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FACULTY OF ENGINEERING
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DESKTOP TUTOR FOR LOWER PRIMARY

BY

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DECLARATION

I Nabukeera Lydia Reg No BU/UG/2012/80 hereby declare that this report is my original work except where explicit citation has been made and it has not been presented to any institution of higher learning for any academic award.

Signature.....

Date.....

APPROVAL

This is to certify that the project report under the title “DESKTOP TUTOR FOR LOWER PRIMARY” has been done under my supervision and is now ready for examination.

Mr. ARINEITWE JOSHUA

Department of Computer Engineering

Signature:.....

Date:.....

DEDICATION

I dedicate this report to my parents Mr. and Mrs. Yiga and my friends for their endless advice, love and financial support during the process of developing the system. May God bless them.

ACKNOWLEDGEMENTS

Great appreciation goes to my family members especially my dad and friends for the support and encouragement.

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May the ALMIGHTY GOD bless them.

Thanks.

ABSTRACT

This report describes the chronological steps involved in the creation of a desktop tutor for lower primary from the idea creation to the implementation and testing.

This project originated from an idea I obtained having analysed many children in lower primary forgetting what they were being taught at school during holidays in the teachers' absence. And also the difficulty and costs involved in keeping lower primary children engaged in the teachers' absence for example hiring tutors and use of charts that are monotonous and offer little academic content.

I then embarked on a number of activities that ranged from problem identification, problem modelling, system analysis, researching, design and development, documentation, and management among many others. To some extent, those steps were achieved through collection of related data inform of electronic articles, electronic and non-electronic books plus papers; this was done while keeping a full citation of their index. Consultations from technical and non-technical people were made; the technical people included the supervisors. Alterations or modification to favour the wellbeing of the project were regular and positive changes were made where necessary and possible.

The final stage of this work was the implementation, testing and validation. This project was developed slowly with research from previous documentations various sites for very complex sessions of development.

LIST OF ACRONYMS

NCDC	National Curriculum Development Centre
USSD	Unstructured Supplementary Service Data
ODBC	Open Database Connectivity
API	Application Programming Interface
WPF	Windows Presentation Foundation
XAML	Extensible Application Markup Language

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CHAPTER ONE: INTRODUCTION

1.1 Background

Primary education is the initial stage of education and has as its basic aim to create, establish and offer opportunities to all children, regardless of age, gender or country of origin to achieve a balanced cognitive, emotional psychomotor development [1] .

According to National Curriculum Development Centre (NCDC), the curriculum at Lower primary education level in Uganda is organized in a Thematic Approach. Lower primary education starts from primary one to primary three and it is for children aged between six and eight years. This is where different themes have been developed and content to be taught organized in broad learning areas referred to as strands. Emphasis at this level is on literacy, numeracy and life skills. Instructional materials used at this level are more of non-textbook materials; charts, flash cards among others. Teachers are also encouraged to use their own locally developed materials to facilitate their lessons. The mode of assessment is continuous allowing the teacher to progressively record the achievement of the learner on a daily basis. A record card is used to document the achievements of the learner. This allows for timely interventions by the teacher in situations where there are children with special needs and need remedial assistance [2]. In lower primary, students' verbal communication is enhanced through engaging speaking and listening activities that get them to express their ideas and communicate [3].

Teachers should bear in mind that children study visible features in the surroundings rather than textbooks, and that these things must be found within the environment of the children; and, further, that no text-book can be sufficiently comprehensive to include in its lessons all the useful of any considerable number of schools or homes, it follows, therefore, that many original lessons, based upon the observations and experiences of individual schools, should form an important part of a course in nature study, and must be provided by the teacher.

During holidays, parents devise means of teaching their children so that they do not forget what was learnt during the term. Parents opt for taking their children for coaching at different learning centres and others opt for coaching their children themselves. Children in lower primary are normally taught from home during holidays due to a number of obstacles like; kidnapping and high coaching fees as requested by tutors.

Home schooling among lower primary students reinforces and extends classroom learning and helps kids practice important study skills. It also helps them develop a sense of responsibility

and a work ethic that will benefit them beyond the classroom. While the child does academic work from home, the parent is available to interpret assignment instructions, offer guidance, answer questions, and review the completed work. Parents resist the urge to provide the correct answers or complete the assignments themselves. Learning from mistakes is part of the process and parents do not want to take this away from their children [4].

It is because of the need for parents to keep their children in lower primary engaged in academic work during holidays so that they do not forget what they learnt during the course of the term that a software tutor with audio visual aids and animations has been developed to aid in their study at home.

1.2 Problem statement

Lower primary education emphasizes the use of instructional materials like charts, storybooks, flash cards as well as teachers' locally developed materials to facilitate learning. Most of these materials are not durable and also cannot help a child engage in speaking and listening activities in the teacher's absence since they don't have audio that can help them learn the pronunciation of letters and words. During holidays most of the measures available to engage lower primary children in academics are expensive for example hiring tutors, others are online hence not accessible by many due to poor networks while others are not interesting enough to keep the child engaged for example textbooks and charts which become monotonous to the children because they read the same material over and over again. Therefore there is a need for a software tutor to aid the lower primary children in their study at home.

1.3 Objectives

1.3.1 Main Objective

To design and develop a desktop tutor that teaches lower primary children during holidays.

1.3.2 Specific Objectives

- i. To identify and analyze the requirements needed to accomplish the development of a desktop tutor for lower primary.
- ii. To design a database and a filing system for the audio visual aids and animations.
- iii. To design a user interface where a child will interact with the system.
- iv. To implement the proposed system.
- v. To test and validate the proposed system

1.4 Justification

Most parents in Uganda are of a working class and therefore have little time to teach their children while in holidays and also some parents are not educated and therefore are not able to help their children academically. Most of the measures available are inconvenient and inefficient for example hiring tutors, using charts among others. Therefore there is need for a system that will help in teaching their children even in the parents and teachers absence.

1.5 Scope

1.5.1 Content scope

The proposed project covered design and implementation of a desktop software tutor that teaches lower primary children during holidays by providing these children with an interface where they keep engaged with what they learned at school during the term putting emphasis on Literacy, Numeracy and Life skills.

It will be used by lower primary children in Uganda.

1.5.2 Time scope

The development of the system was scheduled for a period of four months.

REFERENCES

- [1] "primary education," moec.gov.cy, 5th June 2014. [Online]. Available: <http://www.moec.gov.cy/dde/en/>. [Accessed 4th January 2016].
- [2] E. Love, *Speaking and Listening Activities*, 2008.
- [3] H. H. Cummings, *Nature study by grades*, 2015.
- [4] T. N. Foundation, *Ways to Help your child succeed in elementary school*, 2015.
- [5] G. Hoban, "A new teaching approach to encourage studentgenerated animations," vol. 2, no. 1, 2010.
- [6] D. Awasthi, "Utilising Audio Visual Aids to make Learning and Effective in Primary Education," vol. 3, no. 8, 2014.
- [7] StarAfrica, 12 February 2014. [Online]. Available: <http://brainshare.ug>. [Accessed 17 December 2015].
- [8] C. U. Press, *Cambridge Reading Adventure*, 2015.
- [9] S. Bennett, *Facilitating learners in elementary school using charts*, 2009.
- [10] A. Mani, "Effectiveness of games in elementary school learning," vol. 6, no. v, 2012.
- [11] B. Johnson, *Professional Visio Studio*, 2015 September 8.
- [12] A. Nathan, *windows presentation foundation unleashed*, 2006 December 31.
- [13] E. Thomas, *Introduction to web services technologies*, 2014.
- [14] J. Templeman, *The .NET Framework*, 2009 January 23.