# CHAPTER 1: ELECTION POSTER- ADOBE PHOTOSHOP



# CHAPTER 2: INTRODUCTION

VERITAS University Abuja

(The Catholic University of Nigeria)

CSC 112 PROJECT

By

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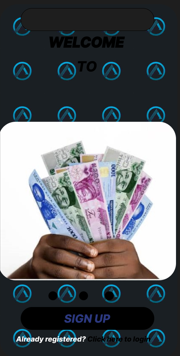
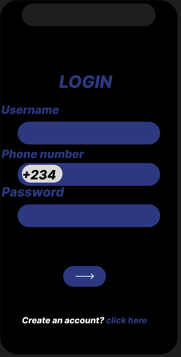
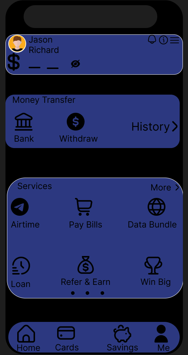
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# CHAPTER 3: BANK APP-FIGMA

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# CHAPTER 5: BOOK COVER – INDESIGN

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# CHAPTER 6: PRESENTATION

VERITAS University Abuja

(The Catholic University of Nigeria)

HCI PRINCIPLES

By

GROUP 21

An assignment submitted to the Department of Information and Communication Technology

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**HCI PRINCIPLES**

What is HCI?

Human-Computer Interaction (HCI) is a multidisciplinary field of study focusing on the design of computer technology and, in particular, the interaction between humans (the users) and computers. HCI is multi-disciplinary, meaning it combines research methods and tools from computer science, behavioral science, design, and media studies

Human-computer interaction is the field of study that focuses on optimizing how users and computers interact by designing interactive computer interfaces that satisfy users’ needs.

HCI is the study of the interaction between humans and computers, particularly as it pertains to the design of technology. HCI overlaps user-centered design, UI, and UX to create intuitive products and technologies.

People who specialize in HCI think about how to design and implement computer systems that satisfy human users. Most research in this field aims to improve human–computer interaction by improving how an interface is used and understood by humans.

HCI helps to make interfaces that increase productivity, enhance userexperience, and reduce risks in safety-critical systems. Poorly designed machines lead to many unexpected problems, sometimes just user frustration, but sometimes, chaotic disasters.

This is why HCI is on the rise. As we become more dependent on technologies, even just the Internet or smartphones, HCI has become a key part of designing tools that can be used efficiently and safely daily

While initially concerned with computers, HCI has since expanded to cover almost all forms of information technology.

HCI is vital as it places the user and their experiences and needs at the forefront during the development of interactive computing technologies.

It focuses on the practical aspects of technological design and use, working towards making systems that are both useful and usable. HCI optimizes the interaction between humans and computers, making them efficient, effective, and satisfying for the intended users.

A successful HCI design can result in improved productivity, better user experience, and increased acceptance and satisfaction with technology.

**HCI PRINCIPLES**

Several principles of human-computer interaction (HCI) guide the design and development of user-friendly interfaces and systems:

**Principle of learnability**

Principles of learnability helps in understanding an interactive system initially by novice and then to attain the maximum level of performance. There are mainly five principles of learnability. They are:

Predictability

Synthesizability

Familiarity

Generalizability, and

Consistency

**Principles of flexibility**

Principle of flexibility is the multiplicity of ways in which the end-user and the system exchange information. There are five principles that contribute to flexibility. They are:

Dialog initiative

Multi-threading

Task migratability

Substitutivity, and

Customizability.

**Principles of Robustness**

The robustness of the interaction between the user and the system covers features that support the successful achievement and assessment of the goals. There are mainly four principles that affect the robustness. They are;

Observability

Recoverability

Responsiveness, and

Task conformance.

Principles of browsability, static/dynamic defaults, reachability, persistence,operation visibility, forward/backward recovery, commensurate effort, stability, task completeness and task adequacy are related with the above main four principles.

**Crafting User-friendly Systems**

A major thrust of HCI is designing systems that balance functionality and user convenience. These systems aim to streamline tasks by automation, creating interfaces that users find comfortable and efficient to navigate while maintaining a robust security profile to ensure user safety.

**Empathizing with Users**

Creating empathetic design is central to HCI. By walking a mile in the end users’ shoes, designers cultivate a better understanding of their needs, leading to the development of systems and interfaces that resonate best with their requirements.

**Developing Efficient Interactions**

HCI’s primary aim revolves around creating interactions that are efficient, effective, and safe.

What this implies is that user interactions should achieve the intended outcome swiftly and safely. This increased effectiveness and efficiency can skyrocket productivity levels and user satisfaction, fostering a sense of well-being.

**OTHER PRINCIPLES INCLUDE;**

1. **Mapping**

Mapping refers to the connection between user input (controls) and system output (actions). It should be easy to understand and intuitive for users.

1. **Consistency**

In design, consistency ensures similar actions and elements have homogenous representations throughout the interface. This reduces the need for users to learn and memorize new interactions.

1. **Simplicity**

The system should be simple and avoid unnecessary complexity that could compromise the user experience.

1. **Feedback**

Feedback is essential to communicate to the user whether or not their actions have been successful. It could be in form of visual, auditory, or haptic feedback.

1. **Visibility**

Visibility refers to the ability of the user to see and understand the state of the system and its components, making it easier for them to take appropriate actions.

1. **Constraints**

The design should use physical or logical limitations to prevent users from taking certain actions or making mistakes.

1. **Mental models**

The design should align with the user’s mental model of how the system should work, facilitating ease of use and understanding.

1. **Affordance**

The system should provide affordances or clues, about possible actions and how to perform them.

1. **Learnability**

The system should be easy to learn and use, with minimal need for extensive training or documentation.

1. **Error prevention and recovery**

Interfaces should prevent errors and allow users to recover from errors easily and quickly.

1. **Crafting user-friendly systems**

A major thrust of HCI is designing systems that balance functionality and user convenience. These systems aim to streamline tasks by automation, creating interfaces that users find comfortable and efficient to navigate while maintaining a robust security profile to ensure user safety.

**STANDARDS AND GUIDELINES FOR INTERACTIVE SYSTEMS**

In definition, standards for interactive system design are usually set by national or international bodies to ensure compliance with a set of design rules by a large community. They are a document of requirements, specifications, guidelines or characteristics regarding the fitness of the purpose of the materials, products, processes and services. A guideline is the rules about designing interactive systems. The basic categories of the smith and Mosier guidelines are; data entry, data display, sequence control, user guidance, data transmission and data protection.

**Shneiderman’s 8 Golden Rules**

Shniederman’s Golden rules of interface design provide a convenient and succinct summary of the key principles of interface design. The eight rules are; Strive for consistency inaction sequences, layout, terminology, command use and so on.

1. Enable frequent users to use shortcuts- such as abbreviations, special key sequences and macros, to perform regular, familiar actions more quickly
2. Offer informative feedback- for every user action, at a level appropriate to the magnitude of the action.
3. Design dialogs to yield closure- so that the users knows when they have completed a task.
4. Offer error prevention and simple error handling- so that, ideally, users are prevented from making mistakes and, if they do they are offered clear and informative instructions to enable them to recover.
5. Permit easy reversal of actions- to relieve anxiety and encourage exploration, since the user knows that he can always return to the previous state.
6. Support internal locus of control- so that the user is in control of the system, which responds to his actions.
7. Reduce short-term memory load- by keeping displays simple, consolidating multiple pages displays and providing time for learning action sequences.

**Donald Norman’s 7 Principles**

Norman’s seven principles were introduced to transform difficult tasks into simple ones. The seven principles are as follows:

1. Harnessing both experiential and innate knowledge
2. Streamlining task structures
3. Maximising visibility
4. Establishing the right mapping ( Linking user mental models with conceptual and design models)
5. Transforming constraints into advantages
6. Designing for error
7. When all else fails, standardize.

**UNIVERSAL DESIGN PRINCIPLES**

Universal design is the process of designing products so that it can be as many as possible in many situations as possible.

Practically it is impossible to provide an equivalent experience for all the users but the target of using universal principles is to provide an equivalent experience to the user. In 1997 the seven principles of universal design were developed by a group of architects, engineers, product designers and design researchers led by the late Ronald Mace in the North Carolina State University. The seven principles are equitable use, simple and intuitive to use, perceptible information, tolerance for error, low physical effort and size and space approach and use.

**Multi-modal interaction**

Providing access to information through more than one mode of interaction is an important principle of universal design. This type of design relies on multi-modal interaction. Situation where the user is provided with multiple modes for interacting with the systems falls here. A multi-modal interface acts as a facilitator via these models of interaction. Multi-modal interaction is for adaptive, cooperative, and flexible interaction among people.

**Sound in the Interface**

Sound plays a major role in usability. A more widespread effective use of sound would alleviate the problems faced by visually impaired people. Addition of audio confirmation of modes, in the form of changes in key-clicks, reduce errors. Speech and non-speech are the two types of sounds that can be used. Speech interface describes a software interface that employs either human speech or simulated human speech. Structure of speech, speech recognition, speech synthesis and uninterrupted speech are the factors that should be considered. A phonetic typewriter is the device which is to convert the human voice into typed letters. Auditory icons and ear cons are some main examples for non-speech sounds.

**Touch in the interface**

Touch is the only sense that acts as an input and an output. The use of touch in the interface is known as haptic interaction. This can be divided into two areas as cutaneous perception and kinesthetics. Touch interaction requires a touch-sensitive display, the direct contact of one or more fingers on the display and movement of the touch.

**Handwriting recognition**

Handwriting is the recognition is the ability to receive and interpret intelligible handwritten input from sources by the computer. The digitizing tablet is a major technology used in capturing handwriting. This is incorporating a thin screen on top to display the information, producing electronic paper. But this can make mistakes due to hand-busy, ink needs a conversion to character codes, finger-movement to write a character is complex and time consuming.

**Gesture recognition**

Gesture is a component of human- computer interaction that has become the subject of attention in multi-modal systems. The gesture is captured using computer vision or a special data glove. But this technology is much expensive, but it is useful in situations like there is no possibility of typing or other senses are fully occupied. Data glove gives highly accurate information but relatively intrusive technology.

**Uses and applications of HCI**

HCI is a **broad field** that reaches almost every industry. It often overlaps with areas like user-centered design (UCD), user interface (UI) design, and user experience (UX) design. Some consider HCI to be the forerunner to UX design.

**Research applications in this field focus on:**

* How to design improved computer interfaces that are optimized for particular qualities, such as learnability, findability, and usability.
* How to evaluate and compare different interfaces in terms of their usability
* How to determine if a user is human or computer
* How to study the sociocultural implications of human-computer interactions

**The most notable industries that rely on HCI are:**

* Virtual and Augmented Reality, and others
* Ubiquitous and Context-Sensitive Computing
* Healthcare technologies
* Education-based technologies
* Security and cybersecurity
* Voice User interfaces and speed recognition technologies

**REFERENCES:**

DOVETAIL

MEDIUM

BAT PENGUIN

# CHAPTER 7: GROUP PICTURE

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# CHAPTER 8: LOGO –ADOBE ILLUSTRATOR

