COMPUTER AIDED PLATFORM FOR TEACHING PHYSICAL GEOGRAPHY: A CASE STUDY OF KIGEZI HIGH SCHOOL

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DECLARATION

I TUMUKUNDE PAKARASIO declare that this is my original work and has not been presented fur a Degree in any other University.

Signature: ·--~- Date: 11/11/2020

APPROVAL

This Report has been submitted for review with my approval as supervisor:

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11.

DEDICATION:

Great pleasure, I dedicate this report to my parents, brothers, sisters and friends for their

ts and courage towards my academic career.

12.

ACKNOWLEDGEMENT

I am very grateful to my supervisor Dr. MIKE CONRAD who never ceased to guide and support me throughout this Project Report writing.

In addition, I want to thank my University lecturers for molding me into a better student by teaching me fundamentals as far as my course is concerned.

A reserved gratitude also goes to my parents who have been and are still source of success to my life; I greatly acknowledge their financial and spiritual support rendered to me up to this far.

Lastly to everyone who contributed towards this Report. Thank you all .....

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LIST OF ACRONYMS

CSS	Cascading Style Sheet
HTML	Hypertext Markup Language
PHP	Hypertext Preprocessor
SDLC	Systems Development Life Cycle

CHAPTER ONE

GENERAL BACKGROUND

1.0 Introduction

This chapter is comprised of the general background, problem statement, objectives, scope, and significances of the proposed study.

1.1 Background

Computer has become an important tool for keeping databases, filing systems, track records.

It has made record keeping much easier than it ever was. It has made data analysis extremely easy, and it can be done at a single click of the mouse unlike the traditional way of teaching that needs a lot of times in reading books .While using CAI as an instructional way of teaching students are more interested in reading their lessons .

Computer Aided Instruction for DBMS using MYSQL is accessible and can be installed in a stand-alone computer. Student must register using their ID and username and must take a pretest in order to measure the student's ability on how to use data base management system using MYSQL and they can view their lessons and they must take a posttest then view their results. The same as the instructor, they register as admin, responsible for the program or account of the students. Computer Aided Instruction for DBMS using MYSQL was using a Waterfall Model in which progress is seen as flowing steadily downwards (like a waterfall) through the phases of Conception, Initiation Analysis, Design, Construction, Testing,

Production, Implementation and Maintenance.

Computer Aided Platform will create a great impact both in the head and in personnel of the school. Therefore, the researcher concluded that the implementation of Computer Aided Platform would provide a cost-effective, smooth operation, more interactive process between the students and teacher.

Geography is a discipline which seeks to explain the character of places and the distribution of features and events as they occur and change the surface of the earth. Geography is concerned with human - environment interactions in the context of specific places and locations, in addition to its central concern with space and place. The nature of geography is described by OFSTED (2008) as "Listen to news broadcast or open a newspaper and you cannot fail to be struck by the relevance of geography. This practical discipline enables us to

understand change, conflict and key issues which impact on our lives today and which will affect our futures tomorrow. The floods in Cornwall and the destructive power of hurricanes in the Caribbean have highlighted changing climatic patterns and global warming. The devastation by the tsunami in the Indian Ocean and the world's reaction has further demonstrated the power of geography. Equally, war and conflict in the Middle East, water shortages, famine, migrations of peoples, disputes over oil, the complexities of world trade, interdependence, globalization and debt are all major issues with which our world is grappling. All this is the geography of today and, in order to understand the intricacy of it, it is important that pupils learn about the world they live in and on which they depend. It is important that the citizens of tomorrow understand the management of risk, appreciate diversity, are aware of environmental issues, promote sustainability and respect human rights and social inclusion. If the aspiration of schools is to create pupils who are active and wellrounded citizens, there is no more relevant subject than geography."(Pp6-7)

The purpose of teaching geography is to develop individuals that are responsible, know their country and can provide solutions for their problems (Akengin 2008). On the other hand OFSTED (2008) is of the view that teaching methods are essential for successful implementation of geography curriculum. Kolb and Kolb (2001) suggest that geography being a practical subject requires that learners should relate to the environment so that they learn in that experience. This experience has different effects on learner's abilities, and active experimentation deepens their understanding of the environment they live in. This is learning by reflection on the experiences. This translates into lifelong learning which they will use after schooling. Lambert & Morgan (2010) adds on that school geography should be considered within the broader observation about nature and contemporary society. Similarly Hamid and Merza (2012) informs geography educators that traditional methods of teaching geography are teacher cantered, effective in disseminating large amounts information. This the authors goes on, requires students to be passive learners; involving listening only. This learning environment presents a challenge in capturing and maintaining interest, securing the student understanding and retention. A challenging and meaningful learning experience ensures engagement and participation of students in learning activities. Many new visualization techniques, technology and practices in mapping have emerged. Modem modes of teaching recommended are problem solving, small group discussions, projects participation and cooperative learning;- fieldwork, role plays, games, music, these promote motivation and effective classroom management (Aikoterini 2010) Adeyemi (2008). Expected outcomes according to Lambert & Morgan (2010) are comprehensive skills and

understanding of the distribution of resources. Qualitative and quantitative skills, understanding of environmental changes, as well as society and conservation of natural resources, should be of great concern in geography. Pre-service teachers' training, consequently, should include fieldwork / excursions and laboratory experiences, this practical nature of training for the core part of their career training and professional work is essential (Lambert & Morgan 2010).

In Kigezi high School the mode of teaching geography is based on manual methods, through Class discussion conducted by teacher, Recitation oral questions by teacher answered orally by students, Discussion groups conducted by selected student chairpersons, instructor(guest speaker), Presentation by a panel of instructors or students, Presentations by student panels from the class ,Student reports by individuals, Student-group reports, Debate (informal) on current issues by students from class, Small groups such as task oriented, discussion, Socratic methods, Textbook assignments, Reading assignments in journals, monographs, etc., Reading assignments in supplementary books, Vocabulary drills, Reflective journals or diaries, Construction of summaries by students, Biographical reports given by students, Library research on topics or problems, Jigsaw puzzle maps. Flannel boards, Flowcharts, Maps, transparencies, Field trips, role playing, Open textbook study, Class projects., Individual projects, Photographs, Laboratory experiments performed by more than two students, Student construction of diagrams, charts, or graphs. Making of posters by students, Problem solving or case studies, Puppets, Use of chalkboard by instructor as aid in teaching, Use of diagrams, tables, graphs, and charts by instructor. Use of exhibits and displays by instructor, Open textbook tests, take home tests.
There is also a delay in notes compiling / teaching aids as more effort and time are wasted in rewriting notes, schemes of work and etc of all over again from time to time. The process of computation becomes boring since the same process is repeated over and over again without the worker deriving any benefit or experience.

The proposed system will avail teachers with geography teaching aids such as videos on physical geography which will ease their teaching and schemes of work this will in tum contribute to completion of the Physical Geography syllabus in time. This system will also enable students to study on their own through research and discovery (self-drive) since the system was accessed by every student any time and from anywhere that is it can also be accessed by day scholar students from their homes.

1.2 Problem statement

Geography teachers at Kigezi High School usually face challenges in trying compile physical geography teaching aids due to limited essential and relevant information about physical geography such as books, articles journals and videos in the campus library yet they are vital in education and learning and enhance understanding.

Lack of physical geography teaching concepts has led to lack of relevant examples, limited knowledge base on physical geography since the mode of teaching is not backed up with relevant examples hence making it unrealistic and hence declined geography performance (P250/l)

1.3 Objectives of the study

1.3.1 General objective

To develop a computer aided platform for teaching Physical geography for Kigezi High School.

1.3.2 Specific objectives

i. To analyze the current system used in teaching Physical geography at Kigezi High School
14. To design a computer aided platform for teaching Physical geography for Kigezi High School
in1. To test and validate the developed system

1.4. Research Questions

1. How is the current system used in teaching Physical geography at Kigezi High School?
11. How can we design a computer aided platform for teaching Physical geography for Kigezi High School?
111. How can we test and validate the developed system?

1.5 Scope of the study

1.5.1 Time scope

The proposed study was conducted from September to May 2020

1.5.2 Geographical scope

The study was conducted from Kigezi High School

1.5.3 Content scope

The proposed study will majorly focus on the procedures of teaching physical Geography to respective students.

1.6Significances of the study

The study eases on the process of web based physical geography teaching platforms will avail accurate physical geographical information to students from where ever they was at any time even from home.

The system equips the researcher with more knowledge as far as the ICT field is concerned. The system saves time and is fast.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter review all the related works compiled by previous researchers and scholars. It has been collected from books, journals, magazines, websites and other articles.

2.1 Current system used in teaching

For teachers and their students, the availability of modem computers, peripherals, networking and resources within an increasingly diverse range of technologies is an essential part of learning and teaching in the 21st century. ICT constitutes an input in the student learning process that should help produce better learning output. The availability of ICT resources can enhance learning by making education less dependent on differing teacher quality and by making education available at home throughout the day (Mbwesa, 2002). Bonnet (1997) argues that the use of ICT can positively transmit knowledge to students. Furthermore, the availability and use of ICT can help students exploit enormous possibilities for acquiring infonnation for schooling purposes and can increase learning through communication (Riel, 1998).

According to the Swedish National Agency for School Improvement (2008), ICT provide a positive impact on learning and student perfonnance when it becomes an integrated element in the classroom and teaching. Bonnet (1997) argues that the availability of visual digital technology (such as animation, simulation and moving images) involves students and reinforces conceptual understanding. ICT use also encourages development from a teacherfocused or teacher-led model to a more student-focused model in which students work together, make their own decisions and take an active role in learning (Swedish National Association for School Improvement, 2008).

Davis (2000) asserts that increased availability of ICT is especially useful for students who suffer from learning disabilities since ICT use allows teachers to prepare suitable tasks for individual needs and each individual more effectively. However, authors like Cox (1999) believe that allowing certain students to use computers distracts them from focusing on the task at hand.

Central to the argument of availability are the issues of whether or not the teachers and students have ample and convenient access to computers and their accessories let alone the software that is necessitated in the context of their day-to-day research, collaboration, teaching and student evaluation (Fabry, et al., 1997). Furthermore, students and teachers should have confidence in these facilities, which is in turn reliant on the facilities" reliability or degree to which the teachers and students are sure that they will have access to them at all expected times and utilize them predictably to the betterment of their academic work, an issue on which consensus is enormous as is clear from ICT in education scholars like Russell (1997), Ross (1997), Guha (2000), Mumtaz (2000) and Pelgrum (2001).

The lesson here is that computers are but a subset of the information communication technology facilities necessitated in schools and that even then, they have to be furnished with quality accessories, installed with appropriate software and linked to necessary networks to allow access to rich resources beyond the school rather than serve as a resource for minor typesetting and other word processing activities. Whilst the above studies attempted generally to explain how the availability of ICT affects learning, it does not look at how particular ICT tools clearly affects students learning.

2.1.1 Use ICT in Teaching

Using ICT effectively can lead to a more positive educational ethos in the classroom and *in* effect a more communicative classroom. Effective use ofICT by the teacher can offer greater interactivity at both a deep and surface level. We will explore the general use ofICT, but also its impact on interactivity within the classroom.

Cox et al. (2003) undertook a review of the research and then concluded that ICT had indeed had a positive effect on attainment in National Curriculum subject areas. They qualified this assertion by stating that it was not just the everyday use of ICT as a tool, but the skilful use of ICT by the teacher, when linked to careful pedagogical strategies enhancing classroom communication. In order to get the best use of ICT teachers have to be aware of ICTs range and features as a resource and should be deeply versed in JCT techniques. This conclusion was confirmed by Somekh and Davies (1999) and Sutherland (2005). They assert that the skilful use of JCT by trained practitioners is absolutely key to higher attainment. ICT offers a range of key features including speed, automation, capacity, range, provisionally and interactivity (Beauchamp (2012:3).

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Speed

Although ICT has offers massive capacity for improving the speed of teaching, it can be detrimental to younger (or less able) children if used too quickly. Learners" needs must be considered at all stages of planning and the pace and timing of the lesson adjusted to learner responses through ICT use when necessary and productive Somekh and Davies (1999) and Sutherland (2005).

Automation

The development of materials, in terms of scale, creativity and choice was far more difficult before the advent of ICT - as was planning, recording and assessment of pupil progress. ICT has indeed become an integral educational aid for teachers and school staff Somekh and Davies (1999) and Sutherland (2005).

Capacity

Linked to automation is storage capacity. ICT has offers high levels of increased storage capacity. Even small devices have huge memories which store great amounts of data. Some data networks are not even ,,wired connections" and as cloud storage can be accessed from anywhere, access to many sites is made easy and swift. ICT makes for an especially bright future when linked to innovative and creative pedagogies Somekh and Davies (1999) and Sutherland (2005).

Range

There is now a wide variety of media easily accessed and available so that lessons can be ICT based. However, ICT should partner and complement traditional modes of teaching such as ,,Big Books" and other materials, not just replace them Somekh and Davies (1999) and Sutherland (2005) ..

Provisionality

Provisionality appears to have two components; temporariness and inventiveness. Lessons can be changed at will, at teachable moments, and content easily effaced as with Interactive Whiteboard (IWB) use. On traditional white or black boards writing was difficult to erase: this is not the case with IWBs. Things can be quickly relocated, deleted, or rearranged so speedily both remotely and in physical locations. Pedagogic materials can be created or

destroyed at immense speed. The process of learning is seen to be more important than the product, but both are integrated during skilful use of ICT in the classroom Somekh and Davies (1999) and Sutherland (2005).

It seems there is a common assumption that ICT, as a tool, provides learners with interactive experiences. The introductory programme for training teachers to use ICT, in use in the UK, explains a number of the merits provided by ICT tools and sources, which teachers have to understand they can benefit from - namely speed, spontaneity, understanding, specialisation and interactivity (DfEE, 1998a). These characteristics give ICT its distinctive features as a learning tool compared to other tools and sources (Kennewell et al., 2008). It is possible that the embedding of ICT into teacher training programmes explains why the use of the ICT is perceptively more interactive to teachers. ICT provides a number of advantages, both essential and combined, which contribute to broaden and designate the procedures used inside the classroom (Kennewell, 2007). The merits of speed and repetition for ICT are utilised when learners are able to see quick sequences for a specific phenomenon, which could help their understanding of the concept. This has actually been observed, for example, while students learn the method of building a reflected picture in mathematics.

2.2 Designing a computer aided platform.

Effective integration of ICT in schools would call for a whole institution to be networked to ensure access to multimedia and learning- rich resources via the school's Intranet and the Internet wherever students and teachers are, in or out of school. The computer labs and classroom computers need to be sufficient in number to allow ready access by students and staff in most subjects across the school. A wide range of peripheral and remote working devices, including video-conferencing, is provided and integrated into the curriculum. Large and small group presentation facilities are readily available (school net Africa, 2004). Despite the above desired situation, most Institutions in Africa face barriers to effective integration of ICT in the teaching and learning process; limited infrastructure in terms of satisfactory physical conditions of laboratories and the subsequent accessibility of the resources (ICT) to the learners (Singh, 1993).

Many commercial and academic developers of educational multimedia have focused primarily on information access and presentation (Singh, 1993). However, *it* is easy *to* see that multimedia has tremendous potential to enhance the vividness with which information can be presented and ease with which it can be accessed, the main barriers to learning are not

generally that appropriate information is difficult to access or badly presented. The problem has more to do with that information (Shank & Kass, 1996).

Accessibility and use of ICT allows students to investigate more thoroughly the real world (Reginald Gregoire inc., Bracewell & Laferriere, 1996; Riel, 1998). They can more readily access information sources outside the classroom and can use tools to analyze and interpret such information. Information may be accessed through online systems or through data logging systems (Riel, 1998). The technologies allow them to receive feedback, refine their understanding, build new knowledge and transfer from school to non-school settings (Committee on Developments in the Science of Learning, 2000). In the past this has been difficult to provide in schools due to logistical constraints and the amount of material to be covered all of which can now be addressed with ICT. What can be learned is broadened and deepened (Reginald Gregoire inc. et al., 1996).

Barriers, associated with ICT integration that fall within the physical realm are beyond the direct control of the teacher (Loveless, 1996). These barriers centers around accessibility and infrastructure and include decisions about purchasing, locations of wiring drops, and decisions regarding the placement of computers in centralized labs verses placement of computer pods in classrooms. Placing computers in centralized labs may provide students with equitable and efficient exposure to technology but severely limit the technology's accessibility for classroom instruction (Loveless, 1996). Labs deny teachers the flexibility of deciding when technology should be incorporated into instruction and may send the message to students that computers are not central to learning or the activities in their classrooms. In addition, physical limitations of the classroom including size and location of desks, often limit choices of room arrangement and do not provide the space that is necessary to add pods of computers to be used as technology centres.

2.2.1 User-ability of ICT resources and student's learning

Teaching is becoming one of the most challenging professions in our society where knowledge is expanding rapidly and much of it is available to students as well as teachers at the same time. Modem developments of innovative technologies have provided new possibilities to teaching professions, but at the same time have placed more demands on teachers and students to use these new technologies in the teaching and learning process (Jung, 2005)

Owing to the above, there is widespread change across the world to infuse ICT into education. Recent research by British Education Communication and Technology Agency (BECTA) has highlighted user-ability of ICT resources as one of the five key pillars of successful integration of JCT in schools (National Council for Curriculum and Assessment UK, 2004). In developed countries, teachers are fully using ICT in all aspects of their professional life to improve their own learning and the learning of their students (Davis, 2000). They use JCT to assist students assess their own learning in completing specific personal projects. It is natural for teachers to collaborate with other colleagues in sharing experiences to solve problems. JCT becomes a stimulus for exciting new teaching and learning opportunities (UNESCO, 2002a).

It is the skill and attitude of the students and teachers that determines the effectiveness of technology integration into the curriculum (Bitner & Bitner, 2002). Once teachers and students developed skills, they could begin to find ways to integrate technology into the teaching and learning process and demonstrate its use to others. If learning was the impetus that drove the use of technology in the school, teachers and students could be partners in the learning process, altering traditional paradigms of the teacher providing wisdom and the student absorbing knowledge. Motivation to endure the frustration and turmoil of the process

of change needed to be intrinsic.

Newhouse (2002) and Loveless (2002) notes that ICT if used positively enhances learning processes and outcomes. Findings assert that both the learning environment and curriculum pedagogy and content are central to the effective use of ICT. However, teachers and students need to be confident in their subject knowledge as well as in basic ICT literacy's so that they can effectively integrate ICT into teaching and learning programs. A large number of studies have found that students are often more engaged and motivated to learn when using relevant

JCT to support specific intentional learning.

What students generally do on the way to becoming computer literate is how to memorize the components of ICT and their functions. It is a mistake to believe that if students can memorize the hardware parts and software then they will understand and be able to use them. Learners do not acquire a repertoire of learning strategies for successfully accomplishing different kinds of learning tasks. Too often, they apply a memorization strategy and when that fails to work they lack alternative strategies to employ. This is especially problematic with

ICT, for which memorization strategies simply do not work (Jonassen, 2000). The researcher believes that the most pandemic, yet most insidious, cause for underachievement in ICT is lower expectations on the part of teachers, which reduces expectations of students and the entire educational system.

According to Laurillard (1994), there is a persistent discrepancy between the questions asked of evaluation studies in new technology, and the conclusions they come to. In a research into JCT and learning, Laurillard (1994) has repeatedly shown that the context of the use of JCT determines any effects that ICT may have on learning, and that it is extremely difficult to separate the uses that new technologies are put to from the context of their use. This is supported by Joy II and Garcia (2000), who suggest that it is not the sole effect of ICT on learning gains which should be studied, but the combination of ICT use with particular pedagogical practices in enhancing much improved students learning, a point which has been echoed elsewhere in Kennewell (2001). Students also learn more quickly, demonstrates greater retention, and are better motivated to learn when they more often use computers (Richmond, 1997). Richmond continues that since technology use is fully integrated into the larger learning system, it is very difficult to isolate the technology variable and determine whether any observed gains are due to technology use or to some other factor or combination of factors. Whilst these studies identifies the user-ability outcome and benefits, the relationship between the form of technology (ICT) and user skills and state of ICT resources in fostering learning were not fully explored.

2.3 Testing and validating the system

According to (Santos, et al., 2019)testing a software system is an important step approach to ensuring quality, safety, and reliability in safety-critical systems (SCS). Several authors have published new approaches to improve the processes of testing safety requirements taking into consideration existing processes that seek to improve techniques and contribute positively with software developers.

Validation is considered an important activity as part of the model development process. The validation process is undertaken in order to ensure that the model developed is sufficiently accurate for the purpose at hand. The importance of model validity becomes more crucial when undertaking modelling in facilitated modelling workshops with stakeholders in what is called facilitated simulation modelling. If the model is not considered accurate by the client

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that would mean that it would not be possible to proceed with planned workshop activities(Tsioptsias, Tako, & Robinson, 2016).

Data validity is most often cited in papers. It involves activities leading to: appropriateness, accuracy, completeness, correctness, impartiality, sufficiency, maintainability, reliability, limited cost, and availability of soft and hard, non-biased and biased data. It becomes apparent how potential modellers would get confused over which features should receive the highest priority. Other data aspects involve its trans- formation(Tsioptsias et al., 2016).

CHAPTER THREE

METHODOLOGY

3.0 Introduction

All the methodologies that were used in collecting data and development of this system is covered in this chapter.

3.1 Research Approach

The researcher used a cross sectional survey design because data is to be collected at one time from the respondents who are students and staff of Kigezi High School.

3.2 Target Population

The target population for the study was 20 respondents to take part in sampling exercise to help me in accessing the right infonnation. This population was made up of 12 students and 8 staff members at Kigezi High School.

3.3 Sampling Techniques

A purposive sampling technique was considered for this study and only respondents who are more knowledgeable and relevant to this study was considered for interviews and questionnaires.

3.4 Sample Size

The sample size of this study included 8 staff members and 12 students from Kigezi High School.

3.5Data Collection Methods

Data collection was done through carrying observations, interviews and use of questionnaires.

Observation

For observation, the researcher had to physically visit the area of study and observe how the current system is working using naked eyes. This helped the researcher in collecting clear and first-hand information. This helped to identify the process and functionality of the current manual system and get a view for the design of the new system.

Interviews

Face to face interviews was carried out in order to get infonnation about how the proposed system is supposed to work thus Student Marks Infonnation System users was interviewed. This helped the researcher to collect first-hand information that was reviewed and analyzed for the requirements of the system. System users to be interviewed include students and

Kigezi High School staff

Questionnaires

Questionnaires were used to collect infonnation from respondents who are busy or where respondents are not available at the time of interviews. For the case of this study the questionnaires were a set of open ended questions that which are type written and printed. The questionnaires was delivered to respondents for filling and later collected within a

period of three days.

3.6 System Design Techniques

Systems Development Life Cycle (SDLC) or sometimes just (SLC) is a software development process, although it is also a distinct process independent of software or other information technology considerations. It provides a consistent framework as the task and deliverables needed to develop a system. An SDLC should result in a high quality system that meets or exceeds customer expectations, within time and cost estimates, works effectively and efficiently in the current and planned information technology infrastructure, and is cheap to maintain and cost-effective to enhance. SDLC is the most suitable methodology for this

system thus I used waterfall model.

For the design of this system, the system development life cycle (SDLC) method has been selected to make sure the project will do properly. In this project 5 steps of process were selected and used. They are identification, planning, analysis, Design, implementation and

testing.

Identification

This stage was very important in developing this system. This stage begun with studying the process of how administrative management avails student marks.

Planning

Planning is one of the important stages in developing a system. The process in this stage was firstly to find all the information about the current system. In finding the data some research has to be done. All the process must be done in a time that is planned from the beginning. In

rime management a schedule for the planning in this system has to be made. The schedules start from defining the scope, searching data until the end of developing and maintenance.

Analysis

Analyses about the software and hardware requirements were done in this phase. The first thing to be made is analysis about the current system that the university is using to avail student marks.

Design

Software design involved identifying and describing the fundamental software system abstractions and their relationships. In this stage, the software designer designed the software completely and then the system was delivered to the user either the user satisfied or not with the Student Marks Information System. I used net beans where I usedjava scripting language in designing interfaces with different forms such as log-in fonns. Other tools included notepad ++, Wamp sever, PHP.

3.7 **Testing**

The proposed system was tested using unit and module testing approaches. For unit testing system units were independently and separately tested to see if they meet user requirements whereas for module testing all system units were combined and tested to check whether they perform as in the design.

3.8 Tools for Implementation

Implementation methods majorly helped in the general coding and running of the system. The proposed system was implemented using an apache server that runs MySQL and in here Wampserver was selected. Programming language Languages such as HTML, CSS, and JAVASCRIPT was used for front end design and PHP was used for back end design as the server side language.

CHAPTER FOUR SYSTEM ANALYSIS AND DESIGN

4.0 Introduction

This chapter discusses the system study, analysis and requirements in details, defines and illustrates the various components of the system and how they are successfully accomplish the required function.

4.1 System Analysis

In Kigezi high School the mode of teaching geography is based on manual methods, through Class discussion conducted by teacher, Recitation oral questions by teacher answered orally by students, Discussion groups conducted by selected student chairpersons, instructor(guest speaker), Presentation by a panel of instructors or students, Presentations by student panels from the class ,Student reports by individuals, Student-group reports, Debate (infonnal) on current issues by students from class, Small groups such as task oriented, discussion, Socratic methods, Textbook assignments, Reading assignments in journals, monographs, etc., Reading assignments in supplementary books, Vocabulary drills, Reflective journals or diaries, Construction of summaries by students, Biographical reports given by students, Library research on topics or problems, Jigsaw puzzle maps. Flannel boards, Flowcharts, Maps, transparencies, Field trips, role playing, Open textbook study, Class projects., Individual projects, Photographs, Laboratory experiments performed by more than two students, Student construction of diagrams, charts, or graphs. Making of posters by students, Problem solving or case studies, Puppets, Use of chalkboard by instructor as aid in teaching, Use of diagrams, tables, graphs, and charts by instructor. Use of exhibits and displays by instructor, Open textbook tests, take home tests.

There is also a delay in notes compiling / teaching aids as more effort and time are wasted in rewriting notes, schemes of work and etc of all over again from time to time. The process of computation becomes boring since the same process is repeated over and over again without the worker deriving any benefit or experience.

The developed avail teachers with geography teaching aids such as videos on physical geography which eases their teaching and schemes of work this will in tum contribute to

completion of the Physical Geography syllabus in time. This system will also enable students to study on their own through research and discovery (self-drive) since the system was accessed by every student any time and from anywhere that is it can also be accessed by day scholar students from their homes.

4.1.1 Strength of the Existing System

The developed avail teachers with geography teaching aids such as videos on physical geography which eases their teaching and schemes of work this will in turn contribute to completion of the Physical Geography syllabus in time. This system will also enable students to study on their own through research and discovery (self-drive) since the system was accessed by every student any time and from anywhere that is it can also be accessed by day scholar students from their homes.

It is user friendly and convenient for people who are technology illiterate.

Less extra expenses are incurred like user training, system maintenance, buying powerful computers and server space.

Less expertise is required; Fact of being manual System is not complex.

4.1.2 Weakness of the Current System

Expensive and time consuming, the process of availing information to every client at counter and entering user data into the database takes too much time and is expensive to conduct. Insecurity; since the manual system in use involves payments in cash, collected money may be exposed to robbery in case of an attempt.

4.2 System Requirements

The system meets the following requirements for it to run the Computer Aided Platform for teaching Physical Geography Functionalities:

i. Web browsers: Mozilla Firefox, Google chrome, Opera and internet Explorer,
ii. MYSQL DBMS and WampServer 2.0 as testing server/local host.
iii. Text editors like, Notepad, Sublime, Adobe CS6 Dreamweaver,
iv. Programming language such as PHP, Java scripts and HTML.
v. Operating Systems: Windows XP, Windows Vista, Windows 7, Windows 8 and Unix. At least 40 GB Hard Disk Capacity and 512 RAM and least 2.0 GHz Processor speed.

4.3 User Requirements

A person should be able to:

i. Log in the System as a user or Administrator.
ii. Navigate to the system through the home page of the application.
iii. Teachers can publish learning materials for students to access and self-study
iv. Teachers can access students
v. Students shall be able to view and do assignments assigned by their respective lecturers

The System should be able to:

1. Handle multiple users at the same time and with the same efficiency, this will cater for the large and ever growing population service.
ii. The system has a user-friendly interface and user guides understandable by people of average computer skills.

4.3.1 Functional Requirements

The following are the functional requirements of the new system

1. Secure storage and retrieval of customer's details from the database.
ii. Enable secure login of system administrators, that is to say. Non-legitimate administrator should never be allowed to login to the system. These include the nonnal registered customers,
iii. Maintaining and manipulating records in database through functions like edit/update Delete and view.
iv. Validate and verify input and output data.

4.3.2 Non-functional Requirements

The following are the non- functional requirements of the new system, these describe the dos and don'ts of the system

i. The System should be accessible at all times, that is. 24hours (7 days a week)
ii. Failure Management: The system should be able to handle failures when they occur.
iii. Availability: The system should be able to provide certain services when they are needed like give feedback to requests asked by the users.

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iv. Reliability: The system should be able to provide required services at all limes.

v. Usability: The system should be user friendly.

vi. Interoperability: The system should easily pass data from one module to another.

vii. Security: The system should restrict access to unauthorized users.

viii. Maintainability: The system should be modularized so as to easily track errors.

Table I: Hardware Requirements

Hardware	Minimum system requirement
Processor	Intel iv and above
Memory	2GB RAM and above
Hard disk	80 GB and above
Visual display unit (VDU)	High resolution

This section discusses the computer hardware that is required for the system to run smoothly; The usefulness of computer hardware to greater extent depends on the available software to manage, evaluate, and control utilization of the software. In order to use central repository for shared files following software must be present in the computer onto which the application is to be installed as shown in table 2.

Table 2: Software requirements

This section discusses the computer software that is required for the system to run well;

Software	Minimum system requirement

Operating System	Windows 7 ,8 and 10
System Environment	W amp server for the database used in implementation is MYSQL, net beans
Web browser	Mozilla Firefox, Google chrome

4.4 System Design

System Design's identify the modules that should be in the system, the specification of these modules and how they interact with each other to produce the desired results. At the end of system design all the major data structures, file formats and the major modules in the system and their specifications are decided. The most creative and challenging phase of the system development process is design phase. It is a solution of "how to" approach to the creation of the proposed system Design, the first step in the development of an engineered product is initiated only alter a clear exposition of expected product functions becomes available.

Based on the user requirements and the detailed analysis of a new system, the new system must be designed. This is the phase of system designing, normally the design proceeds in two stages, preliminary or general design, structure or detailed design.

4.4.1 Context Diagram

A context Diagram is a top level (also known as Level 0) data flow diagram. It only contains one process node that generalizes the function of the entire system in relationship to external entities.

Below is the Context diagram of the new system.

4.4.2 Data Flow Diagram

The DFD takes an input-process-output view of a system i.e. data objects flow into the software, are transformed by processing elements, and resultant data objects flow out of the software.

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Figure 1: Data Flow Diagram

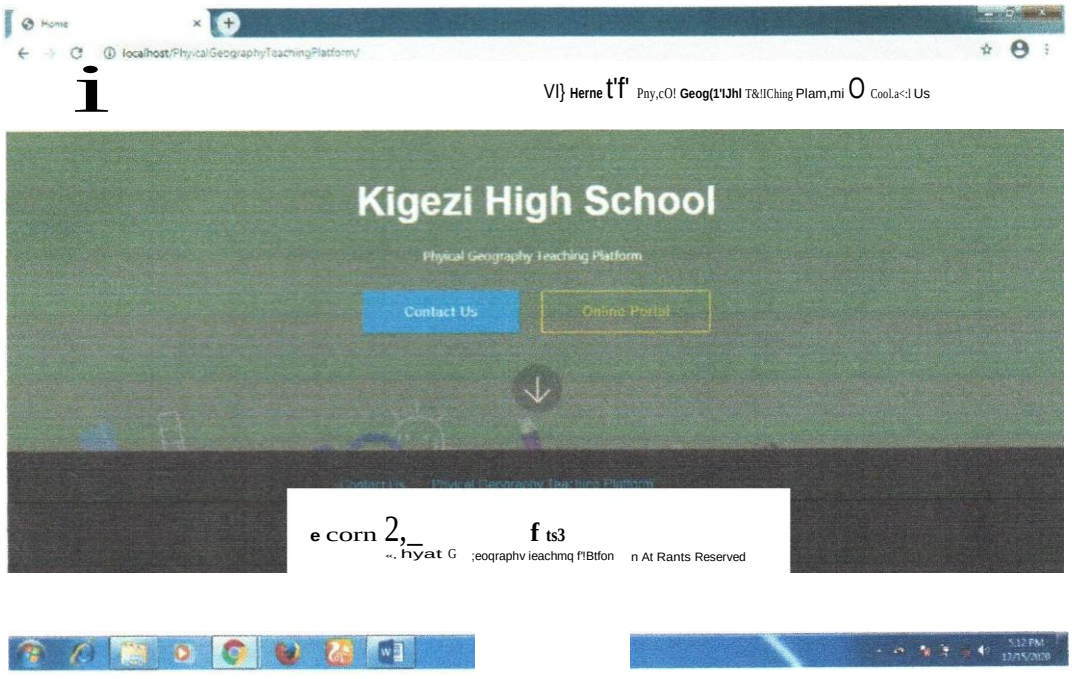
This Section explains the interface design, physical database design, logic database design and network design

4.4.4 Entity Relationship Diagram (ERD)

An entity relational diagram is used to visualize the system database and represent the user's requirements. This is used to represent database entities and how they relate to one another or show the organization of data within the database. According to (A Badia and D. Lemire. November 2011), an entity is a piece of data an object or concept about which data is stored and a relationship is how the data is shared between entities.

4.4.5 Sample Screenshots

Home Page



Portal Users

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Students Portal Login

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Admin login Page

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Admin Home Page

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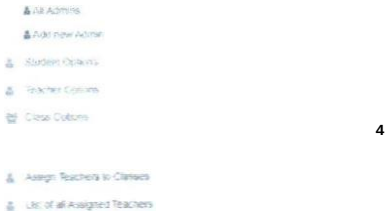
Dashboard



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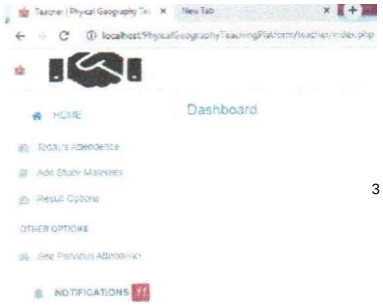
Teacher Home Page



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Student Login Page

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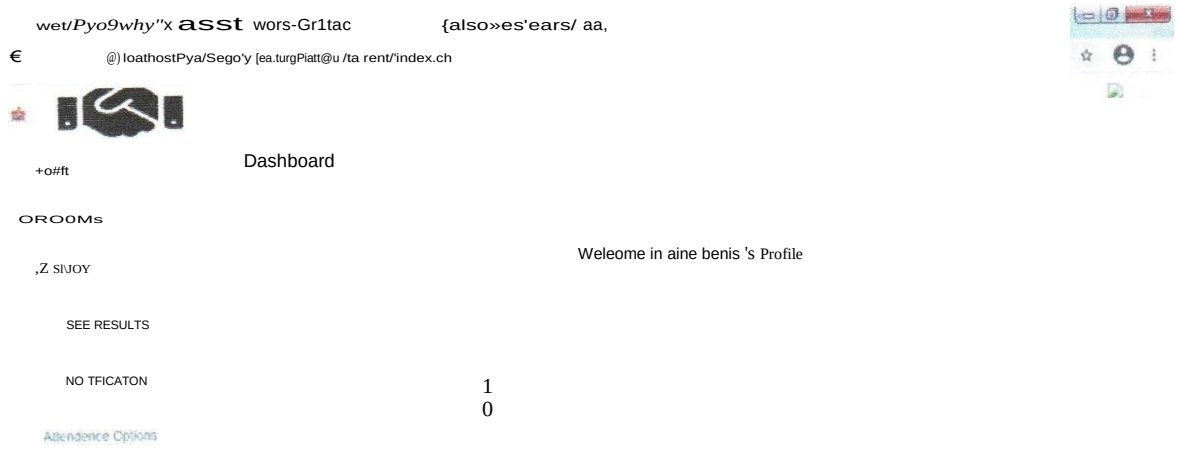
Student Home Page



Source codes

```
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge">
<meta name="generator" content="Mobirise v4.7.2, mobirise.com">
<meta name="viewport" content="width=device-width, initial-scale=l, minimum-scale=l ">
<link rel="shortcut icon" href=" assets/images/aschoolicon-122xl22.png" type="image/x-icon">
<meta name="description" content="">
<title>Home</title>
```

<link rel="stylesheet" href="assets/web/assets/mobirise-icons-bold/mobirise-icons-bold.css">

<link rel="stylesheet" href="assets/web/assets/mobirise-icons/mobirise-icons.css">

<link rel=" stylesheet" href=" assets/tether/tether.min.css ">

<link rel=" stylesheet" href=" assets/bootstrap/css/bootstra p.min.css">

<link rel=" stylesheet" href=" assets/bootstrap/ css/bootstra p-grid.min.css">

<link rel="stylesheet" href="assets/bootstrap/css/bootstrap-reboot.min.css">

<link rel="stylesheet" href="assets/dropdown/css/style.css">

<link rel=" stylesheet" href=" assets/socicon/css/styles.css">

<link rel="stylesheet" href="assets/animatecss/animate.min.css">

<link rel="stylesheet" href="assets/theme/css/style.css">

<link rel=" stylesheet" href=" assets/mobirise/css/mbr-additional.css" type="text/css ">

</head>

<body>

<!-menu->

<?php include("includes/parts/menu.php"); ?>

<section class="engine"><a href'https://mobirise.me/r"></section><section class=" cid-rjmziudFpC mbr-parallax-background" id="header2-1">

<hl class="mbr-section-title mbr-bold pb-3 mbr-fonts-style display-2">Kigezi High School</hl>

Phyical Geography Teaching Platform

Contact Us

Online Portal

</section>

<!-- footer -->

<?php include('includes/parts/footer.php'); ?>

<script src= "assets/web/assets/jquery /jquery .min.js "></script>

<script src=" assets/popper/popper .min.js"></script>

<script src="assets/tether/tether.min.js "></script>

<script src="assets/bootstrap/js/bootstrap.min.js"></script>

<script src=" assets/dropdown/js/script.min.js "></script>

<script src="assets/viewportchecker/jquery.viewportchecker.js"></script>

<script src="assets/parallax/jarallax.min.js"></script>

<script src="assets/smoothscroll/smooth-scroll.js"></script>

<script src=" assets/touchswipe/jquery. touch-swipe.min.js "></script>

<script src= "assets/theme/js/script.js "></script>

<a style="text-align:
center;'>

<input name=" animation" type="hidden">

</body>

</html>

CHAPTER FIVE
CONCLUSIONS, RECOMMENDATIONS AND FUTURE WORKS

5.0 Conclusion

The project was designed in such a way that future modifications can be done easily. The following conclusions can be deduced from the development of the project.

- Automation of the entire system improves the efficiency.
- We can provides the communication between Customer and the Video library.
- Can also create Registration for new users such as students, teachers
- The System has adequate scope for modification in future if it is necessary.
- It is the best way to improve Physical Geography teaching with less efforts. This is the best way for students as well as teachers to interact with each other without much efforts.

5.1 Future Enhancements

The project Computer Aided Platform for Teaching Physical Geography is flexible enough to meet the requirements of the users. This project also has the scope of enhancements like:

Online payment

The system should only limit physical Geography learning Materials to Only students that will have paid school fees

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