# DECLARATION

**STUDENT**

I, HANDERSON NYAMBU MWADIME, hereby declare that this project is my original work and that has never been presented before in any other institution for the award of any academic certificate. I have exercised reasonable care to ensure that the work is original and does not to the best of my knowledge breach any law of copyright and has not been taken from the work of others and the extent that such work has been cited and acknowledged within the text of my work. This project documentation is therefore presented to Multimedia University of Kenya, Faculty of Business and Economics as a partial fulfillment for the award of Degree in Business Information Technology.

**NAME:** HANDERSON NYAMBU MWADIME

**SIGNATURE:** …………………………

**DATE:** ………………………………

# APPROVAL BY UNIVERSITY SUPERVISOR

This project proposal has been submitted to Multimedia University of Kenya for examination with my approval as the university supervisor.

MR. ISHMAEL AKETCH, LECTURER MULTIMEDIA UNIVERSITY

**SIGNATURE:** ……………………..

**DATE:** ………………………………

# DEDICATION

I dedicate this work to my dear cousin Mary Ndighila, my supervisor Mr. Ishmael and my friends Kidali Martin and Nelson Kimathi. I thank them for their support and guidance throughout my project period.

# ACKNOWLEGMENT

This research proposal has been made possible through immerse support received from all my family members classmates and my friend Andere who assisted me in the coding part. I thank the almighty God for everything. Special gratitude and appreciation goes to my Supervisor Mr. Ishmael for the guidance and constant review of the work.

# ABSTRACT

In the recent years, most secondary schools such as the Starehe Boys’ Centre have been using holiday assignments as the only way to keep their students continue studying during the holidays. Most students end up doing a shoddy work because they have no teacher to consult when stack or a classmate to discuss the assignment. Most students report back to school with undone assignment only to copy from the few who would have done by then and hence the assignment not doing its purpose of making them study during the holiday. There has therefore never been a proper platform for students to discuss during school holidays. There is also no proper communication and resource sharing between the students and the teachers during the holidays. As a result of this, the students have therefore found it frustrating, inconvenient and insufficient when trying to access some important information during their holidays. This is as a result of the insufficient KNEC certified course books available online this makes it so hard to access some information during school holidays and the student ends up wasting a lot of time. Another experienced problem is that some students end up getting irrelevant and wrong information from the internet because some articles on the internet are not approved and can be misleading. This has therefore always resulted to misunderstanding of some concepts. Therefore, all these challenges have resulted to the need to develop an information system (Holiday Revision System a Case of Starehe Boys Centre) which will enable the students of SBC to easily communicate to each other plus the teachers and access information from different geographical locations during school holidays. A student looking for information about a particular subject will be able to search for the subject within the system then by a click of a button, all the information about the subjects such as the requirements, units studied and the study materials for the subject will be available for access. All the teachers from the school will also be able to log in, view the questions posted, verify posted answers, post materials for student’s access and as well monitor what is going on in the discussions. The system will therefore help improve communications between teachers and students during holidays, ease of material access by the students and also help reduce the cost and time spent in searching in the internet. The study employed the use of questionnaires, observation, interviews as the data collection techniques. The main aim of observation was to get first-hand information on the issues that concern the students, teachers and the school as a whole. Questionnaires provided both open ended questions making the respondents mainly the students to give more details of the problem as possible. Other information regarding the research was sought from interviews through random sampling of students across the streams and teachers too and also from written materials that have been cited. The aim of collecting detailed data is to help give a clear insight of how the proposed system can be developed to solve the current problem. The system will make use of PHP and MySQL for its development. It will always be updated to keep it relevant to the students. The documentation describes the analysis, design and eventually implementation of the overall success of providing a website that is simple, easy to navigate and real time.

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# ABBREVIATIONS

**24/7-**day and night.

**CSS-**Cascading Style Sheets

**DBMS-**Database Management System

**GB**-Gigabyte

**GHz**-Gigabyte

**HRS**-Holiday Revision System

**HTML**-Hyper-Text Markup Language

**KASNEB-**Kenya Accountants and Secretaries National Examination Board

**LMS**-Learning Management System

**MYSQL-**MY Structured Query Language

**ODF**-Online Discussion Forum

**PHP-**Hypertext Pre-processor

**Q&A**-Questions and Answers

**RAM**-Random Access Memory

**SBC**-Starehe Boys Centre.

**SQL-**Structured Query Language

**XHTML**-Extensible Hypertext Markup Language

**WWW**-World Wide World

# CHAPTER ONE

# INTRODUCTION

## 1.1 Introduction

This chapter gives the overview of the entire project which is expected to provide detailed information about the Holiday Revision System; a case study of Starehe Boys’ Centre and school. It explains the background of the study, statement of the problem, objective of the study, research questions, and significance of the study, limitation and delimitation, scope of the study. It also gives the assumptions have been made during the study.

## 1.2 Background of the study

Most Secondary schools have been equipped with almost all the learning resources to enable them equip their students with all the required skills that are required by today’s industries therefore the quality of education has increasingly become a basic ingredient for upward social mobility and economic prosperity in Africa and the world beyond. Schooling is a very important part of growing up. Learning is an important process of development of a human being and affects society. Well planned and properly directed education is a key to success and progress of country. When a child goes to secondary school it’s easy for teachers to lose touch with them especially during their school holidays. It is therefore important that all stake-holders in learning institutions which mainly include the students and the teaching staff to work closely and communicate constantly during the holiday to ensure learning still continues during holidays. Students being the major contributors to the learning institutions by paying very large amounts of money in the form of school fees therefore expect to gain the knowledge and skills to equip them well for the job market and also meet their parent’s expectations because the parents are the sponsors in this case. Study has also found it that its always difficult for students to study at home because they don’t have the psyche from their fellow students and support from their teachers. Students have also turned to be cyber addicts, engaging in drugs and early sex during school holidays which hinders them from studying during school holidays. All these arise because they are idle and as we know idle mind is devils’ workshop. As much as the school holidays are meant for relaxing, too much of something is always a problem and this case some students go back to school having forgetting everything they had learnt the previous school term, this is a big problem to both the student and teachers because some topics are usually tied to the already taught topic. In such a situation it becomes hard for a student to catch up and also for the teacher to make the concepts sink in the student’s mind. Sometimes the teacher is focus to do a flashback of what was already done hence taking more time of which is limited. The students’ needs to get something that can help them keep on studying and keep them off from distractions and therefore have to seek for the study materials and people to discuss difficult questions and concepts to prepare them for KCSE. However, the students have at times found it a little bit hard to access their learning materials and study partners while they are on school holidays and this has always been a big challenge and hence disappoints them from studying. Most of the Secondary has failed to make their students study during holidays because students come from different parts of the country and even the holiday assignments that are sometimes given to the students are done when they report back to school. This problem can be solved by the use of ICT in learning. Currently we are living in a technological world, a world of technology revolution where almost every one associates with technology. E-learning is an aspect of technology. It deals with the use of all types of technology, including electronic technologies in learning and education. Several researchers suggest that E-learning will be an important part of education for the next generation. E-learning is becoming increasingly vital owing to the global network of the twenty first century teaching and learning. The use of ICT in education has really improved teaching and learning this is because it brings students and teachers together for lessons, tutorials and one to one interactions across geographical locations, fostering students interest and motivation and it also gives students greater control over what they learn and how they learn. It also makes learning sessions more exciting and interesting for both teachers and students. The use of E-learning in the developed countries is something already in use however in Kenya it still strange to some students and teachers. Most E-learning platforms available are mostly for post-secondary education and this case the secondary schools are left unattended and since secondary education the main exam is a National one it means there is need for a school-based platform. A school-based platform means that its controlled by a certain school according to the syllabus for it to be relevant for the students. There it will be of great advantage to secondary schools to have their own e-learning platform to use during school holidays. This has therefore resulted to the need to develop a system that will make it easy for the students to still revise easily during their holidays. The system will be like an e learning platform because it will not entail the traditional chalk and talk method of instruction which will not be effective at the point. Students will be able to post questions which would be answered by their fellow student and be approved by the respective subject teacher Teachers will also have a chance to post questions and subjects learning materials on the system. The system will also provide a very convenient and reliable communication and sharing of learning materials between students and also from teachers to students during holidays from their homes. Being a web application, the system will require some internet connection. The students who will be at home and will be able to access the system on web through their phones, parents’/guardians’ phones or personal computers or even go to cyber cafes. The students who remain at school during the school holidays will be allowed to use the Starehe Institute Computer laboratory which is internet connected.

### 1.3 **Statement of the problem**

Starehe Boys Centre and School being a National School, students come from different parts of the country as a directive from the Education Ministry and this makes it difficult for them to meet during school holidays for academic discussions. The teachers also come from different parts of the country and reaching the students during school holidays on a common platform has always proved to be hard for them and also ineffective whenever they are reached. Teachers sometimes may want to send revision materials to the students and since they are not in school and they cannot all be reached at the same time it becomes almost impossible to be accomplished. Some students leave in areas where the libraries are so far and also libraries work under a specific schedule and since it’s during the school holidays some students during the day help their parents/guardians in doing house chores and shamba works and thus only free in the evenings and at night. The HRS will therefore be an important platform for the students and also the teachers as it will act as an academic chat room and a library of questions and answers and also a media of communication between students and students and students and teachers during school holidays.

## 1.4 Objectives of the study

### 1.4.1 General objectives

The main objective is to develop a holiday revision system, a case of Starehe Boys Centre and School.

### 1.4.2 Specific objectives

The specific objectives of the system include the following;

1. To enable students to post ,view posted questions and access revision materials during school holidays.
2. To ensure there is smooth interaction between the students, teachers with the system.
3. To ensure there is a reliable security access in order to avoid tempering with stored materials

## 1.5 Research questions

1. To what extent will the new system foster learning opportunities during school holidays.
2. In what ways will the system ensure that there is smooth interaction between students and students and students and teachers?
3. How will the system ensure there is reliable security in the stored materials?

## 1.6 Significance of the study

The system seeks to create a platform for academic’s discussions during school holidays where students can discuss online and even those not participating can still follow the discussion and the final answer to be approved by a teacher. Students will be presented with clear menus to make their work easy during his search for the new posted item and for a specific subject as well as the teachers for easy access to areas that concerns them i.e. their respective departments. The system will also enable students to easily access questions and answers posted by fellow students or subjects revision materials such booklets posted by teachers. Teachers from different departments will be able to use this system to communicate to students by providing the learning materials for students to access and also assist students when they need help during their school holidays.

Individualization of learning: Personal responses to forum topics are not limited in time or the length. Students have the freedom to continue dialogues about the topics that interested them most.

It will encourage critical thinking: Effective forum topics are open-ended and designed to encourage students to take a position on issues. To respond to a forum topic requires organized thought and synthesis of concepts introduced in class. If a student's views were challenged, he or she typically adds carefully considered reasons to back up previous comments.

It will give students autonomy: Students have the flexibility to reflect on their thoughts and read the responses of others. Many students have stated that they routinely discussed the forum topics with friends, family and colleagues outside of class before putting their comments online.

It will give the students more time to formulate responses and opinions: Because the forum discussions occur completely online, students have the flexibility to add their input when they are prepared. Some choose to answer questions immediately, while others prefer to consider the responses of others first. Undergraduate students are often much more comfortable discussing topics online after reading the viewpoints of the more experienced students. Students are encouraged to revisit past topics during the course, as their opinions changed.

Flexibility and convenience: Students set their own schedule for the forum. A forum is available at all times of day or night to accommodate school, work, and family demands. The forum is accessible from any Internet connection via the WWW, allowing students to participate even when they were sick or traveling.

Students will experience a professional communication process. Participants experience personal and academic gains as result of their communication with their peers. A goal is for the students to value such professional interchange, and seek it out among their colleagues, and for electronic communication to facilitate the process.

Students will be able to continue an in-class discussion outside normal time-tabled classes.

All students can participate as they are democratic. You can send a question anytime.

Some students are not confident enough to speak out in face to face classes but are willing to contribute to an online discussion.

It will give students time to reflect on their thoughts before contributing.

It will allow students to work on their reply and check for grammar and spelling before posting - particularly useful for students whose first language is not the one used in the discussion.

It will also allow students to practice their writing skills in a more informal way.

The system will offer peer learning opportunities - and this takes some of the workload away from the teacher.

The school will benefit because the performance of students generally will improve because of the system.

## 1.7 Scope of the study

The study will cover Starehe Boys’ Centre and School because the all the stakeholders are found their because it will be used by the school. The system will be highly secured to allow only authorized access. The academics materials and questions will help the students to continue with their studies during school holidays and will also allow teachers to assist their students.

The system is a web application which means it will be able to run on computers and smart phones without preference of the operating systems. Any device that can access the internet will therefore enable students and teachers to access the system.

A strong and reliable internet connection is very important and essential for this system to fully operate. This is because there will be the uploading or posting of academic related materials and information into the system. And to access information and materials form the same system before they can logout of the system. These activities will require the internet.

## 1.8 Limitations/Delimitations of the study

### 1.8.1 Limitations

Though the holiday revision system allows for expeditious communication of academic information between students and teachers during school holidays it comes with a number of challenges such as, some students and lecturers are reluctant to adopt new technologies due to the fact that the students are not used to learning online, some of the teachers are not ready to embrace technology in education. There can only be presence of mischievous students who may post irrelevant materials. The use of the system will also be limited to internet connectivity.

### 1.8.2 Delimitations

Starehe Institute Computer Laboratory has a well-established internet connection that will enable ease of access and operations of the system. Those at home can easily access internet via their parents/guardians or their own phones or by visiting Cyber Cafes.

Students will only access the system using their official administration number and names of which a student can easily be tracked in case of any mischievous behavior.

## 1.9 Assumptions

One of the assumptions the researcher made was that all the stakeholders in the Starehe teaching fraternity are computer literate as well as the students and they also have a basic understanding of an android smartphone and therefore can use them to access the internet.

Another assumption is that the Starehe Institute will allow secondary students to use their Computer laboratory during school holidays and those at home can access smartphones or computers with access to internet.

## 1.10 Definitions of terms

**Asynchronous-**not existing or occurring at the same time.

**Data-**Raw figures and facts obtained from research used to come up with a useful information.

**Manual-**A book giving instructions or information

**Manual System-**System involving data processing which makes use of human input and data processing.

**Module-**One of a set of separate parts that, when combines, form a complete whole.

**Research-**A systematic investigation into and study of materials and sources in order to establish facts and reach new conclusion.

**Resources-**These are materials that are transformed to produce benefit and, in the process, may

be consumed or made unavailable.

**Shamba**-This is a Kiswahili name for Garden.

**Starehe Institute**- Starehe Institute is a college which offers Information Technology and Business courses that will be examined by KASNEB.It’s within the Secondary School i.e. SBC

**Situated cognition**-A theory that explains that knowing is inseparable from doing. It argues that all knowledge is situated in activity bound to social, cultural and physical contents.

**Synchronous-** existing or occurring at the same time.

**System-**It is an organized and purposeful structure that consists of interrelated and interdependent elements, components and factors that continually influence one another, either directly and indirectly to maintain the activity and the existence of the system aimed to achieve the goal of the proposal.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 Introduction

This chapter presents a review of literature related to the study as sourced from various scholars, publications and relevant professional journals. It therefore consists of theoretical literature review, critical review, summary and the conceptual framework. The following literature review therefore situates this dissertation study in a social constructivist theoretical framework informed by literature that describes collaboration and interaction in computer supported learning. I chose this framework because I believe that the theories of social constructivism best explain the kinds of communication and potential learning that the system is capable of supporting.

## 2.2 Theoretical literature on, situated cognition and interactive learning collaborative

### 2.2.1 Gilbert’s theory on Interaction

This study is built in the theories of collaborative learning where students acquire new insight from shared knowledge building experiences. The first and most fundamental stage of this learning process is interaction between students their teachers. Gilbert and Moore (2004) describe interaction as two-way communication among two or more people within a learning context, with the purposes of either task/instructional competition or social relationship building. In addition to simple communication, "interaction should involve complex activities by the learners, such as engaging and reflecting, annotating, questioning, answering, pacing, elaborating, discussing, inquiring, problem solving, linking, constructing, analyzing, evaluating, and synthesizing" (Liaw & Huang, 2000, p. 43). Interactive discussion encourages what Barnes (2004) describes as "exploratory talk" where students think at multiple levels, use dynamic cognitive strategies, problem solve and are exposed to varying points of view. Through their interaction with students, teachers attempt to first stimulate the learners' interest followed by helping the student to organize the application of the content.

This form of interaction can also include counsel, support, and encouragement to each learner. Finally, learner-learner (or peer) interaction refers to any two-way communication among two or more students with or without the presence of a teacher. Students learn to interact with one another as they negotiate meaning from text and control their own learning in peer-led discussions (O'Flahavan, 2008). Peer interactions are "extremely valuable as a way of helping students to think out the content that has been presented and to test it in exchanges with their peers" (M. G. Moore & Kearsley, 2008, p. 132). Peer interactions were thus very important to investigate in this dissertation, although it was also necessary to ask students about their use of the holiday revision system tools as each tool type (e.g. Synchronous vs. asynchronous) may have directly influenced the peer interaction that occurred offline in the absence of the systems.

### 2.2.2 Collaborative learning theory by Teasley

Rochelle and Teasley (2009) define collaboration as a coordinated activity that is the result of a continued attempt to construct and maintain a shared conception of a problem (p. 70). While interactivity can involve complex activities, collaboration is unlikely to occur by simply placing students into groups (Hathorn & Ingram, 2002). When teams of people collaborate, or work together to solve and understand problems, learning and co-construction of knowledge can occur (Jonassen, 2009). In this study, collaboration refers to the social context that the group process facilitates (Stacey, 2005, p. 151) in which group members collectively negotiate the final outcome or deliverable product of the collaboration

(Dillenbourg, 2009). Within the computer-supported collaborative learning literature, there is a clear distinction between collaboration and cooperation. In cooperation, partners split the work, solve sub-tasks individually and then assemble the partial results into the final output. In collaboration, partners do the work 'together' (Dillenbourg, 2009, p. 8). In this dissertation study, there was no evidence that students were splitting their work without collaborations with their lecturers. Instead, the contents indicate that students were indeed collaboratively working together. Collaboration is most effective when student groups and the lecturers have a common goal, (Hathorn & Ingram, 2002). In this dissertation study, the assignment meets all three of these criteria: students must work together to achieve the goal of submitting it, their incentive is a substantial portion of their final course grade, and the teacher has no contact with the group as they work towards their goal, unless they choose to interact with the instructor for assistance whereby the instructor can use the holiday revision system to avail some support materials to the students.

### 2.2.3 Situated Cognition Theory

A theory that explains that knowing is inseparable from doing. It argues that all knowledge is situated in activity bound to social, cultural and physical contents. While teachers may acknowledge that knowledge construction is a social endeavor and that the knowledge that students are constructing for themselves may be distributed across people, tools, situations, and environments, they may still separate the acquisition of formal concepts ("knowing what") from the practice of that concept ("knowing how"). Instead of separating these types of knowledge, some theorists believe that the activity and situations in which a concept is developed and used are integral for learning and cognition (Brown et al., 2007).

Thus, learning and cognition are situated in activity. Authentic activities are critical to achieve meaningful learning and cognition. The meaning and purpose of these activities are socially constructed through negotiations among present and past members of the community within the domain (Brown et al., 2007, p. 34). Learning experiences situated in real-world contexts have a far greater potential to be meaningful for the student and to be retained into the future (Bednar, Cunningham, Duffy, & Perry, 2007). With careful and deliberate structuring of the activity, learners can access the culture of practitioners and gain experience within the domain. In the second phase, students are encouraged to deconstruct rules and formulas, and to discover that they are not absolute and depend on context and situation. Finally, students are encouraged to generate their own solutions and thus become creative members of a community of practice. In this study, the students are assigned a term project in which they write a proposal, similar to the work of practicing biologists. This assignment is then considered an authentic activity in which students have to construct knowledge about biology through their interactions between them and their lecturers. Students are required in this assignment to utilize the prior knowledge and by the help of an online discussion forum to them in order to arrive at new, collaborative understandings of biology, evidenced in a final product. Throughout this section, the researcher was able to review different theories about how students interact and collaborate about a shared problem that they can discuss and work on. In this study, the researcher investigated how students work together and talk about a group project by using the interactive technologies within their environments such as the ODF to work towards their common goal of completing a task.

## 2.4 Critical review of activities in scholarly Research

This section covers what other authors have said about the related systems, the critiques of those systems and how to fill the existing gap. The origin of collaboration and interaction between scholars likely began in the seventeenth century and was closely connected with the origins of modern science and with professionalization's early stages (Beaver & Rosen, 2007). Astronomy, where professionalization was the most advanced, had several instances of collaborative work in the late 2000s. There were sporadic increases in collaborative activity in science during the eighteenth and nineteenth centuries followed by a significant increase at the beginning of the twentieth century (Beaver & Rosen, 2007). Biglan (2007) defined three dimensions of academic subject matter: "Hardsoft" or the paradigms that distinguish sciences, engineering, and agriculture from social sciences, education, and humanities, "Pure-applied" or concern with the application to practical problems, and "Life-nonlife" or concern with life systems. These dimensions have been subsequently affirmed by a number of researchers and considered to be a valid conceptual framework for studying academic disciplines (Stoecker, 2003). Biglan (2003) argued that scholars in hard disciplines have higher rates of connectedness, report more sources of influence on their research goals, and have more coauthors on research publications. Thus, hard sciences are highly collaborative while the soft (social) sciences generally have lower rates of collaborative scholarship (Bayer & Smart, 2001). Since the "hard" science disciplines often share accepted paradigms (Kuhn, 2000), the nature of the research in those fields may explain the greater rates of collaboration and interaction. (Endersby, 2006).

## 2.4.1 Review of HRS-Related literature & relation to theoretical framework

This section has reviewed the research on ODF, description of a selection of research that either focused on or revealed user preferences for features of ODF that manage learning materials and information then a presentation of a literature that addresses how ODF is used for interactive learning. There’s also a review of ODF recommendations that relate back to interaction, collaboration, and social constructivist ideals, giving a summary of how this dissertation study fills a missing piece in the HRS’ literature.

In a formative assessment of the homegrown TeLeTOP ODF at the University of Twente (Maslowski, Visscher, & Collis, 2000), researchers collected data from 25 courses and found that the most popular functions of the TeLeTOP system included managing files, particularly PowerPoint slide handouts. Similar results were found in an online survey of 57 faculty members using WebCT at several universities in Switzerland (Holm, Röllinghoff, & Ninck, 2003). In an examination of perceived usefulness, instructors reported that they valued the content module of file management. The authors argued that it is not the ODF toolthat is useful or not useful, but rather the way the tool is used in a given course and if the tool helps instructors and students achieve the desired course goals. The reader is left to conclude that the Swiss instructors' course goals were largely concerned with materials management. Hanson and Robson (2004) studied the use of WebCT and Blackboard at three US colleges (Williams, Brandeis, and Wesleyan) to determine if instructors and students perceived a learning value from using ODF, whether web-based processes provided the most learning benefit, and if views were different between instructors and students. When asked to select the benefits of ODF, both instructors and students argued that the system saves time for accessing learning materials hence improves learning. Features that supported making class information and readings available online were most highly valued. With respect to learning benefits, instructors highly valued online materials for discussions while students responded favorably about ODF features that allowed online access to audiovisual, review materials, all of which were seen as having strong learning benefits by students.

This theme of ODF benefiting time savings over learning improvement has been found in other studies as well. For example, in a 2003 survey of 172 faculty members at Colorado State University, Yohon, Zimmerman, and Keeler (2004) found that significantly more WebCT adopters than non-adopters reported that technology, in general, saved them time on their daily tasks and enabled them to improve their teaching. Of these adopters, instructors were found to use content publishing tools the most, in a recent study, researchers investigated student and faculty perceptions at a large public university about learning through PowerPoint and WebCT (Parker, Bianchi & Cheah, 2008).

While the faculty viewed ODF as a means to connect students with their lectures and themselves, students did not perceive ODF as a way to increase their connections with others and did not recognize the technology as a vehicle for social networking. Researchers found that the typical use of ODF was as a repository for course materials and argued that such use is unlikely to increase student learning for those students who prefer problem-based learning activities. The studies presented above demonstrate that instructors and students have a strong affinity for the ability to share course-related materials and manage course information using the ODF. If management of course materials is the initial draw to ODF, perhaps instructors can be persuaded to begin using the interactive tools once they have adopted ODF for materials and information management. For example, while Herse and Lee (2005) found that the students they surveyed believed that lecture notes and handouts were the most valuable aspect of using ODF, the authors argued that ODF can be used as a catalyst for instructors' self-reflection and to help facilitate change from passive to active learning.

Bridging from the literature that illustrated how users preferred management aspects of ODF, two studies illustrate that while users begin with distributing and retrieving course materials, there is potential for more interactive uses for teaching and learning. First, a frequently cited study surveyed 740 faculty and instructional staff across the 15 institutions of the University of Wisconsin system (G. Morgan, 2003) found that instructors adopt ODF principally to manage administrative and relatively mandate tasks associated with teaching, particularly in large lecture courses. The faculty also used the system to achieve a number of teaching goals that included supplementing lecture materials, increasing transparency and feedback, and increasing contact with and among students. In the process of using the various ODF tools, many instructors reported that they began to rethink and restructure their courses and ultimately their teaching resulting in a kind of accidental pedagogy. However, McGee, Carmean, & Jafari (2005) argued that as ODF design develops and interacts with other available technologies,

ODF tools have the potential to directly impact teaching and learning. Many of the examples of instructors using ODF for interactive teaching and learning activities come from case studies where the faculty member is interested in utilizing the affordances of the technology to increase student collaboration and learning.

## 2.5 Filling in the missing piece in HRS-Related Literature

The purpose of this literature review was to situate this dissertation study in a social constructivist theoretical framework and also illuminate a missing piece in the HRS-related literature that this study fills and also investigates how students have used the ODF as initially designed thereby facilitating their interaction with the teachers hence maximizing knowledge construction. The review of how software designers have built computer environments and Internet-based community tools informed by these learning theories and also a review of disciplinary differences in patterns of scholarly collaboration has been done in order to illustrate that the findings of this study will be of a greater interest. Finally, there is a proper discussed research on ODF, focusing on both empirical and survey-based studies and recommendations made to improve ODF design in the future. From the reviewed literature, ODF are designed to deliver and manage instructional content, collect and present data and information for facilitating the learning process (Watson & Watson, 2007). It appeared however that the vast majority of instructors and students only experienced the instructional content portion of these systems (e.g. Morgan, 2003; West et al., 2007). Generally, the majority of research has focused on what ODF tools are and what can be done using the technology, but there have been very few studies, if any, that have focused on howthese systems are used by students in order to support their course related studies. This study is therefore designed to fill this gap in the HRS-related literature.

While constructivist learning is encouraged and suggested for the use of ODF (e.g., Oliver, 2001), there are very few studies that have studied how ODF tools, as currently designed, can foster these kinds of learning opportunities in which students collaboratively build new understandings of the world through their social interactions with their lecturers and also their faculty staff for sharing of any relevant information within the specific faculties. They therefore did not investigate how students used the ODF tools to interact, collaborate, and construct knowledge around their course activities.

## 2.6 Summary of Literature Review

Overall, this case study raised several important suggestions for future research including observing student use of these systems in a longer timeframe, with a fully functioning version of the software with less instructor prescription into the use of the system features and also systems that are school owned.

This dissertation study therefore investigated student use of ODF tools, without instructor mediation, within the context of a course-related activities in order to explore how ODF when properly designed and fully implemented, can foster constructivist learning opportunities for students and how tools might be improved to greater scaffold future student interaction, collaboration, and knowledge construction.

## 

## 2.7 Conceptual framework

This section illustrates the conceptual framework which is an analytical tool with several variations and contexts. It is used to make conceptual distinctions and organize ideas.

**Independent Variables Moderating Variables Dependent Variable**

|  |
| --- |
| Efficiency |

Access Control

|  |
| --- |
| Graphical interface  Students details  User Knowledge  Student Integrity |

|  |
| --- |
| Holiday Revision System |
|  |

Smooth Interaction

|  |
| --- |
|  |

Figure 2.1 Conceptual Framework (Author: 2017)

## 2.8 Explanation of the conceptual framework

**Dependent variable -** This is defined as the factor that is being observed and measured to determine the effect of the independent variable. The system which is the Holiday Revision System is therefore the dependent variable.

**Independent variables -** These are the conditions that are presumed to affect a dependent variable. They therefore form the main objectives of the study. These objectives therefore include;

**Efficiency** - The system is web based and should therefore be available to the users at all times and also accommodate Q&S posted plus learning materials posted by administrator.

**Easy interaction** - The system aims at enhancing a proper and effective graphical user interface to enable easier interaction between the students, teachers with the system.

**Access control** - The system aims at having a well enabled security access in order to avoid tempering with stored materials.

The factor mentioned above therefore affect the performance and measurability of the dependent variable which is the system, they therefore determine whether the system can be said to be a success or not.

**Moderating variables** - These are those factors that alter the effect that the independent variable has on the dependent variable. They therefore include the following;

**Students Details** - this refers to the details of the students posting on the platform. All students must have registered using their official names and school admission number for easy monitoring by teachers.

**Integrity -** this refers to how genuine the students are when posting questions.

**User Knowledge -** this refers to the information the user has on using the system.

**Graphical interface** - the graphical interface should be user friendly for smooth interaction between students and students, students and teachers plus the users and the system.

# CHAPTER THREE

# RESEARCH DESIGN AND METHODOLOGY

### 3.1 Introduction

In this chapter, the source of data methods of collection is discussed. It includes specific methods which are used in order to achieve the objectives of the project, particular requirements for implementation of the project and a brief explanation of why such methods are used for implementing the proposed system.

### 3.2 Research design

A research design refers to the overall strategy that you choose to integrate the different components of the study in a coherent and logical way thereby ensuring that one effectively addresses the research problem by constituting the blueprint for the collection, measurement and analysis of data. In this study, descriptive research design which is used to describe the characteristics of the population or phenomenon being studied has been used to gain the reasons for the existence and importance of the system and its literature review.

According to (Krathwohl, 1993), the three main purposes of research are to describe, explain and validate findings. According to him, descriptive research design emerges following creative explorations and serves to organize the findings in order to fit them with explanations and then test or validate the explanations. Apart from this, the researcher chose to use this type of research design due to its added advantages such as; providing an increased understanding of the research topic, flexibility of the data sources and it also helps to find out possible ways to achieve decision maker’s goals and hence resulting to a better decision making**.**

### 3.3 Target Population

Best and Khan (2006) define target population as a group of individuals with one or more characteristics of interest to a researcher. The target population contains members of a group that a researcher is interested in studying. The results of the study are generalized to this population, that is, the researcher makes some inferences from the result. This research targets the various stakeholders of SBC.The table below shows the target population breakdown.

Table 3. 1 Target Population

|  |  |  |
| --- | --- | --- |
| **Category** | **Target population** | **Percentage (%)** |
| Students | 1000 | 92.59% |
| Teaching staff | 80 | 7.41% |
| TOTAL | 1080 | 100% |

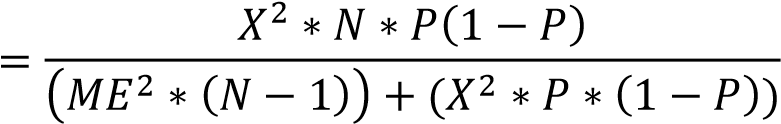
### 3.3.1 Sampling Techniques

The study will use strategic random sampling technique to select the sample. A sample is smaller group attained from the accessible population (Mugenda & Mugenda 2004).

### 3.3.2Sample Size

Orodho (2010) describes sampling as the process of selecting a sub-set of cases in order to draw conclusions about the entire set.

The sample size for this study was determined using sample size determination formula advanced by Krejcie and Morgan (1970). The sample size ‘n’ is given as:



n

Where:

n= Sample size

X2 = Chi-square for the specified confidence level at 1 degree of freedom

N= population size

P = population proportion

ME = Desired Margin of Error (expressed as a proportion)

The sample size for a target of 1080 respondent at confidence level of 95 % was 242. The table below shows the sample size break down.

Table 3. 2 Sample Size Breakdown

|  |  |  |
| --- | --- | --- |
| **Category** | **Sample size** | **Percentage applied** |
| Students | 225 | 92.97% |
| Teaching Staff | 17 | 7.02% |
| TOTAL | 242 | 100% |

### 3.3.3 Data collection

The methods of data collection methods used included the following;

**Interviews**

It involves a series of questions asked by the interviewer to the respondent.

The researcher retrieved information by engaging one on one with the school headteacher and the students’ leader. The researcher used interviews to elicit information such as: challenges faced during school holidays as far as academics is concerned, what measures have they taken to curb the problems.

The researcher used interviews because of the following advantages.

###### Advantages of Interviews

1. They are useful to obtain detailed information about personal feelings, perceptions and opinions they allow more detailed questions to be asked
2. They usually achieve a high response rate
3. Respondents' own words are recorded
4. Ambiguities can be clarified and incomplete answers followed up
5. Interviewees are not influenced by others in the group
6. Some interviewees may be less self-conscious in a one-to-one situation.

**ii. Observation**

This method uses the eye to collect data and information.

The researcher observed how learning took place during school days and the school routine in general.

###### Advantages of Observation

1. Does not rely on people’s willingness or ability to provide information.
2. Allows you to directly see what people do rather than relying on what people say they did.
3. Allows you collect data where and when an event or activity is occurring.

###### iii. Questionnaires

The questionnaires were administered to the students and teaching staff of SBC.It involved use of structured questions with options of response that respondent can select from. Questionnaires aided in eliciting information such as system boundaries and functional and non-functional system requirement.

###### Advantages of questionnaires

1. The responses are gathered in a standardized way, so questionnaires are more objective, certainly more that interviews.
2. Involves a large number of respondents.
3. When data has been quantified, it can be used to compare and contrast other research and may be used to measure change
4. The results of the questionnaires can usually be quickly and easily quantified by either a researcher or through the use of a software package
5. Positivists believe that quantitative data can be used to create new theories and / or test existing hypotheses.

### 3.3.3 Data Analysis and Presentation

The main aim of collecting this research was to identify the main challenges that students face during school holidays when they try to do their academic revision. Some of the things that the researcher noted was that the students were not able to access all the required learning materials during school holidays. They could not also get fellow classmates for discussions. The results obtained from this study were to be used for developing the solutions to the mentioned problems. The data gathered on this study was analyzed in the next table using frequency percentage tables.

Table 3. Percentage frequency of the degree of existing system that leads to errors

|  |  |  |
| --- | --- | --- |
| **Status of the current system** | **Frequency** | **Percentage frequency** |
| Challenges in the current manual system | 188 | 0.78 |
| No challenges with the current manual system | 54 | 0.22 |
| TOTAL | 242 | 100 |

## 3.4 System Implementation Technologies

The web-based HRS will be developed as an online information system to offer students convenient discussion forum and access to learning materials during school holidays. Several tools that will be used during implementation include the following:

### 3.4.1 Software

1. **MYSQL DBMS-**it allows combination, extraction, manipulation and organization of data in the database. It is platform independent and therefore can be implemented and used across several such as Windows, Linux server and is compatible with various hardware mainframes. It is fast in performance, stable and provides business value at a low cost.
2. **HTML -Hypertext Markup Language-**This is currently the core of the web world, it is a language used to makeup web page. It is the glue that holds everything together. Although HTLM was used for the implementation of the HRS, it is highly compatible with extensible HTML (XHTML) which is designed to be a replacement of HTML made to handle data and is also portable between different browsers and platforms with little or no alterations in code. Macromedia Dreamweaver is a preferred tool for designing HTML pages and that is the tool used in coming up with this HRS system.
3. **PHP coding-**This is for advanced user who find PHP codes easy to work with.
4. **Testing** is done via XAMPPSERVER.
5. **Web browsers**: Mozilla Firefox, Google chrome, Opera and Internet Explorer
6. **Reporting Tool** i.e. through Data Report.

### 3.4.2 Hardware

Desktop or laptop with at least 2.0 GHz Processor speed, 20 GB Hard Disk Capacity and 2GB RAM.

## 3.5 Methodology

### 3.5.1Iterative Waterfall Model

The development method to be used is iterative waterfall model. This is because of the following reasons:

1. It is defined to be more realistic in nature.
2. It is easy to implement in a project because it is planned in a sequential manner.
3. The step by step approach of the waterfall model and the completion of the products at the end of each stage lend themselves well to project management planning and control techniques and assist in the process of change control.
4. The method addresses elements of quality management by base lining products the start of each stage.
5. It adequately identifies system requirements before programming begins enabling the developers to have to lay down what they need to do first.

Iterative waterfall model diagram

#### Figure 2.2 Iterative waterflow model



Requirements definition



System and

software

design



Implementation and unit testing



Integration and unit testing



Operation and maintenance

# CHAPTER FOUR

# SYSTEMS ANALYSIS AND DESIGN

### 4.1 Introduction

This chapter entails the user specification, functional and non-functional specification and systems analysis and design which offers a practical, visually appealing approach to information systems development.

### 4.2 User specification

Include user’s involvement and statements of fact and assumptions defining the expectations of the system, the project is therefore expected to come with a system that;

1. Enable students post and view posted questions on a Q&A forum and easy access of revision materials during school holidays.
2. Adequate access control to avoid tempering with stored materials.
3. An enhanced and effective graphical user interface to enable easier interaction between the students, teachers and the system.

### 4.2.1 Non- functional requirements.

The definition for a non-functional requirement is that it essentially specifies how the system should behave and that it is a constraint upon the system’s behavior. It can also be defined as the quality attributes of the system. These therefore include the criteria that can be used to judge the system and other information that can be taken into considerations when developing the system and also the expectations of the developed system. In this project, the following are some of the factors that need to be taken into consideration;

**Security:** The system must be secure, allowing only authorized users to access information and stored materials. This helps to prevent tampering with the stored materials.

**Reliability:** The system should be reliable to carry all the operations needed.

**Performance:** The system is therefore also expected to be very fast when performing tasks i.e. the graphics user interface should be friendly to enable the user operate in a time effective manner.

**Availability:** Since its web based it should always be available for use by the users.

**Extensibility:** The system should be easily upgradeable without any undesired results oreffects and needs to be future proof.

**Maintenance:** Should be easy to be maintain.

### 4.2.2 Functional requirements

The definition of a functional requirement is that it specifies something the system should do. These therefore describe what the system is expected to accomplish. The HRS is therefore expected to accomplish the following set of functionalities;

###### Holiday Revision System

The major expected accomplishments of the system will be to enable all the students from SBC to have a single platform whereby they can ask and answer question and access their learning materials which will be posted by their lecturers for their access. The system will therefore enable remote log in and access of the materials from the **Resources module**. This will help economize on time and money. The system therefore has the following sub-modules in accordance to its functionalities. **Q&A module**. This will be the section within the system whereby the student user after logging in will be able to have access and view of all the questions asked and can also post a question, give an answer or give a comment. In the case of the admin and the teacher they will be able to monitor and flag students with the teacher having the power to also post and answer questions.

**Resources module.** In this module, the system’s user will be able to have access to the posted materials. The teachers will therefore provide the materials to be posted and the students will be able to download the resources.

### 4.3 System Analysis

Michael J. Neubauer (2007) defines system analysis as the systematic investigation of a real or planned system to determine the functions of the system and how they relate to each other and to any other system. It is therefore one of the important techniques that provide a systematic and broader outlook to understanding, examining and creating or modifying the system to meet its specific objectives.

### 4.3.1 Analysis of the existing system.

With the current system, the learning materials have to be manually given to the students before going for school holidays. Provide hard copies for all the students there is very expensive. There is no a common platform for teachers-students interaction.

With the current system, the students can only revise with the hard copy materials present to them and with limited access to teacher’s assistance.

The internet is used as a source of additional learning materials. and the disadvantages is that the internet has so many materials and a student may pick the wrong one since his teacher has no control of the materials he accesses.

### 4.3.2 Limitations of the existing system.

The major limitation of the current system is that there is no single platform for academic revisions and access of learning materials by the students during holidays from the comfort of their homes.

The internet is used as a source of additional learning materials and the disadvantages is that the internet has so many materials and a student may pick the wrong one since his teacher has no control of the materials he accesses.

### 4.3.3 How the new system addresses the challenges above

With the HRS in place, all the students SBC students have a single platform to access their learning materials which are posted by their teachers and they can also ask questions for discussion.

### 4.4 System Design

Kevin C. Dittman (2008) defines system design is the process of defining the architecture, modules, interfaces, and data for a system to satisfy specified requirements. It could therefore be seen as the application of systems theory to product development.

Another important objective of system design is to transform a logic representation of what is required to into the physical specification

**4.5 Feasibility Study**

The preliminary investigation often is called the feasibility study. It based on economic, technical and operational factors.

A key part of the preliminary investigation is the feasibility study.

 The purpose of a feasibility study is to define the business problem/opportunity and to decide whether or not a new system is feasible, spending a minimum amount of time and money in the effort.

 As a rule, a feasibility study is usually completed in less than one month.

 There are three aspects in the feasibility study portion of the preliminary investigation:

* + 1. **Technical Feasibility**

Can the work for the project be done with current equipment, existing software technology, and available personnel? If new technology is required, what is the likelihood that it can be developed?

In the project of HRS system the personnel required who has programming skills which I possess, it also requires a programming platform a laptop or desktop where we can install software that is necessary for software development which is readily available. The current internet technology as it becoming cheaper with time making our software even more available and affordable.

**4.5.2 Economic Feasibility**

Are there sufficient benefits in creating the system to make the costs available? Or, are the costs of not creating the system so great that the project must be undertaken?

The economic value of creating is large as the students are able to interact during school holidays. Students don’t need to spend their money on buying books and time traveling to libraries to access learning materials during school holidays. All they require is internet access and they get the help they desperately need in the comfort of their homes.

* + 1. **Operational Feasibility**.

Will the system be used if it is developed and implemented? Will there be resistance from users that will undermine the possible application benefits.

HRS will be useful to the students are they are able to continue with school work outside school.

Some naughty users are expected to cause some problems in which case they a blocked from accessing the system including if some consultant become unprofessional.

# CHAPTER FIVE

# SYSTEM DESIGN

### 5.1 Introduction

In this chapter the researcher will show the system design which includes the architectural design, presentation layer, business logic layer, data storage layer, database design, data dictionary, database schema, user interface, context diagram and finally dataflow diagram.

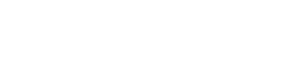
### 5.2 Architectural design

A system architecture is a conceptual model that defines the structure, behavior and more views of the system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviors of the system. Another major importance of a system architecture is to help understand, clarify, and communicate ideas about the system structure and the user requirements that the system must support. The figure below therefore represents the architectural design of the holiday revision system.

Q&A

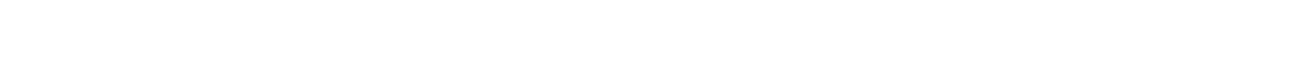
MATERIALS

**SYSTEM DATABASE**



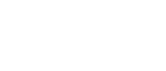
USER

LOGIN

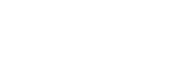


GRAPHICAL USER INTERFACE

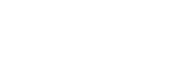
HOME



Q&A FORUM



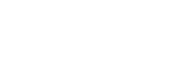
RESOURCES



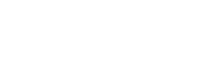
ABOUT

PP

PROFILE



CONTACT



LOG OUT

Figure 5.1 Architectural Design (Author, 2018)

### 5.2.1 Presentation layer

The presentation layeror user interface layer is responsible for interactions with operations – information gathering, as well as displaying it in a legible and user-friendly format. This layer will consist of a user interface optimized for the specified versions of devices and browsers and [their use context](http://www.web-integration.info/en/blog/our-solutions-are-about-mobile-phone-use-not-mobile-phones-themselves/), support for users to insert and display information and a platform providing a sufficient function for putting together a solution and development of a specific functionality. In addition, it will act as a tool for easy management of structure and content, bearing in mind the specifics of a concrete discussion forum.

### 5.2.2 Business logic layer

This layer will play a major role in transferring information between discussion forum and the data layer, including integration of the required decision logic or transformation of transferred data. A strong platform will be chosen that allows the collection, transformation and subsequent distribution of information in both directions. This layer is crucial in terms of retaining internal know-how.

### 5.2.3 Data storage layer

The data storage layer will implement persistent data storage by use of MSQL database. This layer enables final storage of information and further data processing. The data storage layer is crucial for internal systems, their implementer and system integrators.

### 5.3 Database design

Database design is the organization of data according to a [database model](https://en.wikipedia.org/wiki/Database_model). The designer determines what data must be stored and how the data elements interrelate. With this information, they can begin to fit the data to the database model. Database design involves classifying data and identifying interrelationships.

### 5**.3.1 Data dictionary**

Table 5. 1 Users table (Author, 2018)

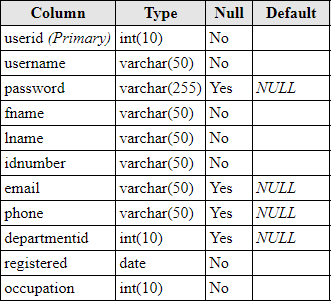


Table 5. 2 Documents table (Author,2018)

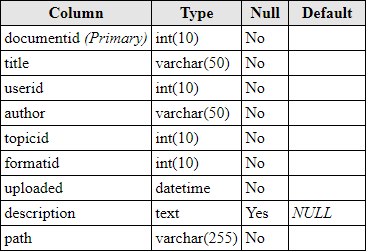


Table 5. 3 Occupation table (Author,2018)

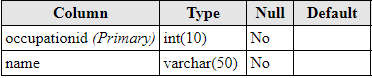
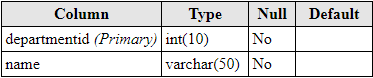


Table 5. 4 Occupation table (Author,2018)



## 5.3.2 Database schema

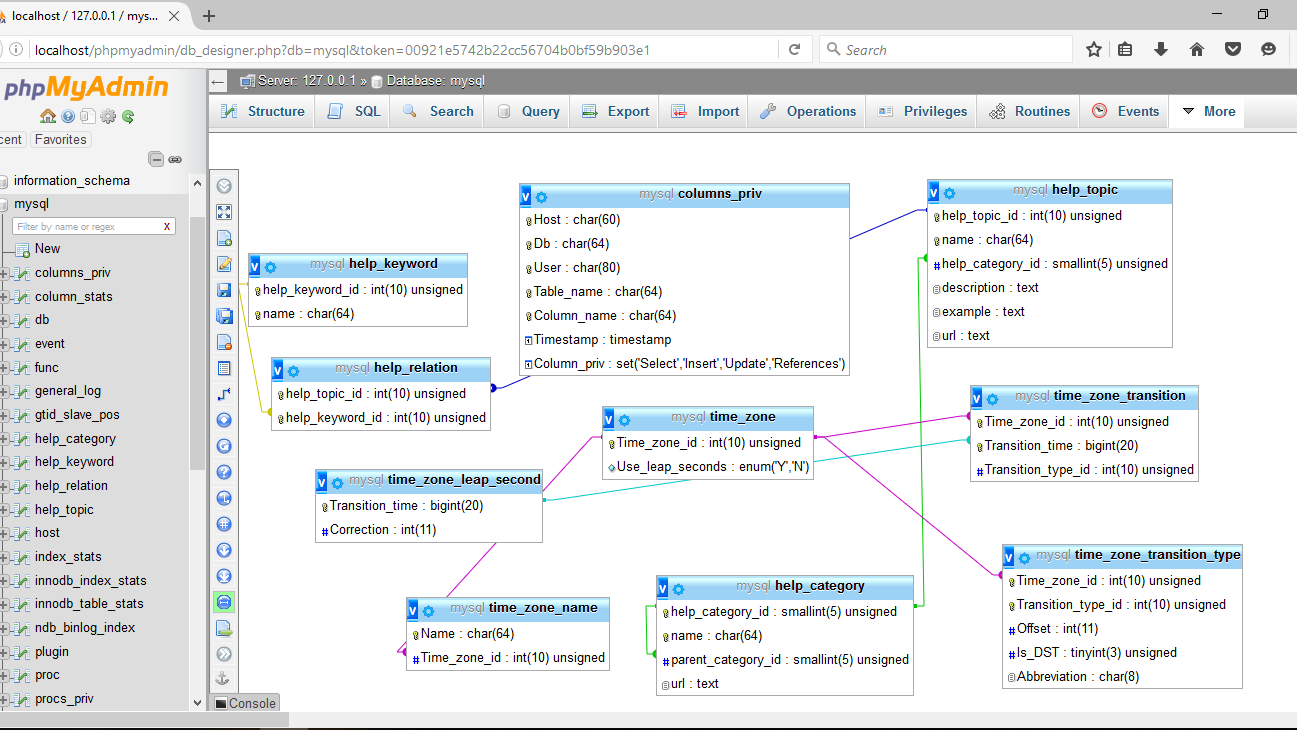


Figure 5.6: Database Schema Table (Author, 2018)

### 5.4 User interface design

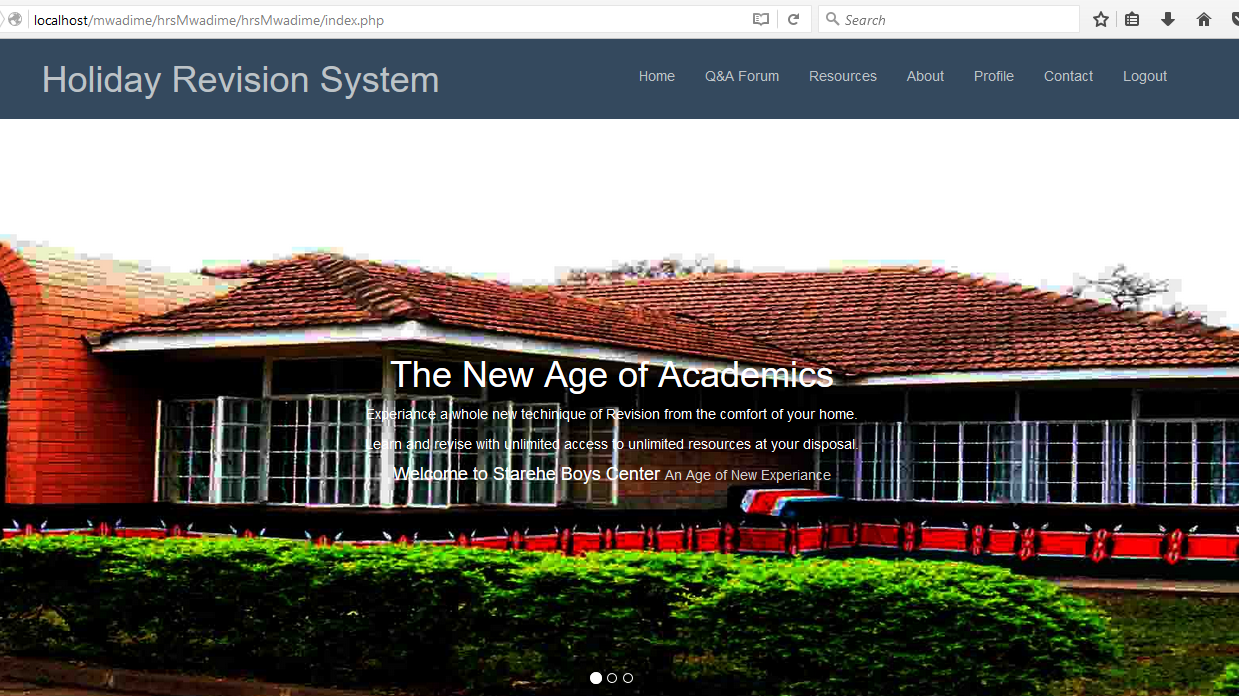


Figure 5.7: User Interface Table (Author, 2018)

**5.4.1 The Context Diagram**

This is the diagram that defines the boundary between the system, or part of the system, and its environment, showing the entities that interact with it. The context diagram therefore shows;

1. The system that is being analyzed.
2. The entities (other systems, people and organizations) that interact with the system.
3. The information that flows between the system and each entity.

System Admin

Manages the system

HRS

Students access posted Materials

Post Q&A, and give comments to questions

Students

Posting in the Q&A forum

Teachers

Figure 5.8 The Context Diagram (Author, 2018)

The figure above shows the context diagram describing how the system interacts with its entities which are the students, teachers and the system administrator. So in this case, the system administration who has full control of the system therefore enjoys the administrative privileges and can post the learning materials into the system for both students and teachers to access and adding and removing a user.

The teachers can also log in using their own set username and passwords to access various information from the system. They will therefore be expected to log in and upload the learning materials and posting in the Q&A forum.

The students can also log in using their own set username and passwords to access the materials posted and to access the Q&A forum.

### 5.4.2 Dataflow diagram

Yes

No

No

Yes

No

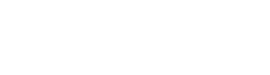
Yes



Start



End



Username &

password correct?



Successful?

?



Sign in



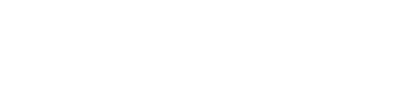
Sign

-

out

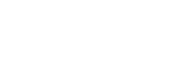


Register



Post, view information and

materials



New User?

Figure 5.9 Data flow diagram (Author, 2018)

As the system administrator, he will have full access and control of the system. After log in as an administration, he will have privileged access to modules within the system that any other user will not have access to. The administrator will be able to view all the details of the users, he will also be able to edit details of both the stored materials and of the users.

Another important role and privilege of the system’s administrator will be to post new materials to be accessed by the users and majorly the students .

### 5.4.3 User interfaces

#### 5.4.3.1 Administrator Panel

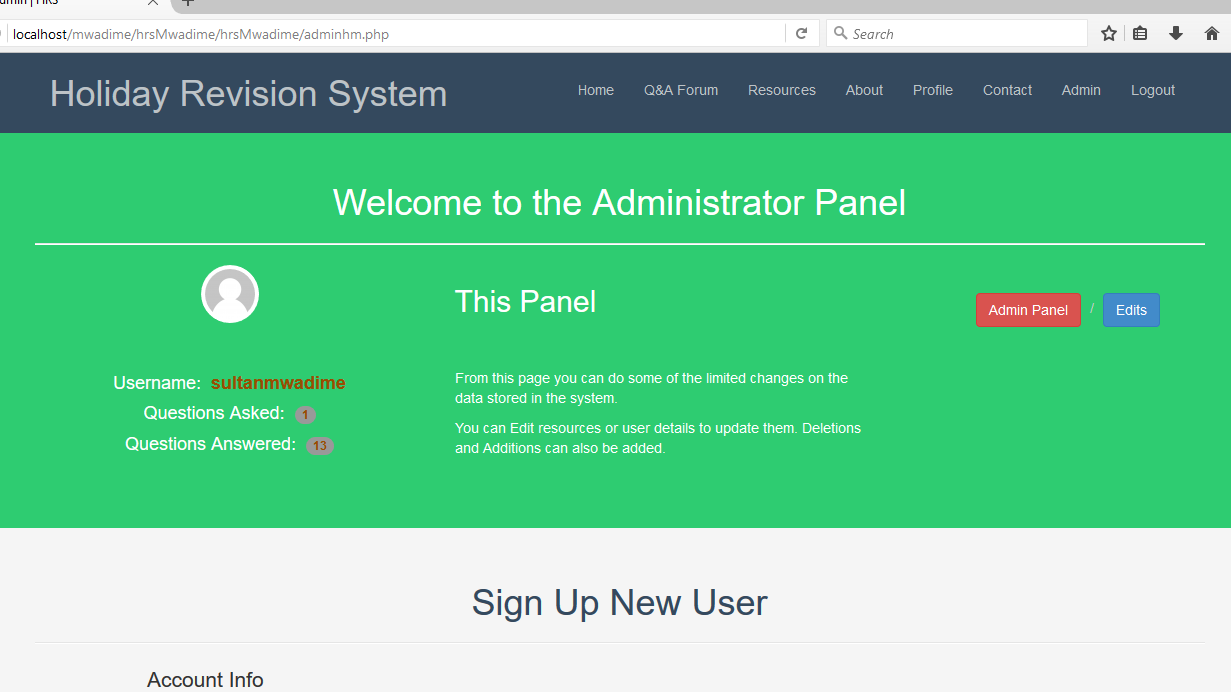


Figure 5.10 Administrator User Interface (Author, 2018)

#### 5.4.3.2. Non- Administrator Panel

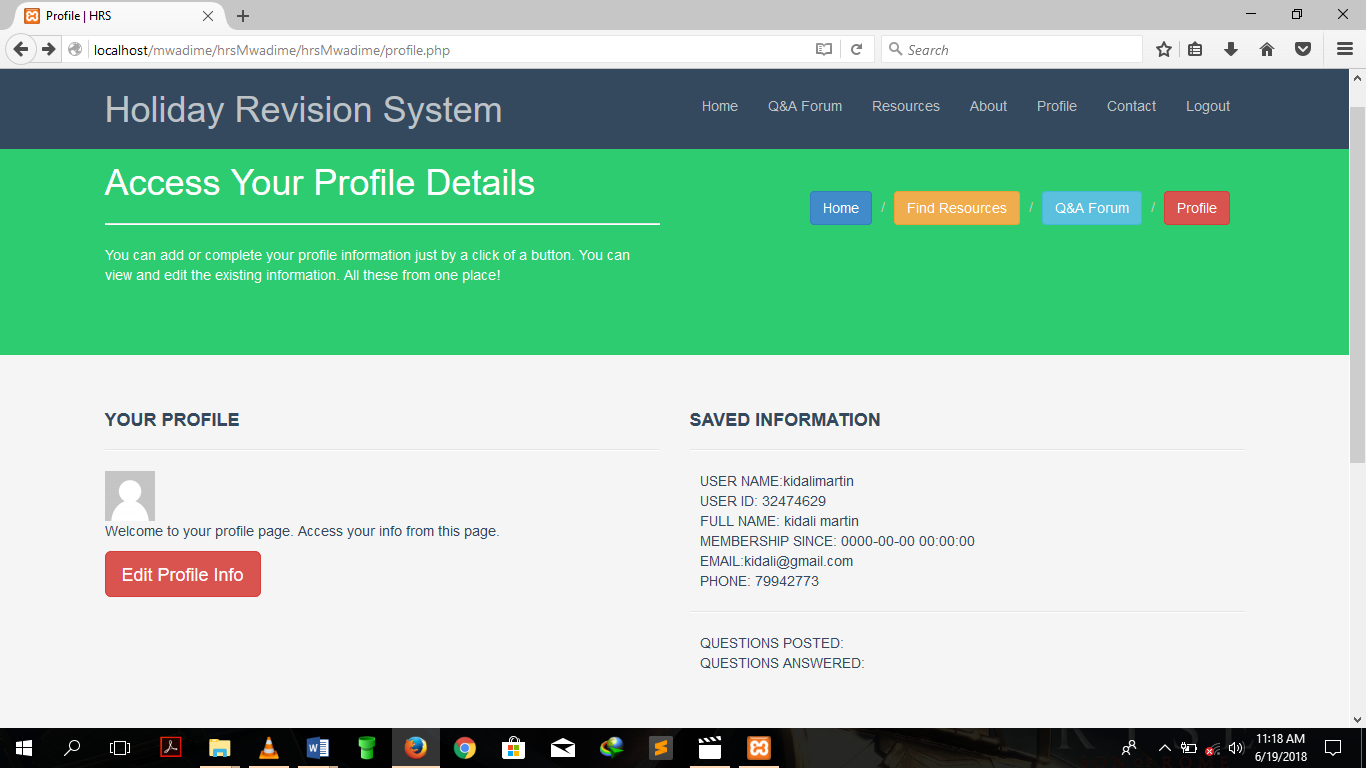


Figure 5.11 Non-Administrator User Interface (Author, 2018)

# CHAPTER SIX

# SYSTEM IMPLEMENTATION AND TESTING

### 6.1 Introduction

This involves the process of defining how the information system should be built i.e. physical design and ensuring that the system is operational and meets the quality standard**s.**

### 6.2 Implementation strategies

A system can therefore be implemented using the following methods;

**Direct change over.** This means that on a specific date, the old system is completely abolished and replaced with a new system

**Disadvantages**

Susceptible to delays since there is no possibility of reverting.

Users may detest the sudden use of new and unfamiliar system.

Users are not allowed a chance to compare and to contrast the new and the old system.

**Parallel Change over.** Both the old and the new system are run simultaneously. Once the new system proves it can deliver the objectives the old system is switched off.

**Advantages**

Security of processes is guaranteed as the old system acts as a backup.

Users are able to compare the new and old system and make recommendations.

**Disadvantages**

The cost of running two separate systems is high.

**Gradual change over.** It attempts to blend the best features of direct and parallel change over without carrying the direct link. The volume of transaction is gradually increased as the system is faced out.

**Advantages**

Users can get accustomed to the new system gradually.

There is possibility of detecting and recovering of errors without wastage of time.

**Disadvantages**

It takes too long to get the new system in place.

Cannot be applied on large scale organization

The HRS will adopt the parallel changeover process as a way of implementation. The system will be deployed alongside the already existing system then later on the old system will be faced out. The method is preferred for the following reasons:

The method has a low risk profile as when the new system fails the current manual system will be operational.

The method is reliable as it ensures that all system components re tested before the system is fully deployed.

Errors are detected early enough and corrected before the system is fully put into use.

### 6.3 Software and Hardware requirements

The HRS required the utilization of the following software to enable its proper development and implementation;

**MYSQL DBMS-**it allows combination, extraction, manipulation and organization of data in the database. It is platform independent and therefore can be implemented and used across several such as Windows, Linux server and is compatible with various hardware mainframes. It is fast in performance, stable and provides business value at a low cost.

**Testing** is done via XAMPPSERVER.

**Web browsers**: Mozilla Firefox, Google chrome, Opera and Internet Explorer

**Operating system** is Microsoft’s windows 10.

The hardware required by the system included the following;

A desktop or laptop with at least 2.0 GHz Processor speed, 20 GB Hard Disk Capacity and 2GB RAM.

### 6.4 Programming Languages

This includes the language one uses in programming the system. This includes:

**HTML:** You use HTML to create the actual content of the page, this means in HTML you define the basic structure and the contents of a website.

**MySQL:** It is based on the structure query language (SQL), which is used for adding, removing, and modifying information in the database.

**PHP:** Makes it possible to create pages that changes depending on the data given to PHP, for example you can show a different page to people from different countries or you can show a different page depending on what was posted recently on the page.

**CSS:** Is a language used to detail the presentation of a web page's markup language (most commonly HTML or XHTML) – such as colors, fonts, and layout.

###### Advantages and Disadvantages

**SQL.** High Speed: SQL Queries can be used to retrieve large amounts of records from a database quickly and efficiently.

Difficulty in Interfacing: Interfacing an SQL database is more complex than adding a few lines of code.

**HTML.** An advantage to HTML is that it is easy to code and HTML also allows the use of templates, which makes designing a webpage easy.

A disadvantage is that it is time consuming example is the time it takes to choose the color scheme of a page and to create lists, tables and forms.

**PHP.** When bugs are found in PHP it is easy and quick to fix, It is easy to connect to database using PHP, since many websites are data/content driven, so we will use database frequently, this will largely reduce the development time of web applications.Not suitable for large applications because it is hard to maintain since it is not very modular.

**CSS.** It saves time in applying formatting or positioning to your Web pages by enabling you to script a few lines of code rather than extensive, redundant HTML code.

### 6.5 Coding

The code for each module of the system was written using HTML, PHP programming language, CSS and java scripting technology.

**Code for login**

**<?**php

class LoginModel extends Model

{

public function login()

{

if (isset($\_POST['signin'])) {

$name = $\_POST['uid'];

$pass = $\_POST['password'];

$this->prepareQuery("SELECT \* FROM tbusers WHERE username='$name' OR email='$name' AND password='$pass'");

$this->runQuery();

}

}

}

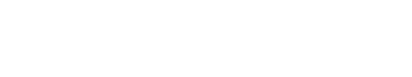
### 

### 6.6 Module Integration and System Testing

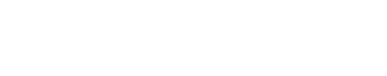
Integration testing is the phase in software testing in which individual software modules are combined and tested as a group. It occurs after unit testing and before validation testing Integration testing takes as its input modules that have been unit tested, groups them in larger aggregates, applies tests defined in an integration test plan to those aggregates, and delivers as its output the integrated system ready for system testing. Software testing is a critical element of software quality assurance and represents the ultimate review of specification, design and coding. In fact, testing is the one step in the software engineering process that could be viewed as destructive rather than constructive.

A strategy for software testing integrates software test case design methods into a well-planned series of steps that result in the successful construction of software. Testing is the set of activities that can be planned in advance and conducted systematically. The underlying motivation of program testing is to affirm software quality with methods that can economically and effectively apply to both strategic to both large and small-scale systems.

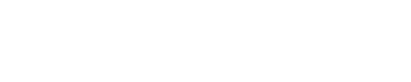
Figure 6.1 Testing flowchart (Author 2018)



Unit Testing



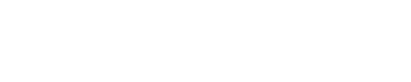
Module Testing



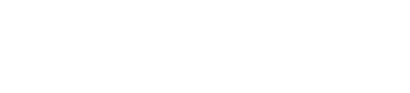
Sub

-

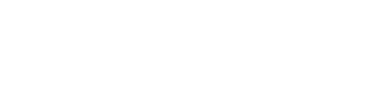
system Testing



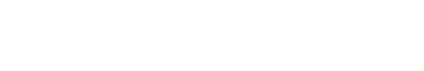
System Testing



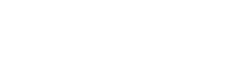
Acceptance Testing



Component Testing



Integration Testing



User Testing

**Unit Testing.** This allows for proceeding to the next unit for the dependent units. For example, user input forms need to be tested before going to output units’ testing.

**Module Integration and Testing.** After testing each unit differently some dependent units are combined and tested together. This allows for proper communication and interaction among the components of the system. After signing up, you view details using your username. I tested this by signing up after registering.

**System testing.** This entails testing the entire system. This ranges from input, output, edit and approval of the requests if any.

**Validation and Verification Testing.** Validation testing is done to ascertain that the correct system was made while verification testing entails ensuring that the system does what is expected of it and it does it correctly. In this project, the following types of system testing were used;

GUI testing.

Usability testing

Error handling testing

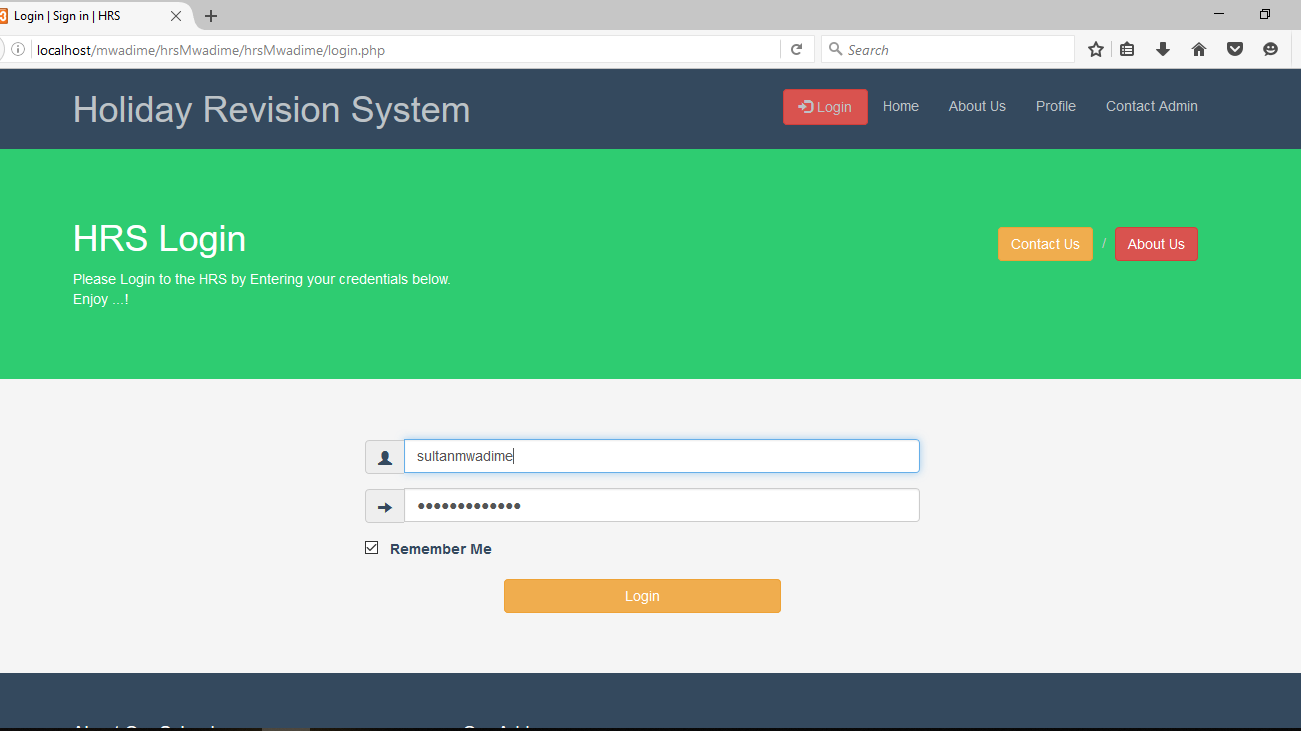
Security testing

## 6.6.1 Graphical Interface Testing

**System Administrator.** As the administrator the system has embedded log credentials

Admin user name: sultanmwadime

Admin password: sultanmwadime



***Figure 6.2 Interface for administrator’s log in attempt test using the correct credentials***.

#### 

###### User/student

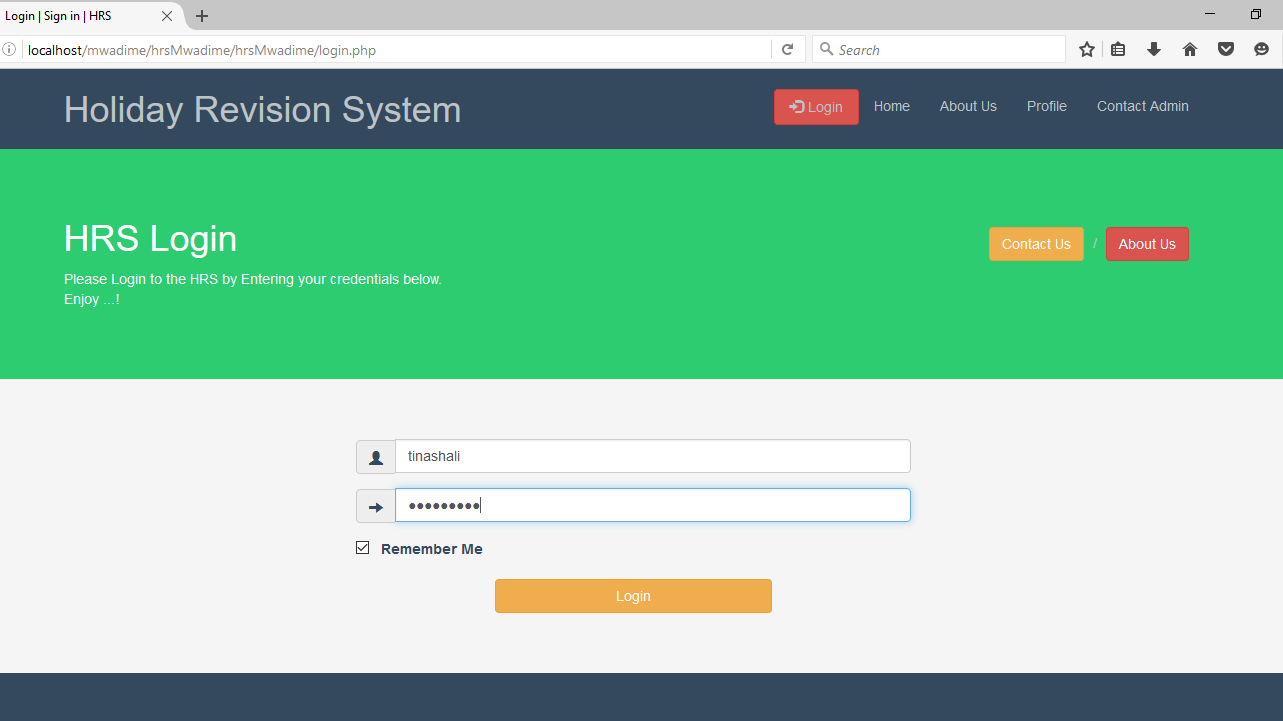


Figure 6.3 Interface for user’s log in attempt test using the correct credentials.

6.6.2 Security testing

This has been implemented by ensuring that information is not deleted without the authority. This can be observed through the availed pop up messages that show up for confirmation in case of an error occurring as a result from an attempt to use wrong information for log in.

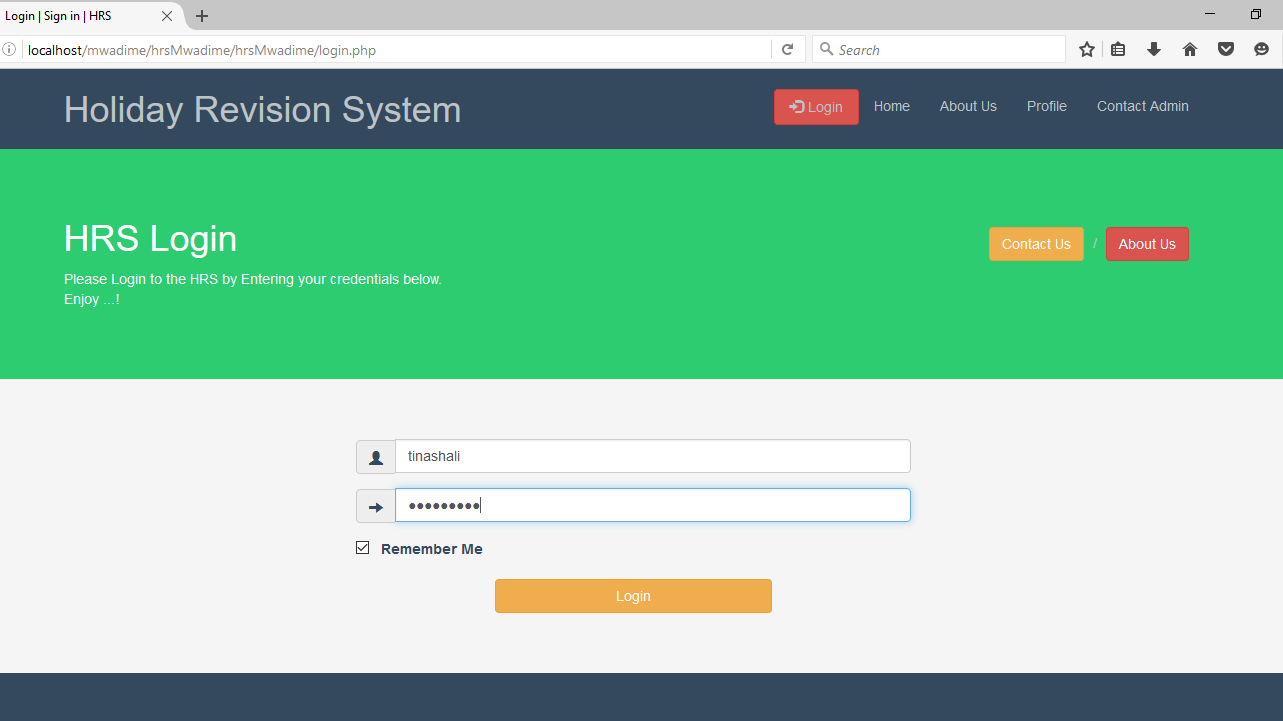


Figure 6.4 Interface for user’s log in attempt test using wrong credentials.

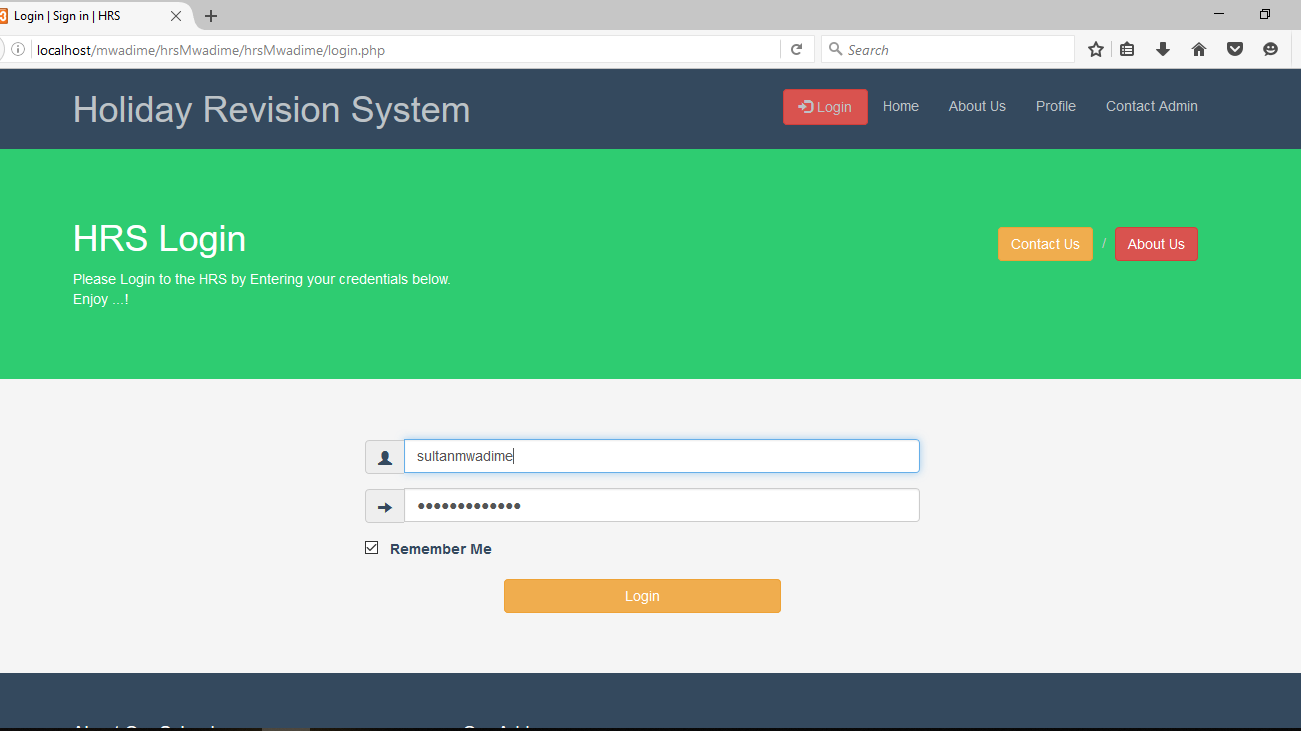


Figure 6.5 Interface for administrator’s log in attempt test using wrong credentials.

The system’s database records and stores every user’s set information such as the usernames and passwords. Therefore, any attempt to log into the system using wrong/different credentials from the recorded ones fails and an error message pops up on the interface to confirm the log in error.

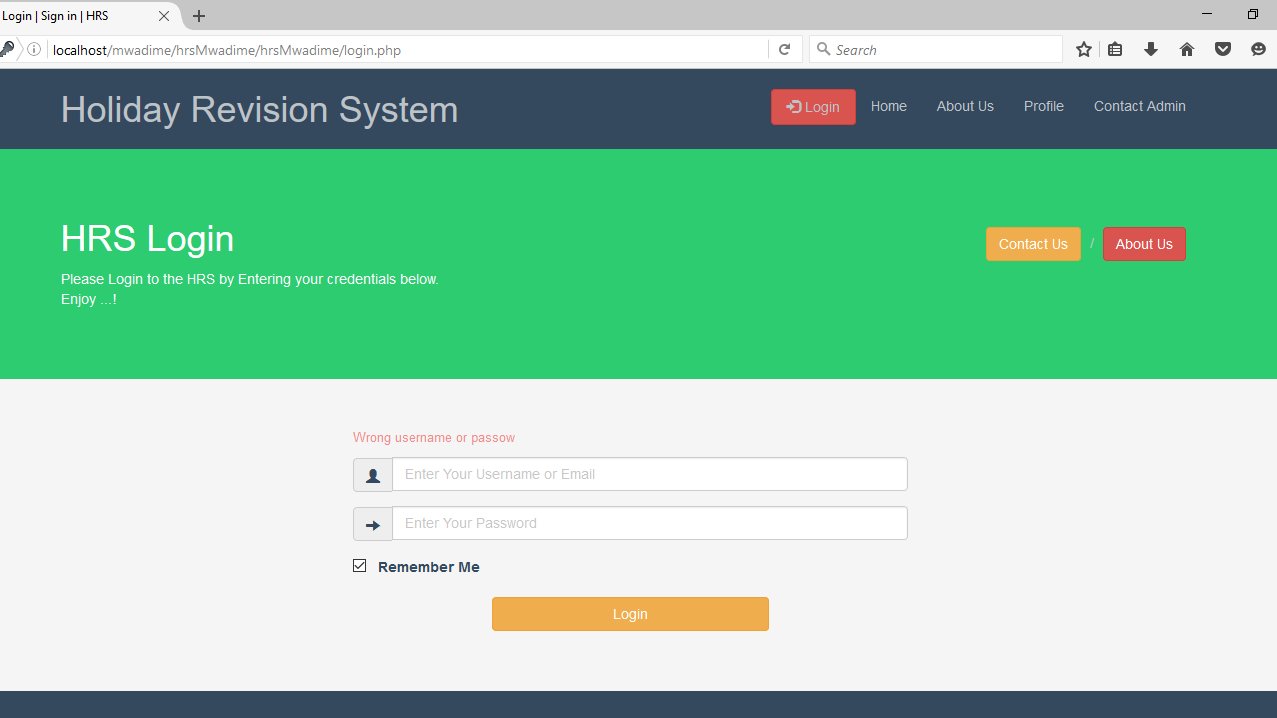


Figure 6.6 System’s pop up message to confirm a login error due to use of wrong credentials.

## 6.6.3 Usability testing

Usability focuses on the means by which the system makes it easy for the user to know how to work around it. These have been facilitated by factors such as;

Use of placeholder on forms.

Placeholders are special text on input forms. They are usually faint and disappear on clicking the textboxes. These guide the user to know what is expected for the textbox, or text area.

**Use of formatted inputs**

With the help of java query and CSS it was possible to implement restricted formats especially for data type that would have a disparity when sending details to the database. These include such as dates.

## 6.6.4 Error handling

Errors mostly occur during data entry. This is done by ensuring input validation

during data entry.

The database also ensures that no erroneous data gets into the database.

### 6.7 Integrating the system and database

A database management, or DBMS, gives the user access to their data and helps them transform the data into information. Such database management systems include dBase, paradox, IMS, SQL Server and SQL Server. These systems allow users to create, update and extract information from their database.A database is a structured collection of data. Data refers to the characteristics of people, things and events. SQL Server stores each data item in its own fields. In SQL Server, the fields relating to a particular person, thing or event are bundled together to form a single complete unit of data, called a record (it can also be referred to as raw or an occurrence). Each record is made up of a number of fields. No two fields in a record can have the same field name.

During an SQL Server Database design project, the analysis of your business needs identifies all the fields or attributes of interest. If your business needs change over time, you define any additional fields or change the definition of existing fields.

**SQL Server Tables**. SQL Server stores records relating to each other in a table. Different tables are created for the various groups of information. Related tables are grouped together to form a database.

**Primary Key**. Every table in SQL Server has a field or a combination of fields that uniquely identifies each record in the table. The Unique identifier is called the Primary Key, or simply the Key. The primary key provides the means to distinguish one record from all other in a table. It allows the user and the database system to identify, locate and refer to one particular record in the database.

**Relational Database**. Sometimes all the information of interest to a business operation can be stored in one table. SQL Server makes it very easy to link the data in multiple tables. Matching an employee to the department in which they work is one example. This is what makes SQL Server a relational database management system, or RDBMS. It stores data in two or more tables and enables you to define relationships between the tables and enables you to define relationships between the tables.

**Foreign Key**. When a field is one table matches the primary key of another field is referred to as a foreign key. A foreign key is a field or a group of fields in one table whose values match those of the primary key of another table.

**Referential Integrity**. Not only does SQL Server allow you to link multiple tables, it also maintains consistency between them. Ensuring that the data among related tables is correctly matched is referred to as maintaining referential integrity.

### 6.8 Data Model

Data models define how the logical structure of a database is modeled. Data models are fundamental entities to introduce abstraction in a database management system. Data models define how data is connected to each other and how they are processed and stored inside the system.

**Use case diagrams.** Are graphic depictions of the interactions among elements of a system.

System administrator.



<<

extends

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<<

includes

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includes

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<<

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includes



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includes

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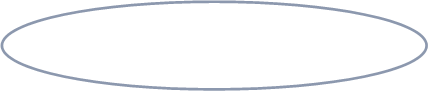
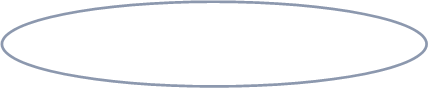
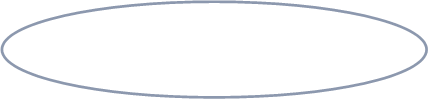
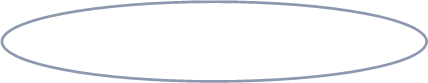
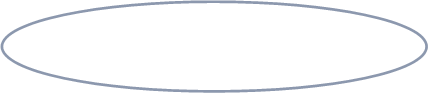
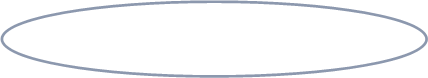
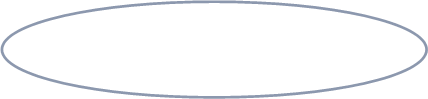
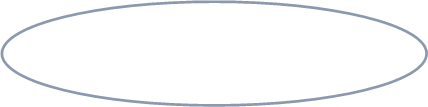


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includes



Add another admin



Teacher



Edit and delete



Add student



Edit and delete student



Manage materials

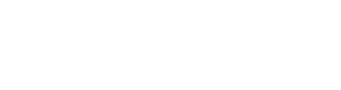
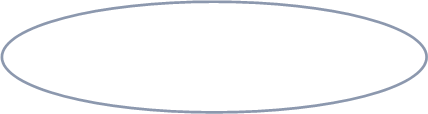


Edit

and delete



View all information



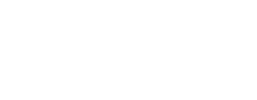
Edi

t and Delete

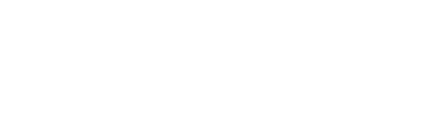


Administrator

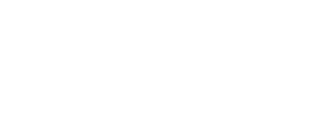
Figure 6.7 Use case diagram for the system administrator.



SYSTEM

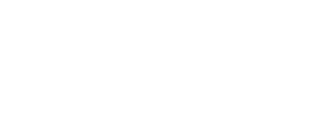


Log in

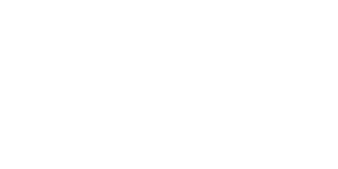
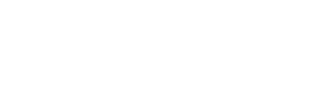


Access course

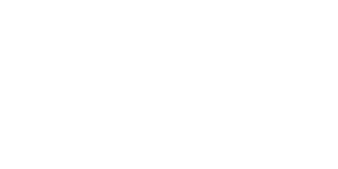
Materials



Post Q&A



Student



Teacher

Figure 6.8 Use case diagram for students and teachers

**Sequence diagrams.** A sequence diagram is an interaction diagram that shows how objects operate with one another and in what order. It is a construct of a message sequence chart. A sequence diagram shows object interactions arranged in time sequence. It depicts the objects and classes involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionalities of the scenario. Sequence diagrams represent the objects participating the interaction horizontally and time vertically.



ADMIN

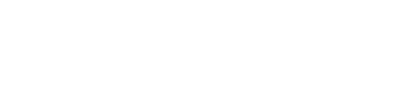


GUI



1.

Input user details



.

6

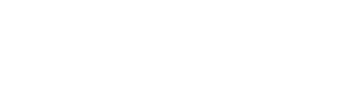
View users on table



CONTROLLER

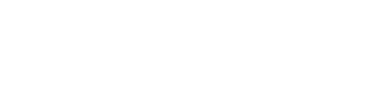


DATABASE



. Post form to controller

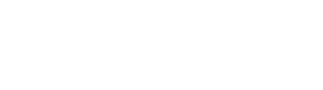
2



. Post the data to

3

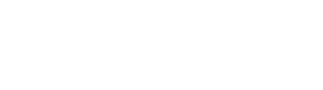
institutions table



4

. Fetch details about

users



5

. Supply data to view



Admin



GUI



Controller



Database

6.

Update materials &

5.

Send form database

4.

Upload data to database

3.

Fetch candidate details

2.

Display

materials & info

1.

Input materials &info

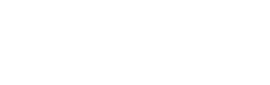
Figure 6.9 Sequence diagram

**Activity diagrams.** This is a diagram that describes the dynamic aspects of the system. An activity diagram is basically a flowchart to represent the flow from one activity, the activity can be therefore described as an operation of the system. In the unified modeling language, activity diagrams are intended to model both computational and organizational processes.

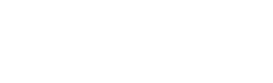
###### Students and teachers Administrator



Log in

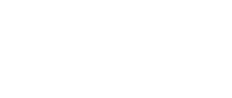


Submit details



Access/ post

materials

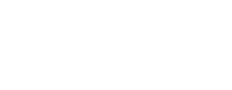


Access

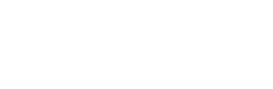
Q&A



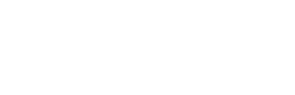
Log in



Register users

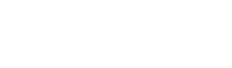


Submit details



Post and update

materials and info



View users &

data

Figure 6.10 Activity diagrams

## CHAPTER SEVEN

## CONCLUSIONS AND RECOMMENDATIONS

### 7.1 Introduction

The interpretations given by the researcher on the significance of the findings of a research project for the purposed organization, along with recommendation for action. These recommendations are based on the research and on any other relevant information available to the researcher, including their own past experience in a market or in business. Conclusions and recommendations form an important part of a project debrief and of any report or documentation, and are key part of the value offered to the clients by professional market research.

### 7.2 Overall summary

The aim of this project was to come up with a course material distribution system which was to be used by Starehe Boys Centre and Schools. With the current system, the learning materials have to be manually given to the students by their teachers before they go for holidays. The sending of the materials via email also makes the learning materials only be accessible to students of that particular course since they are the only ones with access to that email account. Also, with the current system, the students have to carry physical revision materials of which each student have a reference book of the class he is in.

Effective implementation of the system therefore enables all the students in SBC to have a single platform whereby they can access all their learning materials and questions asked by fellow students. The teachers from different departments can now avail anything that they might wish to pass to the students through the system during school holidays, the students are therefore expected to log in and access the materials from there. Therefore, the following were the main objectives of the research project that were achieved.

1. Enable students post and view posted questions on a Q&A forum and easy access of revision materials during school holidays.
2. Adequate access control to avoid tempering with stored materials.
3. An enhanced and effective graphical user interface to enable easier interaction between the students, teachers with the system.

The target population for this research was mainly the students and teachers of SBC. The data used were collected using methods which include interviews, observations and use of questionnaires.

These enabled the gathering of adequate data to enable accomplishment of the project.

#### 7.3 Challenges.

The following are limitations that may prevent the accomplishment of the most efficient and desirable system.

Inefficient time and resource to employ the more desirable technologies. The system may require more efficient real time communication such as text messaging between the students and the teacher in a manner that each teacher is notified each time a student accesses his resource and vice versa This may however be hindered by the time constraints to acquire the required resources to do so. Such may also require payment of some principle to the service providers and may be unachievable on the scheduled duration.

Another major challenge was the fact that the students from SBC weren’t cooperating adequately in providing information and suggestions that might help in proper implementation of the system. Most of the students are used to obtaining information from the physical libraries and therefore they seemed so relaxed in providing their opinions and suggestions in regard to the implementation of the new system.

Users know how- it was rather difficult to capture the user requirement due to the different levels of understanding between the user and the developer.

#### 7.4 Critical review

The project life span stretched to four months, during this period the project has progressed systematically from project proposal to project plan, analysis and finally to project implementation and documentation. It’s worth mentioning that the project faced hurdles, but with determination and support from family and friends, the researcher managed to steer things back to control. As the project nears completion, the following should be noted keenly. There will always be pressure to change system, this is because;

System model reality, as reality changes, so must the system.

Successful system survives beyond the lifetime of the hardware for which it was originally written

**Consequences:**

Constant changes degrade the quality.

Users must be trained on the use of the new system .

#### 7.5 Conclusion

The researcher believes that complete implementation of this system will improve communications within the faculty. The lecturers will effectively interact with the students by availing the learning materials to be posted. The faculty officials can also pass important and relevant information to the students by using the system. The system will reduce the cost of communication largely, further information will be first hand and explicitly presented.

#### 7.6 Recommendations

The researcher therefore appeals for closer cooperation between all the departments to enable complete implementation and adoption of this system. This will enable other schools to see the benefits that this system will have brought to SBC and therefore encourage its implementation in other schools around the country.

#### 7.7 Suggestions for future work

1. Implementation of mobile messaging. Being that the system maintains records of all the user’s mobile contacts and with the advent of the bulk text messaging, it will be soon possible to integrate messaging and ensure that the students are notified the administrator posts any learning material.
2. The system should have an android mobile application created for it so that it can be accessed and used by smartphones.
3. Porting the database from SQL to oracle database that is more secure and robust.
4. Divide the system into subjects’ modules.

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# APPENDIX A

# USER MANUAL

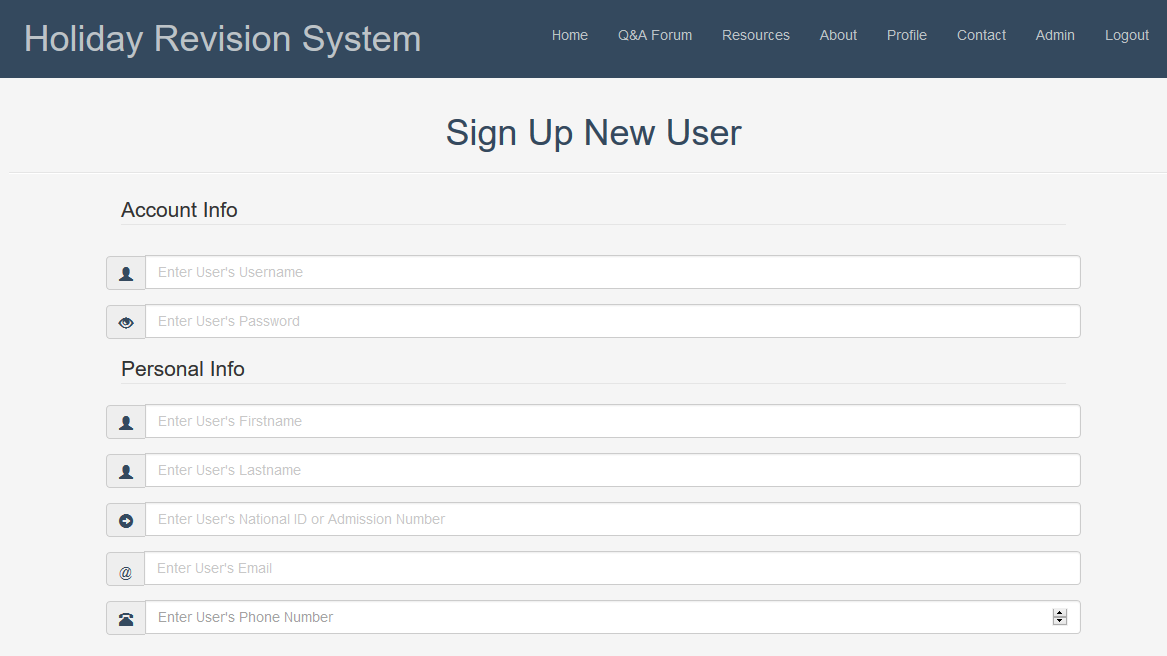
Type the system URL on the browser i.e. http//localhost/mwadime

Login with your username and password.

After login in, select different modules on the menu.

# APPENDIX B-TEST DATA AND RESULTS

###### User registration



###### Log in error for unregistered users

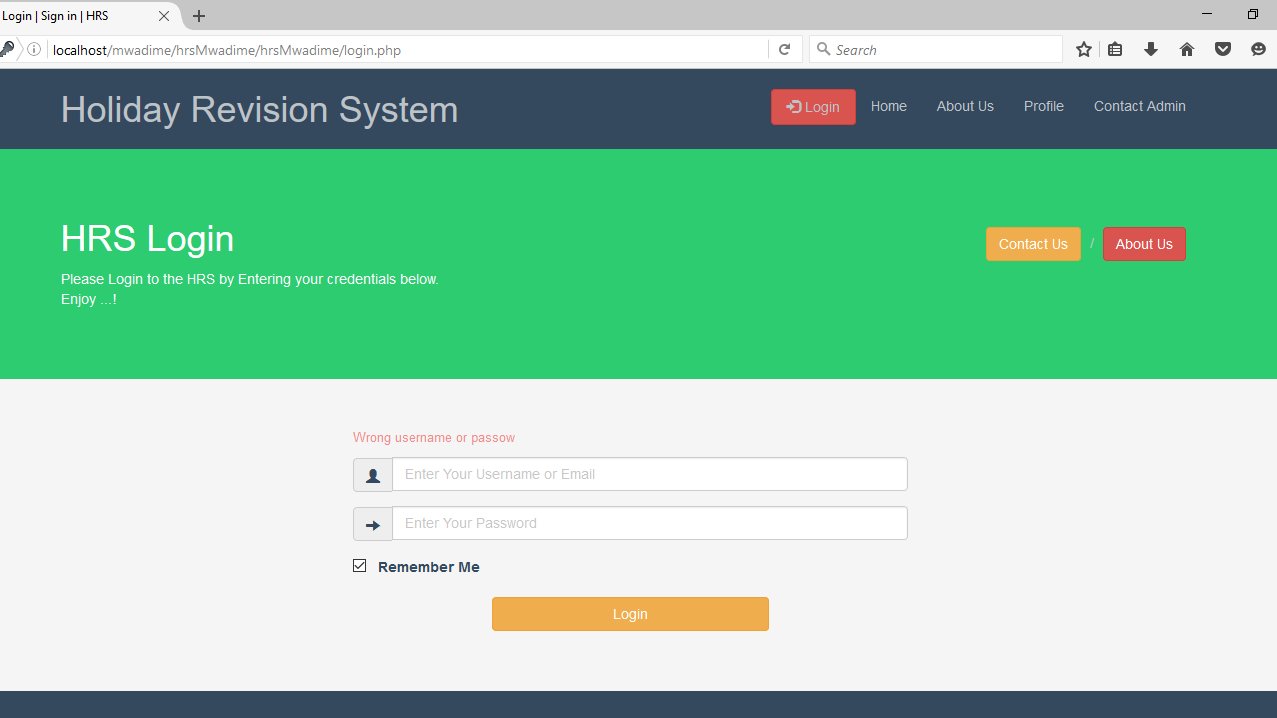


Figure 6.1 Log in error

###### Registered users

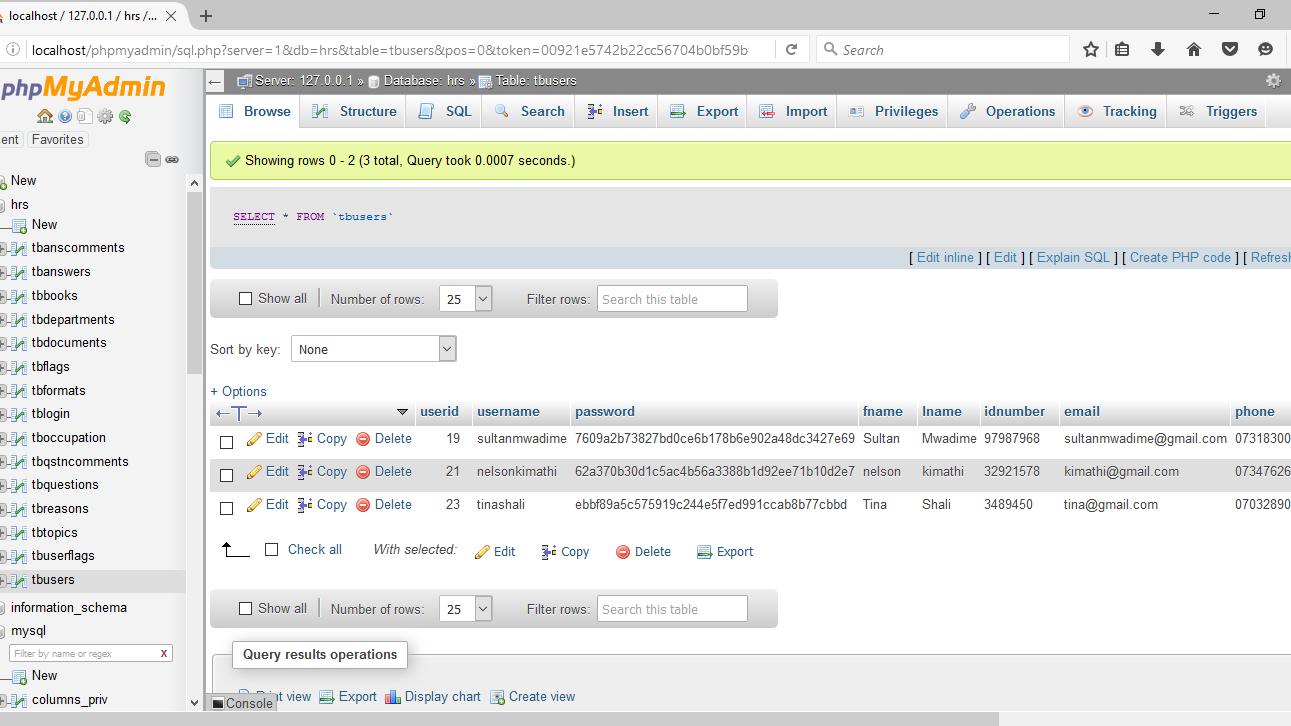


Figure 6.2 Registered users

###### SAMPLE REPORTS

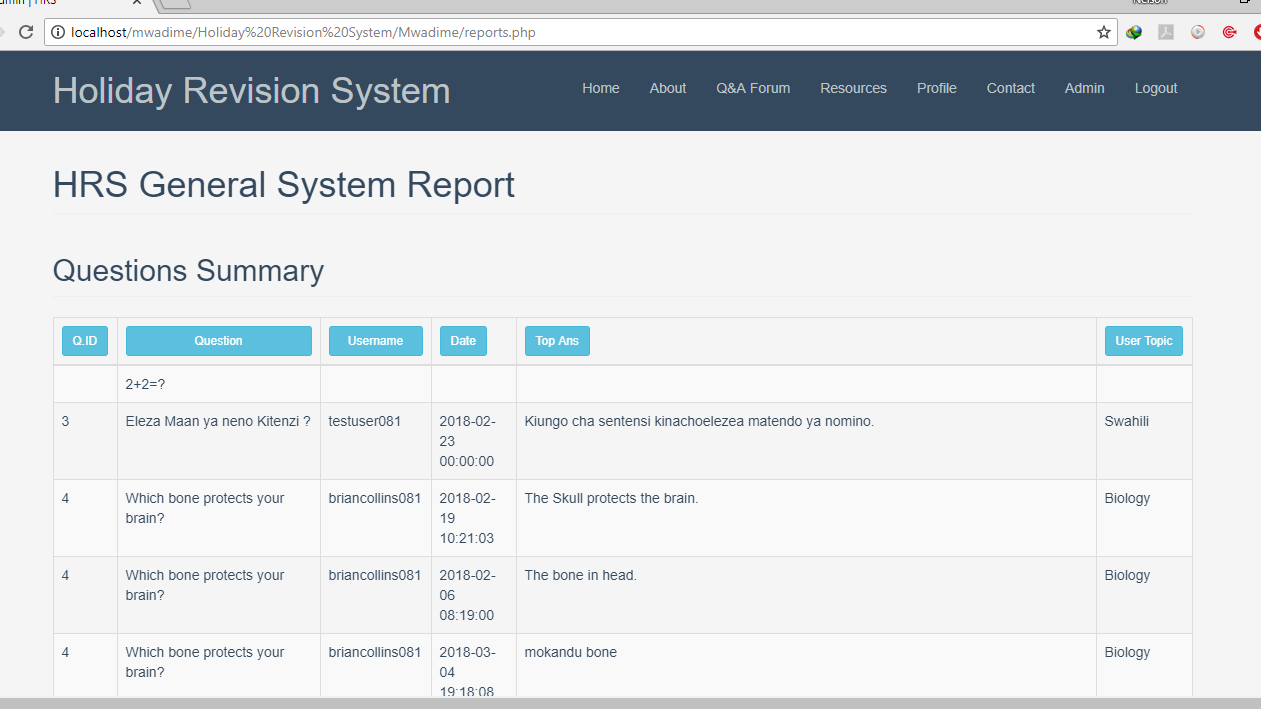


Figure 6.3 Report of Questions Posted

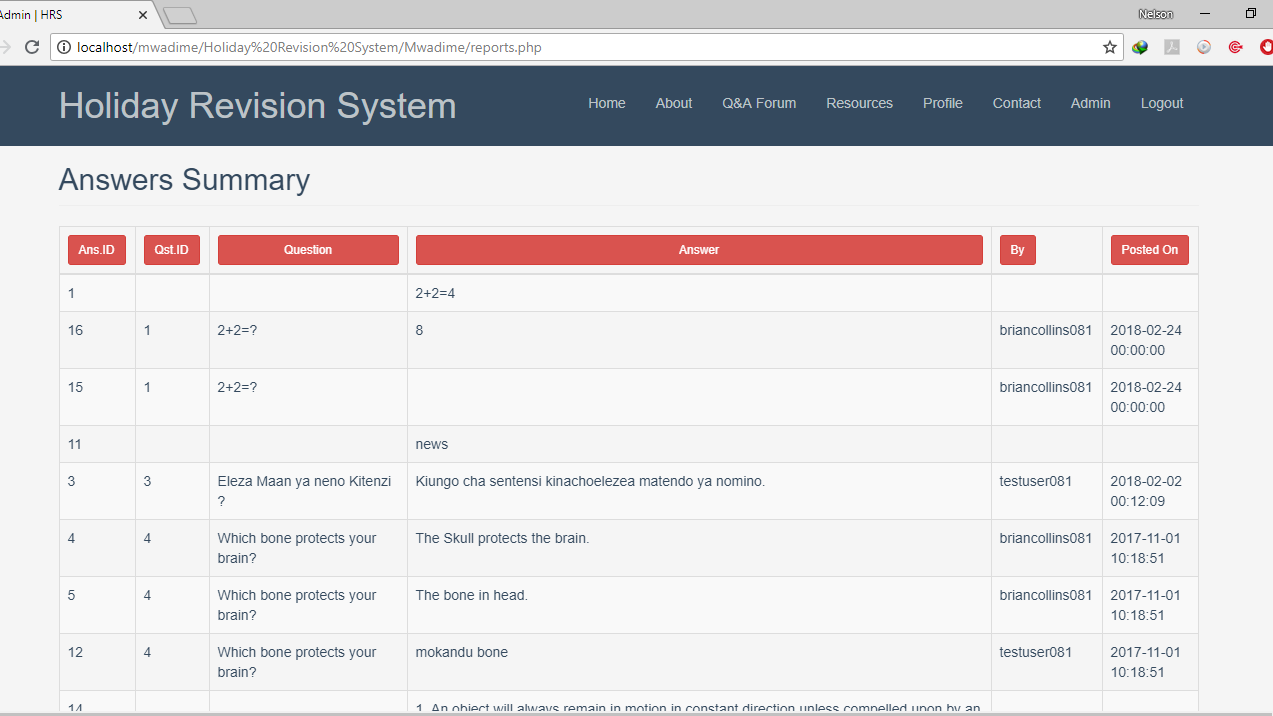


Figure 6.4 Report for Answers Posted

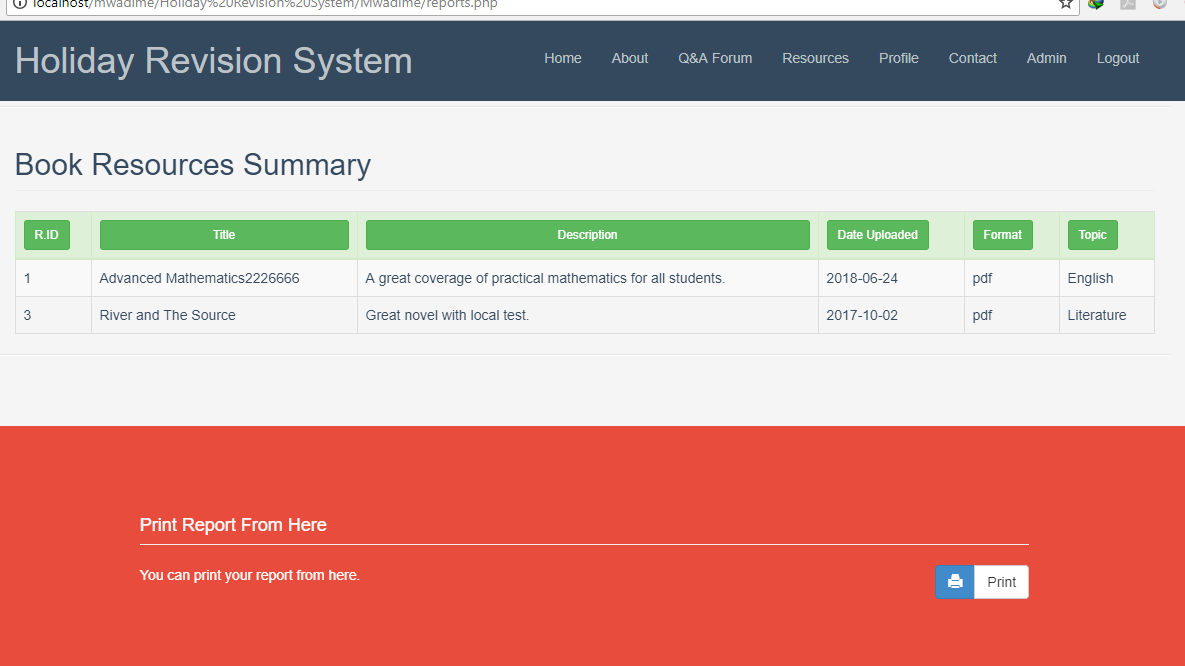


Figure 6.5 Report for Resources Posted

# APPENDIX C

# DATA COLLECTING TOOLS

# QUESTIONNAIRE

Please respond by ticking the appropriate answer or filling your answers in the blank spaces provided. This is an academic exercise and all information collection from respondents will be treated with full confidentiality.

1. Gender of the respondents (Teachers Only)
   1. Male
   2. Female
2. Age of the respondents
   1. 14-17
   2. 18-25
   3. 26-45
   4. 46-75
3. Academic year of the respondents (Students Only)
   1. Form One
   2. Form Two
   3. Form Three
   4. Form Four
4. Respondent Class Stream
   1. A b. B c. C d. D e. E f. F g. G
5. In your own view, do you think the introduction of the holiday revision system will add any academic value to the students?
   1. Yes
   2. No
6. In your own view, do you think introduction of the HRS will provide a smooth interaction for student and teachers during the school holidays?
   1. Yes
   2. No
7. Do you think the HRS will only be used for academics’ questions? If NO give a reason
   1. Yes
   2. No ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………
8. Do you think teachers will monitor what’s happening in the system?
   1. Yes
   2. Not
9. Do you think introduction of IT and the e-resource platforms will reduce the learning operation’s cost and time?
   1. Yes
   2. No
10. Do you think the HRS will increase efficiency and effectiveness in the learning processes during school holidays?
    1. Yes
    2. No

**Thank you for your cooperation**

# APPENDIX D

<?php

session\_start();

require\_once "cn/process.inc.php";

if (isset($\_SESSION['admin'])):

?>

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="utf-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

<meta name="description" content="">

<meta name="author" content="">

<title>Admin | HRS</title>

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

<link href="css/font-awesome.min.css" rel="stylesheet">

<link href="css/prettyPhoto.css" rel="stylesheet">

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

<link href="css/main.css" rel="stylesheet">

<body>

<?php include "cn/header.php";?>

<section id="title" class="emerald">

<div class="container">

<div class="row">

<div class="center col-sm-12"><h1>Welcome to the Administrator Panel</h1></div><hr>

<div class="col-md-4 col-sm-6 col-xs-12">

<div class="center">

<p><img src="images/blog/avatar3.png" alt="User Avatar" class="img-responsive img-thumbnail img-circle"></p>

<div class="gap"></div>

<h4>Username:&nbsp;&nbsp;<b class="profile"><?php echo $\_SESSION['user']; ?></b></h4>

<?php

$sql1="SELECT COUNT(\*)AS num, question FROM tbquestions JOIN tbusers USING(userid) WHERE tbquestions.userid=tbusers.userid";

$sql2="SELECT COUNT(\*)AS num, answer FROM tbanswers JOIN tbquestions USING(questionid) WHERE tbanswers.questionid=tbquestions.questionid";

$result1=mysqli\_query($conn,$sql1);

$ask=mysqli\_fetch\_assoc($result1);

$result2=mysqli\_query($conn,$sql2);

$ans=mysqli\_fetch\_assoc($result2);

?>

<h4>Questions Asked:&nbsp;&nbsp;<b><span class="badge profile"><?php echo $ask['num']; ?></span></b></h4>

<h4>Questions Answered:&nbsp;&nbsp;<b><span class="badge profile"><?php echo $ans['num']; ?></span></b></h4>

</div>

</div>

<div class="col-md-8 col-sm-6 col-xs-12">

<div class="col-md-7 col-sm-7 col-xs-12">

<h2>This Panel</h2>

<div class="gap"></div>

<p>From this page you can do some of the limited changes on the data stored in the system.</p>

<p> You can Edit resources or user details to update them. Deletions and Additions can also be added.</p>

</div>

<div class="col-md-5 col-sm-5 col-xs-12">

<ul class="breadcrumb pull-right">

<li><a href="adminhm.php" class="btn btn-danger">Admin Panel</a></li>

<li><a href="adminedits.php" class="btn btn-primary">Do Edits</a></li>

</ul>

</div>

<div class="col-sm-12">

<span class="pull-right"><a href="reports.php" class="btn btn-warning">Generate Reports | View Reports</a></span>

</div>

</div>

</div>

</div>

</section>

<section class="container desc">

<div class="row">

<h1 class="center">Sign Up New User</h1>

<hr>

<div class="hidden-xs col-sm-1 col-md-1"></div>

<div class="col-xs-12 col-sm-10 col-md-10">

<?php include "cn/snippet-admin-signupuser.php"; ?>

</div>

<div class="hidden-xs col-sm-1 col-md-1"></div>

</div>

<div class="row">

<h1 class="center">Add New Resources</h1>

<hr>

<div class="col-md-5">

<h2>Add New Document</h2>

<hr>

<?php include "cn/snippet-admin-addnewdoc.php"; ?>

</div>

<div class="col-md-2"></div>

<div class="col-md-5">

<h2>Add New Book</h2>

<hr>

<?php include "cn/snippet-admin-addnewbook.php" ?>

</div>

</div>

</section>

<section class="alizarin" id="deletion-section">

<div class="container">

<div class="row">

<div class="centered">

<div class="gap"></div>

<h1>Do Deletions From Below</h1>

<p><h4>Caution</h4></p>

<p>Care should be taken. Any data deletions are not directly recovered and you might lose importanta data.</p>

</div>

<hr>

<div class="col-md-5">

<h2>Delete User</h2>

<div class="gap"></div>

<a href="adminedits.php" class="btn btn-primary">Remove System User</a>

</div>

<div class="col-md-2 hidden-xs"></div>

<div class="col-md-5">

<h2>Delete [ Books | Documents ]</h2>

<div class="gap"></div>

<a href="adminedits.php" class="btn btn-primary">Remove System Resource</a>

</div>

</div>

</section>

<?php include "cn/bottom-content.php";?>

<?php include "cn/footer.php";?>

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

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

<script src="js/jquery.prettyPhoto.js"></script>

<script src="js/main.js"></script>

</body>

</html>

<?php

else:

header("Location: login.php");

endif;

?>