Implementing Mobile Based Interfaces for eLearning

A Case Study of SODeL

BY

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# **Research Area**

Interaction of students with contents on an e learning system

Learning on new ways of doing things is usually an interactive process. In an e-learning system the students are expected to interact with contents on the web application interface on a computer in order to learn the new methods of farming.

On a wider scope the research area is Human Computer Interaction (HCI). HCI is a multidisciplinary field of study focusing on design of computer technology and in particular the interaction between humans as users with the computers. (" Carrol et al", 2019)

# **Declaration**

**Declaration by Student**

I hereby declare that this proposal is my original work and has not been presented in another university or institution for consideration for any certification.

Sign ……………… Date………………………

James Njoroge Njuguna

**Declaration by Supervisor**

This proposal has been submitted for examination with my approval as university supervisor

Sign ……………… Date………………………

Mrs. Nancy Macharia

# 

# **Dedication**

I dedicate this research to my inspiring parents for their efforts, sacrifices, mentorship, and guidance through this course.

I also dedicate this project to God Almighty my creator, my strong pillar, my source of inspiration, wisdom, knowledge and understanding. He has been the source of my strength throughout this research.

# 

# **Acknowledgement**

First, I therefore take this opportunity to express my sincere gratitude to the Almighty God for this far He has brought me and for providing me with the opportunity to carry out these research activities.

I also like to acknowledge the work of my supervisor, Mrs. Nancy Macharia for guidance and support in coming up with the correct research format.

I would also like to thank my parents for their moral and financial support throughout the research period.

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# **Abbreviations and Acronyms**

CEP – Continuing Educational Programme

JKUAT – Jomo Kenyatta University of Agriculture and Technology

SODeL – school of open, distance and e learning

# **Definition of Terms**

* Usability- The official ISO 9241-11 definition of usability is: “the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.”
* Responsive Web Design – responds to the needs of a user and the devices they are using. The layout changes on the size and capabilities of the device. (“Ethan”, 2010 )

# **Chapter 1.**

## **1.0 Introduction**

Jomo Kenyatta University of Agriculture and Technology is a Higher Educational Institution located 35 kilometers North East of Nairobi along the Thika highway in Juja.

The university has several colleges and schools each offering different programs to students. One of the schools is the School of Open, Distance and eLearning (SODeL).

The School of Open, Distance and eLearning (SODeL) previously known as Continuing Educational Programme (CEP) was inaugurated in 2012 following the amalgamation of the CEP and eLearning sections thus enhancing the quality delivery of programmes. The enhanced mandate incorporates Jomo Kenyatta University of Agriculture and Technology (JKUAT) continuing education, Distance learning, Open learning and eLearning modes of study which allows a student to attain internationally Jomo Kenyatta University of Agriculture and Technology academic qualifications at own convenience.

## **Problem Statement**

A high number of students’ own use smart phone compared to those owning laptop and desktops

In SODeL the learning materials are accessed only from a web based eLearning system using a web browser the content is not automatically adjusted to accommodate the student device and context.

Mobile learners have difficulties in accessing course content on the web interface therefore the learners have to adjust the layout for a friendlier viewing as the content appears in tiny fonts that are not user friendly this reduces students’ motivation. Jung (2017) observed that learner motivation is fundamental to the learners’ success in an online coursework environment.

## **Proposed Solution**

Implement mobile interfaces for eLearning by developing a mobile application with improved interface for the learning processes

## **Objectives**

* Examine approaches for designing interfaces for mobile devices.
* Establish necessary usability dimensions for mobile application
* Establish methods of evaluating the mobile interface for eLearning.
* Implement a mobile application for eLearning.

## **1.4 Research Questions**

* What are the approaches for designing interfaces for mobile devices?
* What are the necessary usability dimensions for mobile applications?
* What are the methods of evaluating interfaces?
* How will the implementation be carried out?

## **1.5 Justification**

Improving the interface of the eLearning system will bring several benefits among them

* The eLearning enhances training and learning in that students can access materials and contents on the eLearning platform as from the mobile devices from anywhere as long as there is an internet connection thus improving learning activities.
* It will be more convenient education alternative for other people who wish to improve their education

## **1.6 Scope**

This research project will cover the eLearning in Jomo Kenyatta University of Agriculture and Technology

## **1.7 Methodology**

Research methodology states how the proposed project is intended to be carried out and focuses on data collection tools, samples and sampling techniques, research design and data analysis technique.

### **1.7.1 The unified Process**

An iterative and incremental, architecture centric and use-case driven approach in developing software.

It has the following key features:

1. It is component based, commonly being used to coordinate object oriented programming projects.
2. It uses UML a diagrammatic notation for object oriented design.
3. The design process is anchored, and driven by use cases which help keep sight of the anticipated behaviors of the system.
4. It is architecture centric and its design is iterative and incremental via a prescribed sequence of design phases within a cyclic process.

### **1.7.2** **Phases of Design Cycles**

Design in the unified Process proceeds through a series of cycles, each of which has the following phases:

#### **1.7.2.1 Inception**

Produces a commitment to go ahead and by the end of this phase a business case should have been made, feasibility of the project assessed, and the scope of the design should be known.

#### **1.7.2.2 Elaboration**

Leads to a working specification of the system and the end of this phase a basic architecture should have been produced a plan of construction agreed, all significant risks identified, and those risks considered to be major should have been addressed.

#### **1.7.2.3 Construction**

Produces beta-release system and the end of this phase a working system should be available, sufficient for preliminary testing under realistic conditions.

#### **1.7.2.4 Transition**

Introduces the system to its intended users.

### **1.7.3 Data Collection Tools**

* Questionnaires

Prepare a list of questions about how students interact with the eLearning system

* Observation

Observing how contents is displayed on the eLearning system layout

## **Resource Requirement**

### **1.8.1 Hardware**

#### **1.8.1.1 Laptop**

* Laptop with the following specifications
* Processor core i3
* 4GB DDR3-1333 RAM
* 320 GB hard drive
* Operating system Windows 10 Pro

### **1.8.2 Software**

* Word processors - Microsoft office word for developing the proposal document.
* Spreadsheet – Microsoft office Excel generating Gantt charts
* Microsoft office Power Point for presentation purposes

## **1.8.3 Other Requirement**

* Stationery
* Printing of the proposal document
* Internet for research purposes

# **1.9 Budget and Budget Justification**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Model number** | **Item definition** | **PRICE PER UNIT** | **NO. OF UNITS** | **TOTAL** **(KSH)** |
|  | laptop | 0 | 1 | 0.00 |
| HUAWEI E5573Cs-322 | modem | 5,400 | 1 | 5,400.00 |
|  | Word processor | 0 |  | 0.00 |
|  | Ms project | 0 |  | 0.00 |
|  | stationery | 200 |  | 200.00 |
|  | printing | 500 |  | 500.00 |
|  | Internet | 1,000 |  | 1,000.00 |
|  |  |  |  | 7,100.00 |

Table 1: BUDGET AND BUDGET JUSTIFICATION

# **Project Time Plan**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Description** | **Duration**  **(Weeks)** | **Proposed Start date** | **Proposed Finish date** | **Actual Start Date** | **Actual Finish Date** | **Deliverables** |
| 1 | Project Identification | 1 | 14/1/19 | 18/1/19 | 21/1/19 | 25/1/19 | Research project  idea |
| 2 | Draft Proposal  Writing | 1 | 28/1/19 | 1/2/19 | 29/1/19 | 1/3/19 | Draft Proposal |
| 3 | Final Proposal | 1 | 4/2/19 | 6/2/19 |  |  | Final Proposal |
| 4 | Literature Review | 1 | 11/2/19 | 15/2/19 |  |  | Literature review report |
| 5 | Data collection  And analyses | 2 | 6/5/19 | 17/5/19 |  |  | Requirements specification |
| 7 | System design | 3 | 20/5/19 | 7/6/19 |  |  | System design |
| 8 | System Development | 3 | 10/6/19 | 28/6/19 |  |  | Working System |
| 9 | Testing | 1 | 1/7/19 | 5/7/19 |  |  | Working System |
| 10 | Project Report | 1 | 8/7/19 | 12/7/19 |  |  | Project Report |

# **Gantt chart**

# **REFERENCES**

1. Arinto, P. B. (2016).Issues and challenges in open and distance e-learning: Perspectives from the  
   Philippines. The International Review of Research in Open and Distributed Learning, 17(2).
2. Chapman, C. (2011).Comprehensive Review of Usability And User Experience Testing Tools. *Smashing Magazine*. Retrieved from: [http://www.smashingmagazine.com/2011/10/comprehens..](http://www.smashingmagazine.com/2011/10/comprehensive-review-usability-user-experience-testing-tools/) Accessed on 4th February 2019
3. Giovanis K.,(2015) Keep it simple: Challenges, solutions, and best practices for global eLearning initiatives*,* *International Journal of Advanced Corporate Learning*, 8(2), pp. 47-49,
4. Jung, N. (2017). Korean learning motivation and demotivation of university students in Singapore. Foreign Languages Education, 24(3), 237-260.
5. Lim, K., Park, S., & Kang, M. (2016). Structural relationships of environments, individuals, and learning outcomes in Korean online university settings. The International Review of Research in Openand Distributed Learning, 17(4).
6. Oboko, R., Omwenga, E., & Hadullo, K. (2018). Status of e-Learning Quality in Kenya. *International Review of Research in Open and Distributed Learning*, Volume 19, Number 1.
7. Makokha, G., & Mutisya, D. (2016). Status of e-learning in public universities in Kenya. The InternationalReview of Research in Open and Distributed Learning, 17(3).
8. Mayoka, K., & Kyeyune, R. (2012). An analysis of eLearning Information System adoption in Ugandan Universities: Case of Makerere University Business School. Information Technology ResearchJournal, 2(1), 1–7.
9. Muuro, M., Wagacha, W., Kihoro, J., & Oboko, R. (2014). Students’ perceived challenges in an online collaborative learning environment: A case of higher learning institutions in Nairobi, Kenya. TheInternational Review of Research in Open and Distributed Learning, 15(6).
10. P. Kumar, and U. Gulla,(2011) . Corporate e-learning: Possibilities, promises, and realities. *Journal of Library and Information Technology*, 31(3), pp. 179-188, 2011.
11. Tarus, J., Gichoya, D., & Muumbo, A. (2015). Challenges of implementing e-learning in Kenya: A case of Kenyan public universities. The International Review of Research in Open and DistributedLearning, 16(1).
12. Yang Harrison .( 2013) .*New world, New Learning: Trends and issues of E-learning”* Retrieved from: <https://www.sciencedirect.com> Accessed on 5th February 2019