analyst needs to define:
  - what system requires a new or updated interface
  - what type of interface is needed
  - what will the interface be used for
  - who will use it

Information Gathering

- These can include:
  - Interviews
  - Focus groups
  - Questionnaires
  - Observations
  - Documentation

User Analysis - 1

- Identifies users and their characteristics:
  - Demographic data
    - For example: age, gender, general educational level, position at the organisation, cultural background, any special requirements, technology training and knowledge, experience with similar systems/products, etc.
  - Skills and knowledge
    - For example: cognitive styles, skill sets, capabilities, proficiencies

User Analysis - 2

- Work or work related factors:
  - For example: organisation-specific knowledge and experience, job characteristics, job familiarity, frequency of using technology, expertise level (novice, intermittent, frequent), familiarity with specific hardware and software, technology skill base such as using a keyboard, familiarity with interaction styles

User Analysis - 3

- Are users:
  - Experienced?
  - New?
  - Executive?
  - Managerial?
  - Operational?
- An effective user interface should match the skills, experience and expectations of its users and be able to meet the needs of different types of users, e.g. visually impaired.

Task Analysis - 1

- The analyst will need to differentiate between what the technology does and what the users do.
- The following aspects will need to be examined and documented:
  - task workflow
  - distribution of work
  - users' work skills
  - frequency of use of technology
  - ordering of tasks

Task Analysis - 2

- The analyst will need to establish what the users' goals are and what they need to do to achieve their goals.
- Descriptions of scenarios and conditions under which users perform their tasks will need to be provided.
- Opportunities need to be identified that will support user activities, for example, sound may need to be added and used to draw the users' attention to items on various screens.

Techniques for Task Analysis

- The analyst can use the following:
  - ***Task Decomposition*** (tasks are split into subtasks or sequences)
  - ***Knowledge-based techniques*** (identifies what users need to know in order to use the interface)
  - ***Hierarchical Task Analysis*** (tasks are decomposed into subtasks)

Hierachical Task Analysis - 1

- The analyst must:
  - Identify major tasks - tasks must be visible and accessed easily
  - Identify tasks to be achieved and include the subtasks associated with them
  - Determine the frequency of tasks and include the level of detail
  - Determine the necessary or typical order in which the tasks are undertaken

Hierachical Task Analysis - 2

- Put into a logical sequence tasks that belong to the same group or that are related in some way
- Identify parallel tasks
- Build up hierarchy of tasks/subtasks
- Ask users to check the analysis
- Analyse individual tasks for possible error conditions
- Define the users' goals and actions

Hierachical Task Analysis - 3

- Hierachical task analysis should also:
  - represent descriptions of the tasks that need to be undertaken
  - predict potential difficulties
  - evaluate the system against usability
  - evaluate the system against the functional requirements

Demonstrate how Good Interface Design can address the Requirements and Characteristics of the User - 1

- Improve users' task performance and reduce their effort.
- Prevent user errors/include efficient error messages
- Be appropriate for the tasks, the information needed and the way that it is presented.
- Facilitate a satisfying, engaging and enjoyable interaction
- Appear simple but effective

Demonstrate how Good Interface Design can address the Requirements and Characteristics of the User - 2

- Be appropriate for the level of expertise
- Be appropriate for the knowledge and skills base
- Be appropriate for the general educational level
- Meet organisation-specific knowledge and/or experience requirements
- Easy to use
- Consistent
- Reliable
- Provide relevant feedback

References

- Preece, J., Rogers, Y. and Sharp, H. (2002) *Interaction Design: Beyond Human-Computer Interaction,* John Wiley & Sons, New York.
- Hinze-Hoare, V. (2007). *Review and Analysis of Human Computer Interaction (HCI) Principles.* [Available Online] http://arxiv.org/ftp/arxiv/papers/0707/0707.3638.pdf

Topic 11 – Principles of Interface Design and the Requirements and Characteristics of Users that Motivate These

Any Questions?