USING DIGITAL ANIMATIONS TO ENHANCE LITERACY SKILLS: A CASE OF PRIMARY ONE LEARNERS IN SELECTED SCHOOLS IN MUKONO MUNICIPALITY.

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A DISSERTATION SUBMITTED TO THE FACULTY OF EDUCATION IN PARTIAL FULFILMENT FOR THE REQUIREMENT FOR THE AWARD OF DEGREE OF MASTERS OF EDUCATION IN EARLY CHILDHOOD EDUCATION OF KYAMBOGO UNIVERSITY

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DECLARATION

I, Nabulo Jessica, declare that this research dissertation titled "Using Digital Animations to enhance literacy skills; A case of primary one learners in Selected Schools in Mukono Municipality" is my original work which has never been submitted to any institution for any award. I am now submitting it to the Faculty of Education Graduate Board of Kyambogo University with the approval of my supervisors. .

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DEDICATION

I dedicate my work to my husband Gerald Bakunda Ataremwa, my children Siima, Blessing, Ayera-Favor, Crystal learners and my parents Mr. and Mrs.Muyonga.

ACKNOWLEDGEMENT

All praise and honor to God, who has granted me power and determination to pursue this degree and has helped me accomplish this research. To my supervisors Dr. Stephen Ndawula and Dr. John Maani whose advice and guidance assisted me in succeeding in this research, I thank you. Finally, all appreciation is due to the staff of Early childhood Department especially Dr. Geoffrey Ejuu for giving me knowledge and guidance throughout my pursuit of this degree.

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ABBREVIATIONS AND ACRONYMS

ECD	Early Childhood Development.
ECE	Early Childhood Education.
NCDC	National Center for Curriculum Development.
MOE	Ministry of Education and Sports.
ICT	Information and Communication Technology.
SDG	Sustainable Development Goals.
BC	Before Christ.
AD	After Christ.
CGI	Computer Generated Images.
UN	United Nations
USAID	United States Agency for International Development.
RTI	Research Triangle Institute.
EGR	Early Grade Reading
UNEB	Uganda National Examinations Board.
ITES	Information Technology Education Systems.
ICLAP	Interactive Constructive Active and Passive.

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ABSTRACT

Literacy is a basic skill that unfortunately not everybody acquires sufficiently. Many young learners today in Uganda have not adequately acquired the foundational skills of literacy. This is evident in the reports that have come showing poor performance at high levels of learning like *Uwezo* (2016) reports that 2 out of 10 learners in primary seven cannot comprehend a primary two story. This presents a challenge in the education sector that needs to be resolve. Schools have taken on different strategies to counter this challenge one being the use of digital animations. This study sought to examine use of digital animations and its effectiveness in enhancing different aspects of literacy among young learners in selected schools in Mukono Municipality. The study was based on three objectives which included; To establish the difference in the performance of learners in reading comprehension that used digital animations and those that used traditional method of learning in Mukono Municipality, to find out the difference in the performance of learners in phonics that used digital animations and those that used traditional methods in Mukono Municipality and finally to determine the difference in the performance of learners in vocabulary that used digital animations and those that used traditional methods of learning in Mukono Municipality. It was based on 3 hypothesis. The study was based on Vygotsky's theory of zone of proximal development, where a child keeps discovering new knowledge through the help of a peer, a medium or an adult that is already knowledgeable. This study used the quantitative approach, with a quasi experimental design. 2 schools were purposively selected basing on their use of digital animations, the participants were randomly sampled. The study had 160 participants, 80 for the control group and 80 for the experimental group. The key findings were as follows; there was no significant difference in the performance of learners in reading comprehension and there was a statistically significant difference in the performance of learners in phonics and vocabulary. In conclusion, these findings could have been based on the fact that the content and context of the digital animations were not developed basing on the needs of the learners for reading comprehension. Phonics and vocabulary registered a difference in performance basing on the fact that there was a sense of audio presentations that were repetitive. This therefore implies that when developing a digital animation for learning, the learner should be put into consideration. The study therefore recommends that when enhancing the literacy skills of reading comprehension, phonics and vocabulary, social cultural setting of the learners should be put into consideration. The audio presentations of content should be in an accent the learners easily understand. It is also important that these digital animations are developed in a language the learners are familiar with

CHAPTER ONE

BACKGROUND OF THE STUDY

1. Introduction

This chapter analyses the use of digital animations and its enhancement of literacy skills among primary one learners in Mukono Municipality, Uganda. The chapter presents the background of the study; which entails historical, theoretical, conceptual and contextual aspects of the problem under study. This chapter also presents the statement of the problem, and highlight's the purpose, objectives, research hypothesis, the scope and significance of the study.

1.1 Background

While Uganda has a literacy rate of 78.4%, national literacy rate assessments indicate that more learners in lower primary classes have not acquired basic competences in literacy with a reading ability rate of only 39.0% (Uwezo, 2016), yet vision 2040 expectations indicate that the country should be at 95% literacy rate. After two years of primary education, studies reveal that candidates in primary classes perform poorly in Uganda National Examinations Board (UNEB) due to failure to comprehend questions. According to Uwezo (2016), only two out of 10learners in Primary seven could read and comprehend a primary two story. This is due to the inability to understand foundational skills of literacy that have made the whole process of teaching literacy concepts a challenge. This is compounded by overcrowded classrooms, high teacher-pupil ratio and lack of adequate learning materials.

The information and technology service (ITES) industry has enormous opportunities that Uganda can exploit to transform the education sector through innovations like presentation of education

content in form of digital animations in different languages to enhance learning. The country has initiatives through the ministry information, communication and technology to improve on the literacy rate in the lower primary levels of education. These are pioneered by different organization like EGR funded by USAID, LARA, RTI to mention but a few.

1.1.1. Historical.

The history of Digital Animation dates back as early as 1940s and 1950s when people began to experiment with computer graphics. Digital animation is a general term for a kind of visual digital display technology that simulates moving objects on the screen (Technopedia, 2017). It is also the process used for generating animated images. Computer-generated imagery (CGI) which is another term for digital animation encompasses generating dynamic images or images in motion (Lomas, 2016).

By early 1960s, digital computers had become widely established, that new avenues for innovative computer graphics blossomed. Most computer graphics at this time involved 2-dimensional imagery though increasingly, as computer power improved, efforts to achieve a 3-dimensional realism became the emphasis. By late 1980s, photo-realistic 3D begun to appear in cinema movies which later by mid 1990 developed to the point of being used for an entire feature film production.

An improvement has been presented with every 3Dimensional imagery with the latest called siggraph (Hitosh, 2012). Modern forms of digital animations have evolved from more primitive computer graphics over the last few decades, as huge advances in computer technology led to much more sophisticated imaging methods.

Africa's animation industry (Afrimation) started under the projects that have potential of being highly innovative in the digital technology and as a medium to enhance education. It started with projects that included; kabongo, TingaTinga Tales, Zambezia, The lion of Judah; Magic cellar and interactive child learning Aid project (I-CLAP) model (IJEDICT, 2006). While it has been discovered that Africa's priceless artifacts have been inexplicably carted out, digital animation posits that repackaging relevant aspects of Africa's unique cultural heritage in animated digital content ensures preservation. This started with countries like South Africa, Ghana, Kenya, and Nigeria which is also taking shape in Uganda.

According to Ssempijja (2010), the use of digital animations was formally adopted in the Uganda education sector at a higher level in 2008 though the early childhood education level was using it without this formalization. With the different features of digital animation, this study will find out the relationship between the roles of digital animations in improving literacy skills.

Literacy is traditionally referred to as the ability to read and write. The United Nations Educational, Scientific and Cultural Organization (UNESCO) (2015) defines literacy as the 'ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts. In this study, literacy was looked at in terms of According to the researcher, literacy can mean the understanding of written texts through word recognition and comprehension. This is through corresponding spoken language and making meaning of words, connected texts and sentences. The reader ought to have background knowledge, fluency, grammatical knowledge and experience with the text and through the use of other strategies that can help in understanding.

The history of literacy dates back to the invention of writing during the 4th millennium BC. The first writing of Sumerian logographs was introduced in 4000 BC which showed different pictures of objects and activities. In 2000BC, the Phoenicians developed the first methods to represent spoken language in form of the alphabet though entirely consisted of only consonants. Then in 1000BC, the first major upgrade occurred in the technology of representing language. The Greeks added vowels to the consonants to make a full alphabet which plays a role in determining a learner's phonics.

The Africa Alphabet (also International Alphabet) was developed by the international institute of African languages and cultures in 1928. Today, the Latin script is commonly used across Africa, especially Sub-Saharan Africa. Arabic script is mainly used in North Africa and Ethiopic script is dominant in Somalia. The most famous writing and reading system of the African continent is the ancient Egyptian hieroglyphs which has later developed into Hieratic, Demotic and Coptic systems (Gerber, 2017).

Reading was introduced in Uganda by missionaries at the end of the nineteenth century and has a short history because it was simply a transfer of the British system of education (Nalusiba, 2010). It is considered that this brief history presents the differences between Africa/Uganda and the western world due to the different needs of the two groups of people.

According to the researcher, literacy can mean the understanding of written texts through word recognition and comprehension. This is through corresponding spoken language and making meaning of words, connected texts and sentences. The reader ought to have background knowledge, fluency, grammatical knowledge and experience with the text and through the use of other strategies that can help in understanding.

Reading comprehension or reading for meaning is the primary purpose for reading. To assist processing and understanding of new unfamiliar information, a previous schema should be stored in the long term memory. There are many factors influencing reading comprehension such as a reader's character, nature of reading materials and the reading tasks. Due to individual differences, learning styles play a big role for a learner to understand (Heffner $ Leutner, 2011).

Phonics help children learn the relationship between the letters of written language and the sounds of spoken language. Children are taught, for example that letter 'n' which represents the sound /n/ and that is the first letter in the word 'net'. Children's reading development is dependent on their understanding of the letters or sounds of spoken language.

Vocabulary is another crucial literacy aspect where children use words to express common concepts and use these to talk about life experiences across contexts. Children also use oral language as they begin to write and explain acquired knowledge. Vocabulary development allows a child transfer the understanding of written text to oral language (Cowen, 2011).

1.1.2. Theoretical.

The Vygotsky's theory of Zone of Proximal Development often abbreviated as ZPD is the theory that was used in this study. It presents the difference between what a learner can do without help and what they cannot do (Penguin Dictionary of Psychology, 2009). This theory states that a child follows an adult's example or any form learning and gradually develops the ability to do certain tasks without help. Vygotsky and some other educators believe that the role of education is to give children experiences that are within their zones of proximal development, thereby encouraging and advancing their individual learning such as skills and strategies like

digital animation. The link between aspects of digital animation presentations and advancement of literacy skills is likelihood when the theory above has been implored.

1.1.3. Conceptual.

The Audiovisual presentations of digital animations means possessing both a sound and visual component such as slide-tape presentations, films, television programs, church services and live theater productions (Antunez, 2002). Computer-based audio visual equipment is often used in education, with many schools installing projection equipment and using interactive whiteboard technology. Audio-visual education is instruction where particular attention is paid to the audio and visual presentation of the material, with the goal of improving comprehension and retention.

In digital animations, the use of visual presentations and audio sounds are chosen in line with the audiences. This plays a role in the way the audience comprehends a text or a clip. Presentation of an image with the help of digital animation say visual effects is a concept whose whole purpose is to direct the audience's attention, and make clear what is of great importance in the scene (Lightfoot&Natasha.2014). It aims at making the presentation of any idea completely and unmistakably understood, whether that idea is in action, personality or mood. To sustain the children's attention, the focus should be presented in child characters like 'cartoon' in motion. Visual effects help the audience to gain a clearer understanding of characters and storylines. Camera movements, themes, actions, blocking and stage settings indicate many things such as character, next action and thinking.

Audio-visual education is instruction where particular attention is paid to the audio and visual presentation of the material, with the goal of improving comprehension and retention.

Basic computer 3D animation requires one to have solid drawings that are attractive and not over crowded. One thing is the artist should have the skill of drawing as emphasized in literature available for purposes of neat, sticklike and attractive visuals that will help a child-reader to take time in reading the pictures and construct his own knowledge (Pannafino, 2015). This enables a child to easily comprehend abstract ideas that could be complicated to understand.

Digital animations are presented in form of 'squash and stretch' showing motion so that they do not change the form of presentation and make the presentation continuous. It also enriches the readers experience by developing imagination, self reliance and cognition which facilitate confidence hence literacy skills.

Movement of the human body and other objects in digital animation need time to accelerate and slow down. For this reason, animation looks more realistic if it has more drawings at the beginning and at the end of an action, emphasizing extreme poses and fewer in the middle (Lightfoot, Natasha.2008). This principle goes for characters moving between two extreme poses such as sitting down and standing up but also for inanimate, moving objects like a bouncing ball. It is attractive in nature and holds a reader's attention with the desire to see what happens next which leads to retention of knowledge.

Repetition in audio sounds is another concept of animation that is very important and relevant to reading because it presents sounds in a repetitive and interesting form for instance rhymes and tongue twisters that help a child learn sounds and blends. To boost reading in a learner, it needs to be repetitive and involve supernatural or surreal alterations in the physical features (William, 2006). Audio effects in a cartoon character correspond to what would be called charisma in an actor (Pannafino, 2015). A character that is appealing in picture and sound

makes a viewer feel a sense of identification. The viewer eventually feels the urge to imitate what has been presented in the animation through pronunciations and punctuation hence fluency. This helps the character to easily connect with the learners. The character is usually likeable particularly baby-like to be effective for the lower primary classes age group (William, Blender 2006). With all the above concepts of animation in play, a child is likely to be motivated to read a story with ease and eventually build a lifelong skill of reading that will enhance literacy achievement.

The key to literacy achievement is reading comprehension, which is a progression of skills that begin with the ability to understand spoken words, decode written words and culminate in the deep understanding of text. Literacy achievement involves a range of complex language underpinnings which include awareness of speech sounds (phonology), spelling patterns (orthography), word meaning (semantics), grammar (syntax) and patterns of word formation (morphology), all of which provide a necessary platform for reading fluency and comprehension. For a young learner to understand a text or picture well, presenting it in digital animation form may make understanding easier.

The key aspects of literacy achievement are vocabulary, comprehension, phonics, phoneme awareness and fluency. If a learner acquires these aspects of reading development, there are chances of high levels of literacy achievement. Reading comprehension is a skill that refers to thinking about the meaning of the each segment of the text as it is read and building understanding of the text as a whole for purposes of reflecting on meaning of the message (Burns, 2010). These concepts can be advanced in many ways and digital animation is what this study will consider because of its appealing aspects that attract children to learning.

1.1.4. Contextual

For decades now, educators worldwide have pondered on the issue of enhancing literacy skills among learners early in life. This is due to the challenges they face later in their academic life. And with this background, strategies have been developed to counter this challenge and digital animation is one of the innovations with aspects that support the enhancement of literacy skills among primary one learners.

Uganda developed its initial ICT national policy in 2003 which recognized that Uganda needed to embrace the goal of 'lifelong education for all' through integrating technology as an initiative into mainstream educational curricula regardless of the level. Uganda as a member country to the United Nations (UN) in September 2015 agreed to Sustainable Development Goals (SDGs) which require member states to have fully adopted ICT for achieving the three pillars of sustainable development. It's believed that there is tremendous potential to improve education globally, and especially in the developing world, with the power of ICT hence the use of digital animation in schools today. SDG 4 commits to quality education and to improving learning outcomes, which requires strengthening inputs, processes and evaluation of outcomes and mechanisms to measure progress. Target 4.2 reaffirms the international community's focus on ensuring strong foundations for all learners in the youngest age group through early childhood care and education. It is also key that at the end of lower primary, a learner's ability in literacy and numeracy is measured. It puts emphasis on strengthening science, technology and innovation. ICT must be harnessed to strengthen education systems, knowledge, dissemination, information access quality and effective learning.

The current formal education system of Uganda bases its teaching of lower primary learners on the thematic curriculum developed by the National Curriculum Development Centre (NCDC) in conjunction with the Ministry of Education and Sports (MOES). The thematic curriculum gives insights on methods of teaching literacy. Different initiative have been deployed to enhance literacy skills by organizations like USAID like EGR, RTI, LARA though none is known to have been done in line with using digital animation as a means to enhance literacy skills among learners.

The developmental activities for literacy skills as indicated in the curriculum put emphasis on the use of traditional pedagogies and are silent on the use of ICT like digital animation yet when adopted it brought to teaching and learning a modern art of teaching. It is important to adopt digital animation to supplement on the traditional teaching and learning methods because learners' interests in modern technology are increasing day by day.

This study examines the use of digital animations and its effectiveness in enhancing literacy skills among primary one learners in primary one as a way of integrating modern technology in the current methods of teaching. It is believed that modern technology makes teaching easier and fun to the learners especially when it concerns animation that presents reading in different modes. This is a way to rectify the challenges that the education sector is facing at higher levels.

1.2. Statement of the problem

Literacy is a foundational skill that is very important in the academic skills of any learner. For one to excel in other learning areas, they should have mastered the key literacy aspects of reading, comprehension, vocabulary and phonological knowledge. Today the literacy levels and particularly reading ability of learners in Uganda is unsatisfactory which has presented challenges in the academic performance of learners at a higher level of learning. For instance for the case of Mukono municipality, the average mark in English reading competence according to *Uwezo*(2016) was 39.5 % for P.3 to P.7. It is also noted according to *Uwezo* (2016), UNEB (2017) reports that three out of 10pupils in primary seven could not read and comprehend a primary two English story. This presents an inadequacy in the teaching of literacy skills of learners at an early academic stage. Schools have adopted different strategies or innovations as a way of improving literacy skills. This is through the use of both traditional and modern technology. To improve on the learners' ability to read and write effectively, schools have adopted the use of digital animation and this study was meant to the effectiveness of using digital animations in enhancing literacy skills of reading comprehension, phonological knowledge and vocabulary among primary one learners. There is need to find out if the use of digital animations is aiding the development of these literacy skills among these learners or not.

1.3. Purpose of the study

The Purpose of the Study is to find out the difference in the performance of learners that use digital animations and those that use the traditional approach of learning in enhancing digital animation in Mukono municipality.

1.4. The objectives of this study were:

1. To establish the difference in the performance of learners in reading comprehension that used digital animations and those that used traditional method of learning in Mukono Municipality.

2. To find out the difference in the performance of learners in phonics that used digital animations and those that used traditional methods in Mukono Municipality.

3. To determine the difference in the performance of learners in vocabulary that used digital animations and those that used traditional methods of learning in Mukono Municipality

1.5. Research Hypotheses

H_0 .1. There are no statistically significant differences in the scores of learners who learned comprehension through the use of digital animations technique and the scores of learners who learned in the traditional way.

H_0. 2. There are no statistically significant differences in the scores of learners who learned phonics through the use of digital animation and the scores of learners who learned phonics in the traditional way.

H_0. 3. There are no statistically significant differences in the scores of learners who learned vocabulary through the use of digital animation and the scores of learners who learned vocabulary in the traditional way.

1.6. Significance of the Study

The study established the difference in the scores of learners that use the digital animations causes on the enhancement of specific aspects of literacy skills that is reading comprehension, phonological knowledge and vocabulary.

The study gave options to other schools to consider adopting digital animations as a learning tool to avoid monotony and advance technology in education as a move for achieving vision 2040.

Head teachers were motivated to provide their schools and classrooms with suitable technologies like LCD, computers and external headsets to be able to use animated pedagogy.

Teachers and teacher educators were exposed to animation as a tool to boost teaching methods for learners at lower primary class level. They also became literate in the use of animation.

This study also offered alternative teaching and learning methods to special groups of learners especially those with special needs like dyslexia that have challenges in comprehension while using traditional methods.

NCDC may also adopt a new method of advancing technology in primary education through use of animation and increase on the pedagogies of early childhood education through developing curriculum in that line.

The agencies and Non government Organizations (NGO) involved in ECD activities like *UNICEF, UWEZO*, USAID may improve their service delivery by implementing the findings on digital animation strategy by considering its use.

1.7. Limitations and Delimitation

The use of digital animation in literacy lessons is a strategy that is not used by most of the schools in Uganda due to lack of expertise and limited resources. This therefore means that the study was limited to a selected number of schools.

Rural schools were not considered in this research because most of these schools in Uganda do not use ICT and lack the infrastructure required to facilitate its use. It was therefore important to choose schools in the urban center like Mukono Municipality.

1.8.Conceptual framework

This conceptual framework contains the independent variable of digital animation with aspects of visual content, audio content and audio visual context, the dependent variable is comprehension, phonological knowledge and vocabulary development.

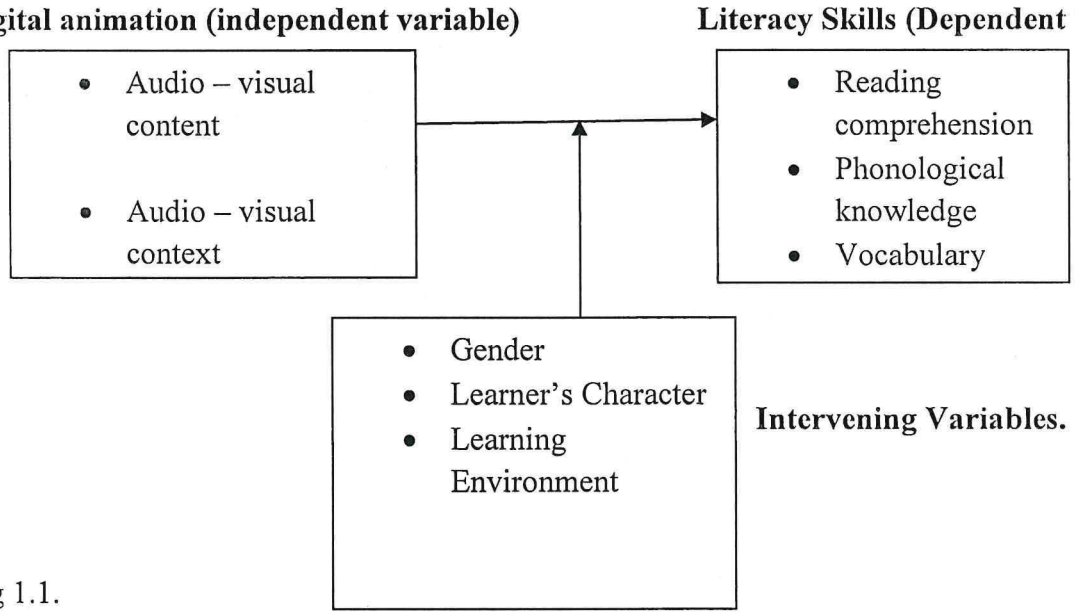


Fig 1.1.

Digital animations were presented in different forms with attributes of visual and audio content and context in form of images, sound, text, intonation, setting and duration. In the process this according to this study led to the development of aspects of literacy skills like reading comprehension, phonological knowledge and vocabulary. Digital animations aspects enabled learners to learn from the adults that have expertise in this area of study and peers who are better in the literacy competence.

The extraneous variables include the teacher who scaffolds a child, learner's character, learning environment and financial status which may indirectly have an impact a child's literacy skills.

1.9. Operational Definition of Terms

Digital Animation – Is the process used for generating still images or computer generated images.

Literacy: Is the ability, confidence and willingness to engage with language to acquire, construct and communicate meaning in all aspects of daily living.

Literacy Skills: Is a general term used to describe the levels of reading comprehension.

Audio-visual content: Does the digital animation possess both sound and a visual component such as tape presentations, films, presentation.

Audio-visual context: Is instruction where particular attention is paid to the audio and visual presentation of material with the aim of improving comprehension and retention.

Reading comprehension – Is a cognitive process of decoding symbols in order to construct or derive meaning.

Enjoyment – Having fun while doing an activity and in this case its reading.

Phonological knowledge – Is a subset of phonological awareness in which listeners are able to hear, identify and manipulate phonemes, the smallest units of sound that can differentiate meaning.

Phonics – A method of teaching people to read by correlating sounds with letters or groups of letters in an alphabetic writing system.

Fluency – The ability to express oneself easily and articulately.

Vocabulary- Body of words used in a particular language or occasion.

Comprehension- Capacity of understanding a given text or group of words.

Learner – A 5 - 7 year old learner in lower primary classes school.

Animator – is a person who develops animations.

CHAPTERTWO

LITERATURE REVIEW

1. Introduction

This chapter reviews literature related to the study to enable the researcher gain more insight on the use of digital animation clips in enhancing literacy skills among primary one learners of lower primary. Relevant Literature was reviewed basing on the objectives of the study. The chapter was concluded with a research gap compared to the literature available in line with the Uganda formal education curriculum of specifically 5-7 year olds.

2.1. Digital Animation and Reading Comprehension

Visual content in digital animations is a learning style where particular attention is paid to the visual presentations of the material with the goal of improving comprehension and retention of literacy. Children learn best by observing and copying the behaviors of adults. It is therefore evident that learning is more effective when sensory experiences are stimulated. These include pictures, slides, videos and other visual tools. According to Webster dictionary, visual aids are defined as training or educational materials directed at both the sense of sight used in a classroom for instructions, library collection and the likes.

The concept of audio-visual aids is not new and can be traced back to seventeenth century when John Amos Comenius (1592-1670) a Bohemian educator, introduced pictures as teaching aids in his book Orbis Sensualiumpictus ("picture of the sensual world") that was illustrated with 150 drawings of everyday life (Aggarwal, JC 2009). Similarly Jean Rousseau

(1712 -1778) and JH Pestalozzi (1746-1827) advocated for the use of visual and play materials in teaching (Akram, S: Sufiana; Malik K, 2012). More recently, audio visual aids were also widely used during and after World War II by the armed services.

Educators are enthusiastically taking up opportunities that computer animation offers for depicting dynamic content. For example, PowerPoint now has an easy way to use animation facility that if in the right hands can produce very effective educational animations. Digital animation when used to present dynamic content can mirror both the changes in position and in form. This makes the content more vivid, engaging and intuitively comprehensible (Stelzner, 2017) which makes abstract information to be easily understood for a learner. The socio-cultural context of the digital animation is critical at this stage for a child to comprehend.

Digital animations according to research suggest that content presentation in form of visuals or images have an effect on reading comprehension (Takacs & Bus, 2016). It brings stories to life through moving images that make meaning clearer. The 2D images and 3D images with the latest technology put into consideration the age of the audience and can develop the animations that enhance literacy through synchronized presentations. Digital animation brings in features that enhance word learning through picture additions, text and audio sounds that advance meaning of text to the learner (Mayer 2002; Neumann, 2017). This enables a child learn new words easily by relating to the pictures but to ensure that a learner benefits, one needs to ensure the context is ideal.

Digital animations content in line with the learner and the learning environment has not been developed to benefit those especially in the developing countries like Uganda. The content available puts emphasis on things within the environment of the western world for instance clips

with snow to a learner who only interacts with the weather conditions of Uganda that is sunny, windy, rainy and cloudy may not be beneficial and understandable. This experience may remain an imagination to the learner.

Pictures used in digital animations demonstrate the relationship between the picture, word and meaning of text. Learners get to understand that words, pictures and sentences tell a story and convey information that is complemented by different features and invites a listener into conversation with the author hence making meaning effortless (Burns, 2017).

Reading comprehension in literacy is made easy and interesting because of the technological enhancement that comes with digital animation. It acts as a stimulant in reading and listening of specifically stories which make the reading experience qualitatively different from that of using traditional paper books (Takacs, Cornelia & Kegel, 2016). The monotony of using paper books in every class activity brings boredom to learning yet learners enjoy impromptu activities which makes watching digital animation ideal. This also encourages cooperative learning through peer discussions after watching these animation clips. This motivation is good for the learner but if not well presented it may a negative cognitive impact considering that some digital animations are not for learning purposes.

Digital animation can mirror and reinforce proven enhancement of reading comprehension through the use multi-media supports in form of pop-ups, linked questions, online resources and e-tutors that engage questioning, prompts and read aloud. Struggling readers' who are often faced with difficulties because of limited reading vocabulary are easily helped through these enhancements. Increasing vocabulary is an important goal and necessary component of comprehension especially for learners as early as 6 years for purposes of forming a

good foundation. This enables learner assessments which informs a level on what level of excellence they are.

The multimedia supports that have been developed were done in line with a particular set of learners. It is imperative that multi-media supports are developed in line with the needs of the learners in a given setting like for this case in Uganda. Text-to-speech animated clips developed are in the accent which a learner in Uganda may not easily understand due to the differences in pronouncing words and the speed at which a text is read.

In multi-media learning framework, there is reason to expect primary one learners to learn more effectively from presentations that include words combined with pictures than words alone which is the case with digital animation (Mayer, 2011). There is evidence that learners can comprehend and retain unfamiliar words and story meaning if presentation is in both visual and verbal. When a story is processed through both visual and verbal channels, comprehension is enhanced and complex ideas easily understood. Dual channel processing when in close temporary proximity of words and pictures make understanding easier. It also facilitates memory traces that connect details of pictures with phases in the narrative (Management Association, 2017). Memory of story line and story detail is boosted which is very important in reading comprehension.

According to dual-channel assumption, the advantage of having images and text is that learners have a chance to match verbal information with corresponding images because they are presented at the same time that facilitates better comprehension of the story events (Verhallen & Bus, 2011; Takacs et, al. 2015). Digital Animation provides guidance to the learner, more so in integrating images and language and cementing these associations firmly in their memory. This

eventually facilitates the enhancement of memory traces that connect details of pictures with phases in the narrative (A.G Bus et al, 2015).

Presentation of visual and verbal information in digital animated stories would be more relevant to the learners of lower primary classes learners if they had content in line with the themes in the curriculum that they easily relate to for instance instead of a helicopter that a learner hardly interacts with, a story line may have a taxi or 'boda-boda' which majority of Ugandan learners relate to.

In digital animations, visual elements are normally presented as a single detailed illustration that can be split up into several smaller portions that are highlighted or zoomed in and out, each representing one element of narration. Thus synchronizing phrases in the narration with portions of the relevant picture which makes it easier for a child to make connections between words and images. This also makes the lower primary classes child concretize the narration without much effort compared to screen shots (Smeets & Bus, 2014) hence hold a learner's attention longer. This makes a learner's understanding of the scene and complex expressions easier for instance 'meat' or 'meet' (Smeets & Bus 2012; 2014).

According to Schnotz (2005), integration of text and picture is not necessarily associated with the visual modalities alone, but can also be conveyed by other sensory modalities such as sound images that are evidenced in animated texts. Background sound for instance of knocking on a door, birds whistling or an engine running enrich non-verbal coding and thus help concretize scenes and word meanings hence enhancement of comprehension. When background sounds are contingent with the oral text, this may enable simultaneous processing of verbal and non-verbal material, thereby facilitating language comprehension. Moreover apps often include non verbal music which may lend support to text comprehension by illustrating the character's

mood for instance fear, sadness and happiness. For this to make more sense, these texts should have content that learners relate to, for instance life experiences in the local Ugandan setting like a child being woken up by the sound of a cock in the morning and also connect to literature they have previously been exposed to, then later to universal concepts (Kenne and Zimmermann, 2005).

Digital animation is effective in attracting learners' attention through its presentation that leaves the audience in anticipation. A story is repeatedly listened to and watched especially for age (Verhallen & Bus, 2009) but because of its features, the learner is always eager to watch it over and again. This is possible because of the balanced set of motion pictures, enriched with music and sound which motivates the reader to re-read. Stories also become more attractive if semantically related words are presented closely together in space and time which is an attribute relevant to learners of lower primary classes (Moody, Justice & Cabell, 2010). Word learning and understanding is enhanced through this because if a child has not understood the first time, will definitely do the other times the story is repeated.

Visuals in digital animations are very important in enhancing reading comprehension as a foundational skill in early childhood education but more research that is relevant to the Ugandan child in lower primary classes is important so that content developed enables a learner to develop holistically.

In digital animations, the use of visual presentations and audio sounds are chosen in line with the audiences. This played a role in the way the audience comprehends a text or a clip. Presentation of an image with the help of digital animation say visual effects is a concept whose whole purpose is to direct the audience's attention, and make clear what is of great importance in the scene (Lightfoot & Natasha.2014). It aims at making the presentation of any idea completely

and unmistakably understood, whether that idea is in action, personality or mood. To sustain the learners' attention, the focus is the presentation being in child characters like 'cartoon' in motion. Visual effects help the audience to gain a clearer understanding of characters and storylines. Camera movements, themes, actions, blocking and stage settings indicate many things such as character, next action and thinking.

2.2. Digital Animation and Phonics.

The Audio effects in digital animations enhance the literacy aspects of Phonological knowledge which is a broad skill that includes identifying and manipulating units of oral language such as words, syllables, and onset rhymes. For example, the word 'mat' has three phonemes: m/ /a/ /t/. There are 44 phonemes in the English language, including sounds represented by letter combinations such as /th/. Acquiring Phoneme awareness is important because it is the foundational skill for spellings and word recognition. Phonemic awareness is one of the determinants of how well a child will learn how to read during his first two formative years of study.

Phonics is how most learners learn to read, and it's a brilliant way that enhances literacy skills at an early stage of a child's reading. It is a method of teaching a learner how to sound out alphabetical letters rather than focusing on strict spellings and learning by rote. With repetitions in sounds, a child can learn how to blend sounds to make a word (http://m.youtube.com.watch). Learners begin to read and decode new written words by sounding them out, or in phonic terms, blending the sound spelling patterns for example the sounds, digraphs, trigraphs and tricky words.

Repetition of audio sounds in animation enhance literacy skills through acquisition of phonological knowledge through different app like 'Squeebles Spelling Test', 'Phonics Genius', 'Best spelling apps' and many others. Repetition in digital animations support blending which is one of the many ways new words are made in English. It refers to joining the beginning of one word and the end of another to make a new word with a new meaning. According to Nordiques (2017), a blend is a word formed by merging sounds and meanings of two or more other words

or word parts for example a motorcade - motor + cavalcade, brunch – breakfast + lunch, smog – smoke + fog, stagflation – stagnation + inflation, spork – spoon + fork, dramedy – drama + comedy (Bauer, in Renner et al. 2012).

Childlike sounds in digital animations attract a learner to pay attention since it's in line with who they are. It facilitates the use of single sounds, making of syllables and joining of these sounds to make words and also derive meaning. This is possible through giving sounds and relating them with pictures that are familiar to the child as shown in this link (http://m.youtube.com.watch)

Digital animation enhances consonant blends a literacy skill for guiding learners in reading words. This enables a child to easily read sight words and do spellings practice. In digital animation, it is evident in 'Jolly Phonics', a program that helps learners learn phonics and grow in vocabulary. Jolly phonics is a fun and child centered approach to teaching literacy through synthetic phonics. This is through joining of sounds and making words. They have word previews that help in blending and making new words. Jolly words help a child learn how to spell and sound out new words by learning phonics, consonant blends, word families, diphthongs, digraphs through interactive spelling puzzles (https:m.youtube.com.watch).

The duration of these digital animations enhances literacy skills through ensuring that the period used is in line with the attention span of a learner. These animations are developed in such a way that time span is key. The sounds developed help a child learn but would learn better and faster if the pictures related to the sounds were familiar to the learner.

Digital animations produce rhymes with their audio effects which for instance teach sounds. The sound 'b' can be well explained with the rhyme 'Baa Baa black sheep'. It also

comes with the words, images and since it is repetitive, it gives a child an opportunity to pick the sound and relate it to the other content of the clip. The animated rhymes enhance reading on you-tube though so many are in English with no local content. These include rhymes like 'Johnny, Johnny' 'Little Baby bum' 'Wheels of the bus' however, Uganda would benefit more if this content is localized by using the local language and rhymes like 'tuulotuulo, kwataomwana' often used in the lower primary classes schools has vocabulary with things in the environment.

The development of literacy skills requires a child or learner to have basic language, listening skills and word awareness. These are easily acquired through repetitive tongue twisters and sayings. Digital animations present tongue twisters and sayings in repetitive forms that enable a child to get exposed to new language and words which make Phonological skills to develop in a predictable progression. This concept is important, as it provides the basis of sequencing tasks from easy to difficult.

The tongue twisters used locally in the form of digital animation are mainly developed by the other countries other than Uganda. Many of the words may be said by a child in the Ugandan setting but if local content is used and tongue twisters are developed, it could have a more appealing impact on the learners and their advancement in developing phonological knowledge.

Digital animation makes presentation of text through the use of silly sentences repetitive which enhances literacy skills. These sentences do not have meaning but help a child learn pronunciations and expand on vocabulary. Short poems, rhymes and songs are presented by digital animation to enhance reading of new words and sounds that give foundation to reading at an advanced stage.

Programs that provide emergent readers with visual and auditory examples of sound manipulation say 'star' without the sound 'r' can make these concepts less abstract and help readers build connections between oral and written language. Animation is said to increase struggling readers' mastery of them (Baker & Torgeson, 1995; Heimann, Nelson, Tjus and Gillberg, Mitchell and Fox, 2010). It is imperative to develop animations in line with needs of learners.

The success of any digital animated context should be structured, research-based and in line with curriculum which should be applied here in lower primary classes schools in Uganda not adopting the global way of teaching reading and it's also important that digital animations of phonics are developed in the local languages in Uganda since the mother tongue policy is at play.

2.3. Digital Animation and Vocabulary Development.

Digital animation presentations have an effect on vocabulary through context and content in that reading of phrases, intonations could either make a learner a better reader or not. Many researchers including Breznitz (1987), Armstrong (1983), Knupp (1988), & Samuel (2006), argue that digital animation have an impact on literacy skills. Vocabulary development is key to reading competence that enables readers to devote their cognitive effort to comprehension and enjoyment of reading so that they can put their written knowledge to oral language.

The framework of presentation in digital animations ensure vocabulary development by emphasizing decoding and natural phasing for mainly struggling readers which are made possible through necessary practice (Kuhn & Stahl, 2003) which is also applied in traditional methods of teaching though the physical presence of a teacher or an adult is necessary. Vocabulary development is a process by which people acquire words. Throughout the school years of learners, children continue to build vocabulary because the environment contributes to its development. The context in digital animation makes vocabulary development through motivation which explains why learners who find reading laborious tend find it fun when watching digital animations. It gives a teacher and a learner an option to use it whenever it is convenient.

In today's digital world, reading materials come in many forms. Learners will read many texts, but they also be listening carefully to music for lyrics, intonations and mood which is the context. They may also be listening to interviews and other oral forms of storytelling or even conducting their own. As they listen to this information, especially content from primary sources

or interviews, they need to become critical listeners to better evaluate point of view and personal perspectives. This is possible in other methods of teaching but time consuming and laborious. As learners listen and watch digital animations to get the narrations right, they don't often notice they are reading and practicing vocabulary development. Effective digital story tellers don't wing it they write scripts, read, reread, edit and practice many times. They work on intonation, using grammar cues to help with cadence and flow. If learners are not strong readers or confident speakers or if they are new to a particular language creating a digital story provides an authentic reason to practice vocabulary development. This allows them to record, listen, and rerecord until they are comfortable with their sentence formation and ready to include their speech within their digital story(Kolk, 2017). It is at this stage where there is need for the primary one learner to start practicing and recording what is being watched and listened to for improvement of vocabulary development. The content and context of the digital animations make a learner easily identify with what has been developed and also fosters creativity. Learners need to read material silently and aloud with ready support for words and concepts that they do not know (Meyer & Felton, 2010).

Providing vocabulary development guidance in form of audios like combining text-to-speech, visuals and speech recognition helps a reader to realize what needs correction. This is through an electronic tutor where an animated agent interacts with a reader like a tutor. These programs have proven to be very helpful to both learners and their teachers through providing the readers with word recognition and vocabulary development supports, then tutors or parents with monitoring information.

Given the limited supply of trained reading tutors and specialists who can provide a fluent oral model and one-on-one tutoring, the effectiveness of e-tutor is encouraging like a

reading Tutor. Audio texts could be recorded by a tutor with the local accent which may enable a lower primary classes child understand faster. E-tutors that have had interaction with the education system of Uganda would extensively benefit a learner in these classes. The context in which these vocabulary development supports are developed would meet the need that has proven challenging to the learners.

According to *The national Reading Panel* (2000), Teacher modeling through teacher assisted reading, peer assisted reading and audio assisted reading can enhance vocabulary development. Audio effects in digital animation can be used as a strategy to ensure all the above are put to use. The context of digital animation makes vocabulary development a focus and readers who are lacking have little cognitive resources to monitor comprehension. The potential of digital animation to improve vocabulary development especially in struggling readers has received considerable attention. RAVE-O program addresses specific deficits of young readers in language and learning disabilities. This addresses vocabulary development, comprehension, orthographic and phonological awareness engagement. This program has proven a positive impact on learners' literacy skills and reading attitude (Wolf, Miller, & Donnelly, 2011).

Through audios in digital animation , learners are able to listen to read aloud texts which is a foundation to development of literacy skills. It is the most important activity for reading success (Bredekamp, Copple, & Neumann, 2000). It provides learners with a demonstration of phrased and fluent reading of lower primary class level. The learners are able to independently put them to use which is not the case for the traditional methods of reading. An adult has to be present to guide during time of difficulty.

The read-aloud texts that the learners listen to are good but may present a challenge to learners who may not understand the accent of the sounds and words in the story. It is important

that these stories are localized through the use of teachers and fellow learners in the Ugandan setting.

Listening to audios in digital animation develops key understandings and skills, such as an appreciation for how a story is written and familiarity with story conventions like "once upon a time" and "happily ever after' (Bredekamp et al., 2000). This also puts emphasis on pronunciations and intonations. If this is done with the help of the teachers in lower primary class school, it's easier for the learners to improve on their vocabulary development because of the fact that they identify with the pronunciation and intonation of words.

Digital animation texts with supports of vocabulary development such as linked mini-videos demonstrate a concept or dictionaries and thesauruses with text-to-speech capabilities. This can help learners achieve the goal of advancing in literacy skills and improve comprehension especially among the 5-7year olds.

CHAPTER THREE

METHODOLOGY

3.0. Introduction

This chapter presents the methodology that was employed when carrying out the study. It discusses the research design, methodology, location of the study, population of the study, sampling methods, research procedures, data collection methods and techniques, data analysis and limitations.

3.1. Research Methodology

Burns and Grove (2003) define a research design as "a blue print for conducting a study with maximum control over factors that may interfere with the validity of the findings". It refers to the overall strategy that a researcher uses to integrate the different components of the study in a coherent and logical way, thereby ensuring that the research problem is effectively handled (DeVaus, 2001). Quantitative approach to researching this study because it could easily find the differences in the use of digital animations and use of traditional method of teaching according to the objectives and hypotheses which show performance of learners in literacy aspects of reading comprehension, phonological knowledge and vocabulary.

3.2. Research Design

The experimental study research design was employed during this study. It is a systematic and scientific approach to research in which the researcher manipulates one or more variables, and controls and measures any change in other variables. The study had a control

group and experimental group with the subjects randomly assigned between the two. An experimental study was used because the comparison and measurement of the two groups of participants needed the researcher to put the participants to test to find the difference the invention brings unto the learners. It was also due to the nature of research objectives and research hypothesis of the study that needed this kind of design. This design enabled the researcher to get the difference between the two groups that participated.

3.3. Location of the Study

The location of the study was Mukono Municipality which is an urban center and has schools that have been using digital animation as a form of advancing literacy skills. It also has the lower primary school learners that have a background of using English reading competence which was the form in which the animations were presented.

3.4. Target Population.

In this study, population can be defined as the group of people with one or more characteristics in common (Sowell, 2005). The target population was primary one with similar characteristics in age and is also referred to as theoretical population which was a total of 300 learners. According to McLeod (2014), the target population is the total group of individuals from which the sample might be drawn. The study targeted a population selected from two schools which included Cornerstone Junior School and St Elizabeth Montessori School which took on the pseudo names of X and Y respectively. These use digital animations during literacy

lessons before but randomly selected both the control and experimental group from both schools. The participants were drawn from two schools and specifically from primary one because it was the class where digital animations were being used.

3.5. Sampling size and Sampling Techniques.

The sampling technique at the level of schools was purposive due to the use of digital animations. Random sampling was used for selecting learners of primary one who sometimes learn literacy the traditional way and is enhanced by the digital animation innovation. Purposive sampling is a non-probability sample that is selected based on characteristics of a population and the objective of the study (Crossman, 2017). It is also known as judgmental, selective or subjective sampling. Purposive sampling focuses on particular characteristics of a population that are of interest which in this case was the schools learning literacy and enhancing it using digital animation. Through the use of purposive sampling, 2 schools were chosen with each providing both a control and experimental group. The learners were randomly sampled after identifying the schools with 40 for the control group and 40 for the experimental group.

Table 3.1. Distribution of Sample according to the groups.

Group	School x	School y	Total	Sampling Technique
Total population	100	100	200	Purposive sampling
Control Group	40	40	80	Systematic sampling
Experimental Group	40	40	80	Systematic sampling

The participants were equivalent in the economic, cultural and social level. They were different in their general skills in accordance with the statistical treatment of their results in the first term of the school year 2018. They were equivalent in their literacy skills tests for beginning of term 2018 term 2. The age variable of the sample was also controlled before the experiment. The participants were between 5 and 7 years of age.

3.6. Research Instruments

3.6.1. The Tests

The data obtained was from primary one learners who study literacy through both the traditional way and through digital animations. To achieve the purpose of the study, the researcher used tests as an assessment tool to collect data that is relevant to the skills scores. To illustrate, a pre-test was carried out by both the experimental and the control groups. The purpose was to identify the two groups' level before starting the strategy and to compare results of the pre-test with the results of the post test after the intervention. The test was prepared according to the criteria test specifications. In addition, the researcher ensured that the skills under investigation were: comprehension, phonics and vocabulary were being tested as indicated in the testing tool.

3.6.2. Observation

An observation checklist was used to confirm and show the difference between the use of traditional methods of enhancing literacy skills and the use of digital animation in enhancing literacy skills and the forms in which the digital animations were presented.

3.7. Measurements

The tests were designed according to the general specifications of a valid test. The items were related to the objectives represented in testing the target learner's literacy skills of reading comprehension, phonics and vocabulary. There is a consistency between the items of the test and the cognitive levels of Bloom's Taxonomy.

3.8. Validity and Reliability

3.8.1. Validity

Validity is the extent to which a concept, conclusion or measurement is well-founded and likely corresponds accurately to the real world based on probability. The validity of measurement of the tools is equivalent to a percent of how accurately the hypothesis corresponds with reality. Alden (2007) observes that the quality of an instrument refers to the degree to which the resulting score truly represents the factor to be measured. Alden further notes that the instruments must be tested for face validity, content validity and concurrent validity. Content validity is concerned with the extent to which instruments measure what they are designed to determine and the extent to which they cover the variables. To ensure content validity index, the researcher constructed data collection instruments for each aspect of literacy in the study that is reading comprehension, vocabulary and phonological knowledge. These tools were given to 5 specialists in the area of digital animation and literacy. The researcher consulted subject matter experts (SME) and the items were reviewed.

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded(a)	0	.0
	Total	20	100.0

a Listwise deletion based on all variables in the procedure.

3.8.2. Reliability

Reliability refers to whether your data collection techniques and analytic procedures would reproduce consistent findings if they were repeated on another occasion or if they were replicated by another researcher. This was possible through avoiding participant bias where by the learners and teachers did not have an idea why learners were being tested, researcher bias where the views and knowledge of the researcher was not discussed with research assistants, researcher error and participant error.

To maintain the validity of the test, a pilot study was conducted: two tests were applied to a random sample of 40 pupils from Crystal Kindergarten and Primary School. The results were recorded and statistically analyzed to measure its validity and reliability. The items of the test were modified in the light of the statistic results. The results are shown below.

Reliability Statistics

Cronbach's Alpha	N of Items
.185	7

3.9. Data Collection Procedure

Prior to the data collection, a letter of introduction was obtained from the school of post graduate Kyambogo University. Another letter assuring confidentiality of the information to be provided was designed by the researcher. The researcher visited schools using digital animation and presented these letters. Through the guidance of the head teachers from the two schools, respondents were randomly sampled out and an appointment made with them for the day when the tests and interviews would be done. The tests for specific literacy schools were done on different days as schedules were made by specific class teachers. The pre-tests and post tests

were done on the same day for a particular literacy aspect to ensure that the effect of the intervention is easily assessed.

3.8. Data Processing and Analysis

Cohen and Manion (2001), indicate that data collected is known to be raw information and not knowledge by itself. It was therefore organized in various stages. At the end of data collection process, the raw data collected was organized according to specific literacy skills basing on the two groups that is control and experimental groups in order to identify any errors. It was categorized into themes using codes to determine the significant patterns and also attach meaning. The scores were organized in form of graphs and later the two groups compared to find out the differences in performance. These scores were later analyzed using t-test analysis.

3.8. Ethical Consideration

An introductory letter from Kyambogo University was obtained and presented as a proof of the study with the purpose to be passed to the authorities in the schools. The letter sought permission and cooperation to administer the research instruments and acted as evidence of what the research is about, in order to avoid any bias from the respondents. Interviews were carried out after getting the consent of the interviewees and before each interview, the study objectives were clearly explained to the participants. Each respondent was assured that the information provided was confidential and only for an academic purpose and confidentiality would be ensured by keeping the respondent's identity anonymous. Also the conclusions of the study would be based on the data collected.

CHAPTER FOUR

PRESENTATION OF FINDINGS, ANALYSIS AND INTERPRETATION

4.0. Introduction

This chapter details the findings and analysis of data obtained from this study that sought to examine the use of digital animations in the enhancement of literacy skills among primary one learners. Measures were taken to find out if there is a significant difference between the use of traditional methods of teaching literacy and the use of digital animations as a means of improving literacy skills among primary one learners.

The researcher therefore used the t-test analysis to find out the differences in scores of literacy by assessing the two groups i.e. the control group which did not use the digital animations and experimental group which was exposed to the treatment. 160 learners were randomly selected in the study with 80 being exposed to digital animations while 80 were not after which each was provided with a test that sought to measure the literacy skills of reading comprehension, vocabulary and phonological knowledge. The resulting data was then analyzed using a t-test analysis.

4.1. Demographic Characteristics

General Information on Participants

The participants were children of primary one from 2 schools that were between the age of 5-7years of age. In Table 4.1 is a summary of all the participants in the study.

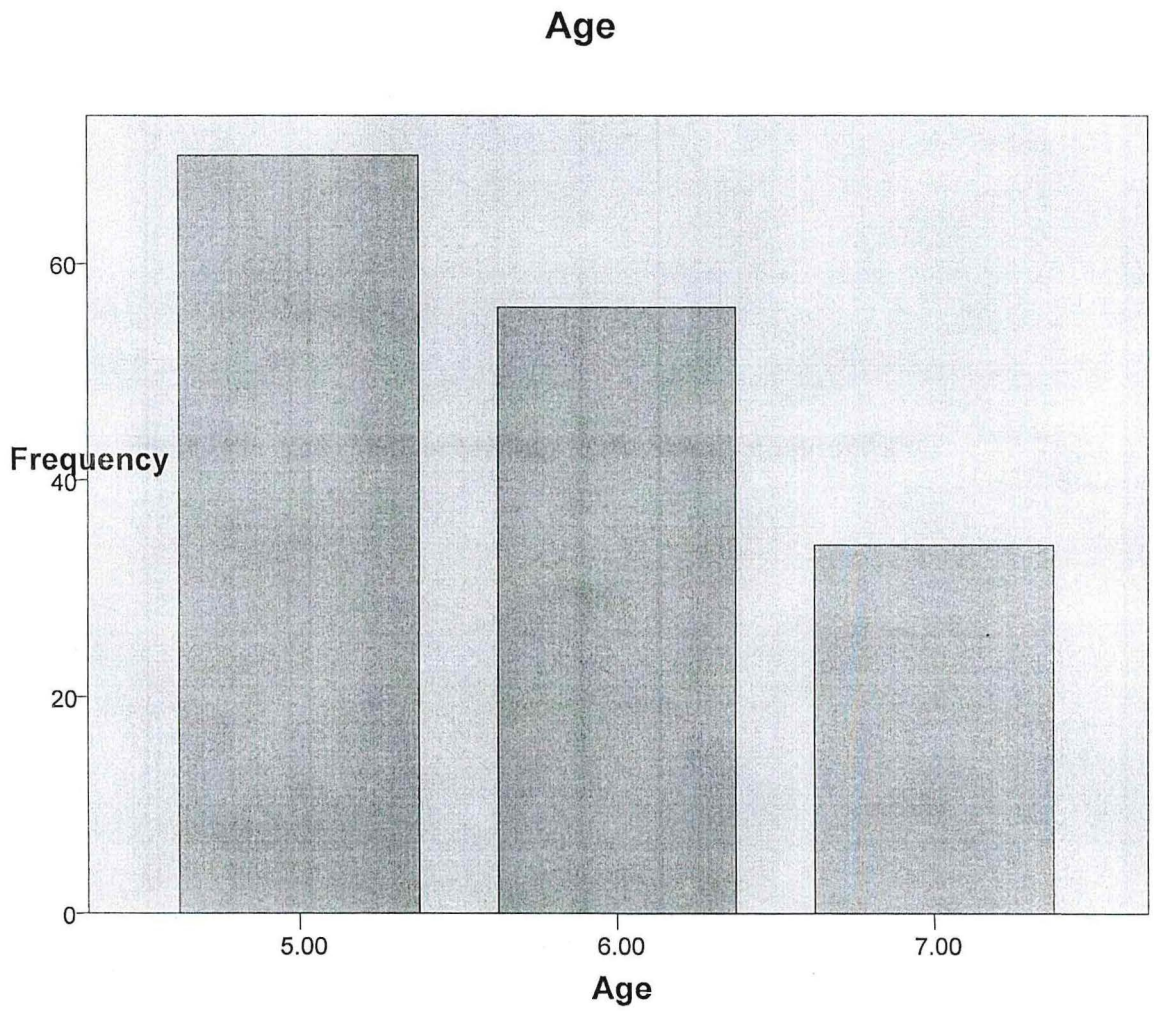
Table 4.1. Summary of the Participants in the Study

School	Control Group	Experimental Group	Total	Percentage
School X	40	40	80	50 %
School Y	40	40	80	50%
Total	80	80	160	100%

1. Age

It was the intent of this research to include the participants in the age bracket of 5-7years which defines learners of primary one studying literacy as a subject and assessed in reading comprehension, phonics and vocabulary development. Digital animations used were extracted from the primary one literacy content under the themes being covered in term 2. At the time of the study, participants' ages ranged from 5-7 years old.

Figure 4.1 Shows the Age range according to the sampled population



The figure above shows the ages of the children that were randomly selected for the two groups starting from 5 years to 7 years of age.

The 5 year olds were 70 and the 6 year olds were 55 and 7 year olds were 35 which represent the age bracket of primary one children.

4.2.1 Presentation of the Findings on Digital Animation and Reading Comprehension.

H_0. 1.There are no statistically significant differences at ($\alpha \leq 0.05$) in the skills level between the scores of the experimental group who learned reading comprehension of literacy through the use of digital animations and the scores of the control group who learnt in the traditional way.

Tables 4.2 Shows the Findings from hypothesis 1

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Comprehension	.00	80	47.9750	5.50023	.61494
	1.00	80	49.4875	4.82870	.53986

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
		Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Comprehension	Equal variances assumed	.452	.502	-1.848	158	.066	-1.51250	.81830	-3.12871	.10371
	Equal variances not assumed			-1.848	155.395	.066	-1.51250	.81830	-3.12892	.10392

Independent Samples Test

Table 4.2 Mean differences = -1.51250Standard deviation= 5.50023 P- Value =0.066

t – Value = -1.848

The p-value of 0.066 shows that there is no statistically significant difference between the pre-test and post-test scores which makes the null hypothesis stated in the study acceptable.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Control group	80	30.00	59.00	47.9750	5.50023
Experimental group	80	40.00	59.00	49.4875	4.82870
Valid N (listwise)	80				

Table 4.3 gives details of the mean, minimum score, maximum score and standard deviation.

The mean for the control group was 47.9 yet that of the experimental group was 49.4 which show that the experimental group had a slight difference in the scores though they had the same highest score.

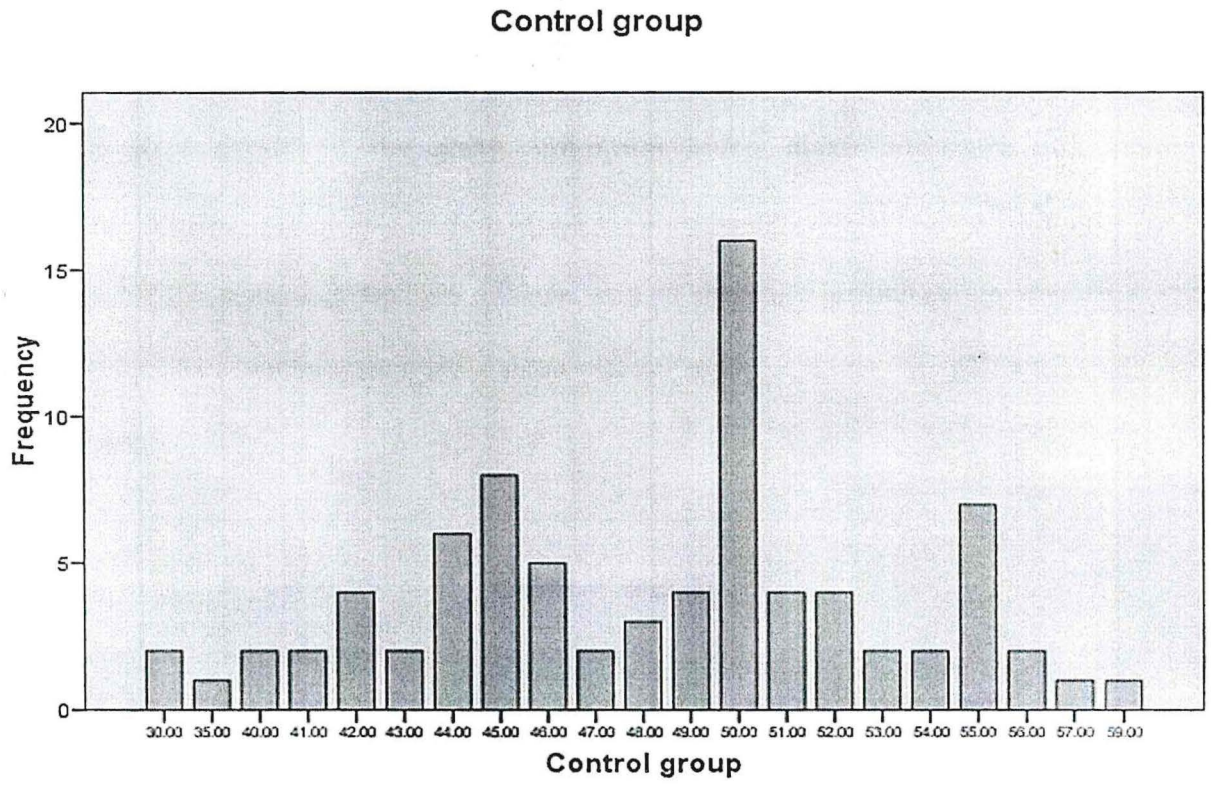


Fig 4.1. Showing Scores for participants of control group for both pre and post test results of reading Comprehension.

Fig 4.1.Shows the scores of the control group for both the pre-tests and post-tests for the literacy skill - reading comprehension. The majority of learners performed scores of 45% and 55% with the highest frequency at 50% and the lowest at 59%.

Comprehension.
Control group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	30.00	2	2.5	2.5	2.5
	35.00	1	1.2	1.3	3.8
	40.00	2	2.5	2.5	6.3
	41.00	2	2.5	2.5	8.8
	42.00	4	4.9	5.0	13.8
	43.00	2	2.5	2.5	16.3
	44.00	6	7.4	7.5	23.8
	45.00	8	9.9	10.0	33.8
	46.00	5	6.2	6.3	40.0
	47.00	2	2.5	2.5	42.5
	48.00	3	3.7	3.8	46.3
	49.00	4	4.9	5.0	51.3
	50.00	16	19.8	20.0	71.3
	51.00	4	4.9	5.0	76.3
	52.00	4	4.9	5.0	81.3
	53.00	2	2.5	2.5	83.8
	54.00	2	2.5	2.5	86.3
	55.00	7	8.6	8.8	95.0
	56.00	2	2.5	2.5	97.5
	57.00	1	1.2	1.3	98.8
	59.00	1	1.2	1.3	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

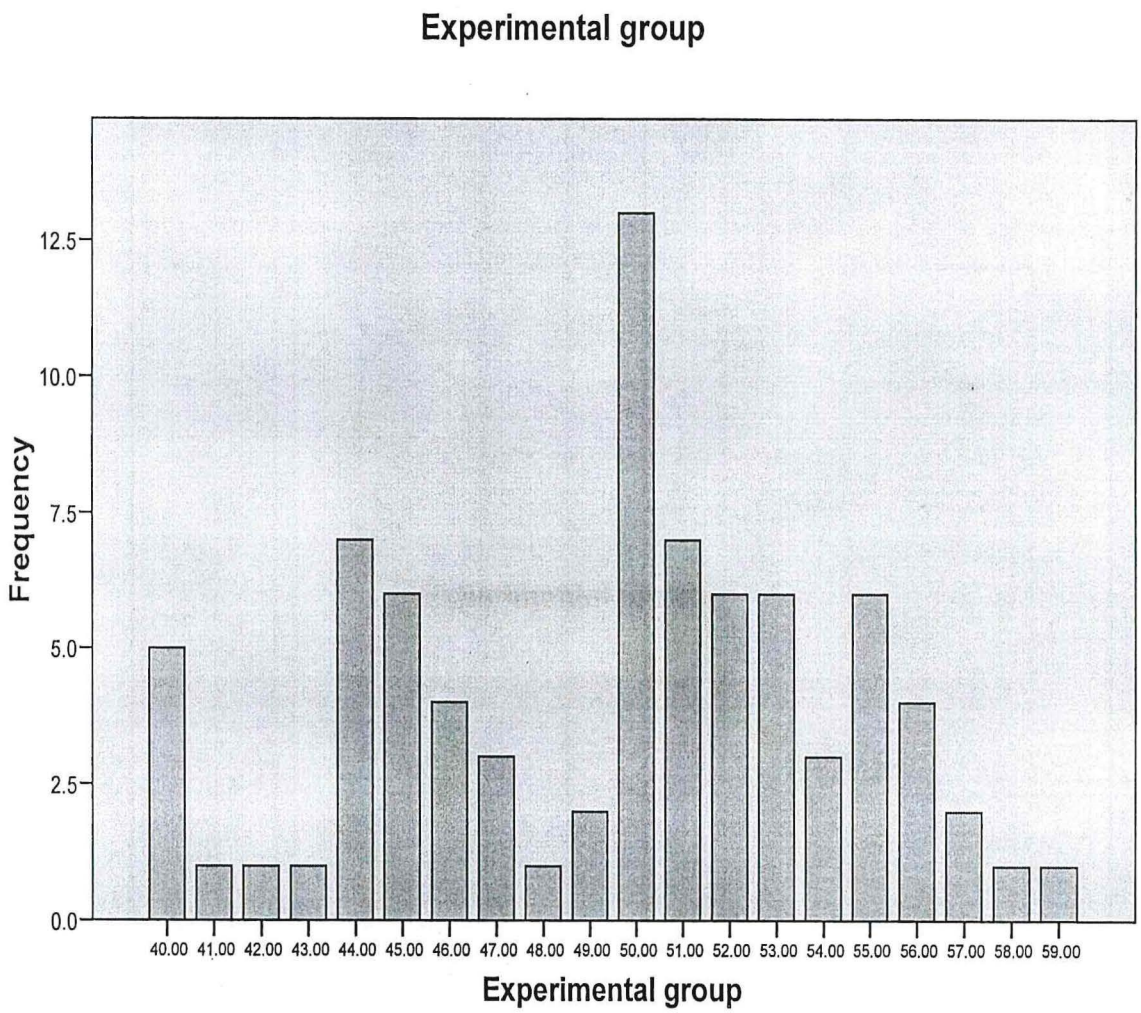

Experimental group
Frequency
12.5
10.0
7.5
5.0
2.5
0.0
40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 53.00 54.00 55.00 56.00 57.00 58.00 59.00
Experimental group

Fig 4.2 Shows Scores of participants in the experimental group for Reading comprehension.

Experimental group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	40.00	5	6.2	6.3	6.3
	41.00	1	1.2	1.3	7.5
	42.00	1	1.2	1.3	8.8
	43.00	1	1.2	1.3	10.0
	44.00	7	8.6	8.8	18.8
	45.00	6	7.4	7.5	26.3
	46.00	4	4.9	5.0	31.3
	47.00	3	3.7	3.8	35.0
	48.00	1	1.2	1.3	36.3
	49.00	2	2.5	2.5	38.8
	50.00	13	16.0	16.3	55.0
	51.00	7	8.6	8.8	63.8
	52.00	6	7.4	7.5	71.3
	53.00	6	7.4	7.5	78.8
	54.00	3	3.7	3.8	82.5
	55.00	6	7.4	7.5	90.0
	56.00	4	4.9	5.0	95.0
	57.00	2	2.5	2.5	97.5
	58.00	1	1.2	1.3	98.8
	59.00	1	1.2	1.3	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

The table above shows scores of learners in the experimental group that learned reading comprehension using digital animation. The most frequent mark was 50% with 13 participants with the most frequently scored mark. The least mark was 41%, 42%, 43%, 48% and 58%.

Observation on digital animations and reading comprehension

It was observed that the learners' participation during the follow-up activity were the same for both groups. The learners did not respond easily to the teacher's questions which indicate that

they could have not understood especially for the experimental group. They used previous knowledge acquired to respond to queries.

4.3.2. Presentation of Findings on Digital Animation and Phonics.

H_0. 2.There are no statistically significant differences at $(\alpha \leq 0.05)$ in the level of phonics between the scores of the experimental group who learned literacy through using digital animation and the scores of the control group who learned in the traditional way.

Tables 4.2 Shows the Findings from hypothesis 2

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Phonics	.00	80	50.2000	5.32346	.59518
	1.00	80	51.8500	5.14868	.57564

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
		Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Phonics	Equal variances assumed	.007	.932	-1.993	158	.048	-1.65000	.82801	-3.28540	-.01460
	Equal variances not assumed			-1.993	157.824	.048	-1.65000	.82801	-3.28541	-.01459

Table 4.

Mean differences = -1.65000 P- Value = 0.048 t – Value = -1.993Degrees of freedom = 158

The p-value of 0.048 shows that there is statistically significant difference between the pre-test and post-test scores which makes the null hypothesis stated in the study rejected.

Phonics.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Control Group	80	40.00	62.00	50.2000	5.32346
Experimental Group	80	43.00	63.00	51.8500	5.14868
Valid N (listwise)	80				

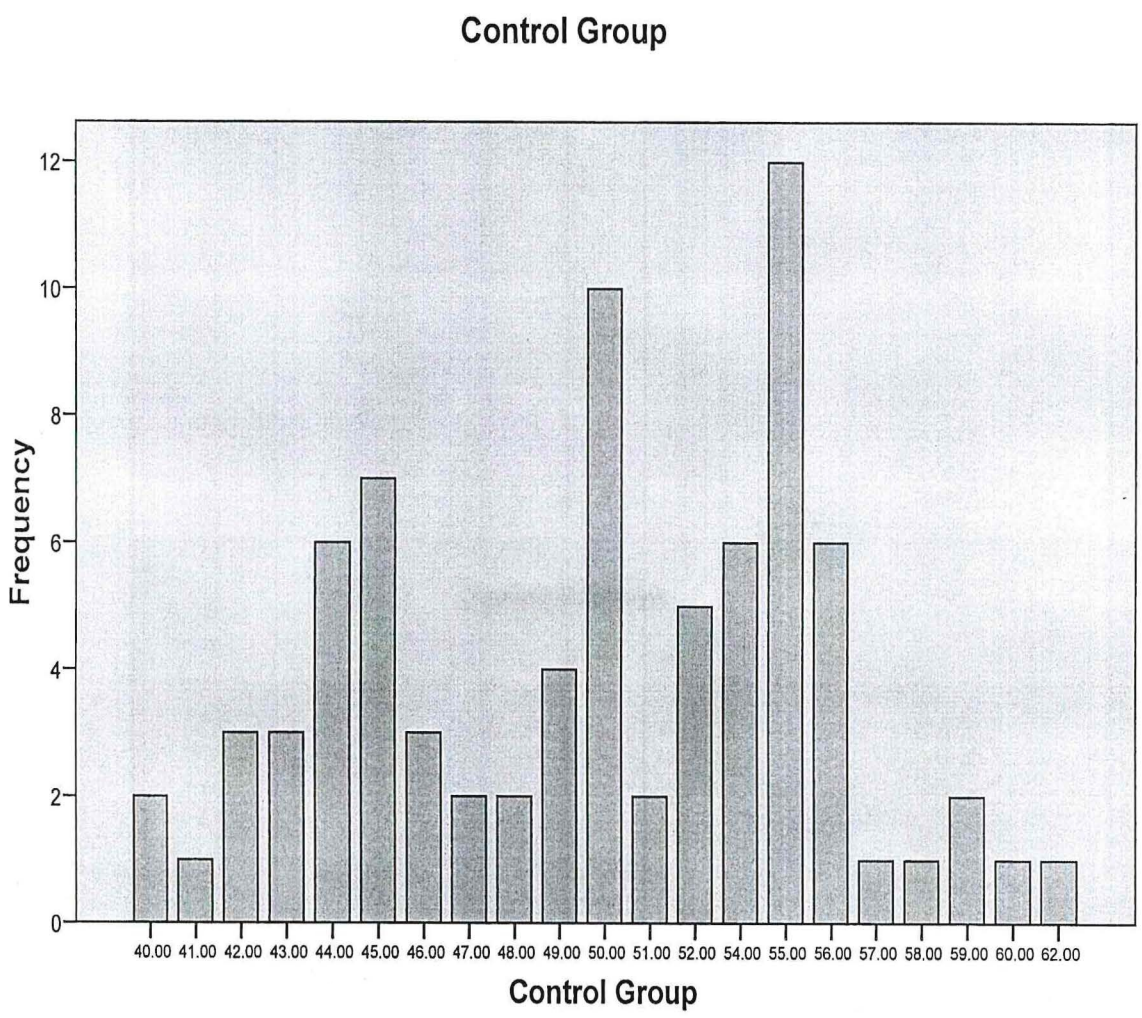

Control Group
Frequency
0
2
4
6
8
10
12
40.00 41.00 42.00 43.00 44.00 45.00 46.00 47.00 48.00 49.00 50.00 51.00 52.00 54.00 55.00 56.00 57.00 58.00 59.00 60.00 62.00
Control Group

Fig 4.3.Shows Scores of participants in the Control group for Phonics.

The graph above shows scores of participants having 55% as the mark with the biggest frequency. The learners had a frequency of 2 at 40% and 1 at 62 % representing the lowest and the highest mark respectively.

Control Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	40.00	2	2.5	2.5	2.5
	41.00	1	1.2	1.3	3.8
	42.00	3	3.7	3.8	7.5
	43.00	3	3.7	3.8	11.3
	44.00	6	7.4	7.5	18.8
	45.00	7	8.6	8.8	27.5
	46.00	3	3.7	3.8	31.3
	47.00	2	2.5	2.5	33.8
	48.00	2	2.5	2.5	36.3
	49.00	4	4.9	5.0	41.3
	50.00	10	12.3	12.5	53.8
	51.00	2	2.5	2.5	56.3
	52.00	5	6.2	6.3	62.5
	54.00	6	7.4	7.5	70.0
	55.00	12	14.8	15.0	85.0
	56.00	6	7.4	7.5	92.5
	57.00	1	1.2	1.3	93.8
	58.00	1	1.2	1.3	95.0
	59.00	2	2.5	2.5	97.5
	60.00	1	1.2	1.3	98.8
	62.00	1	1.2	1.3	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

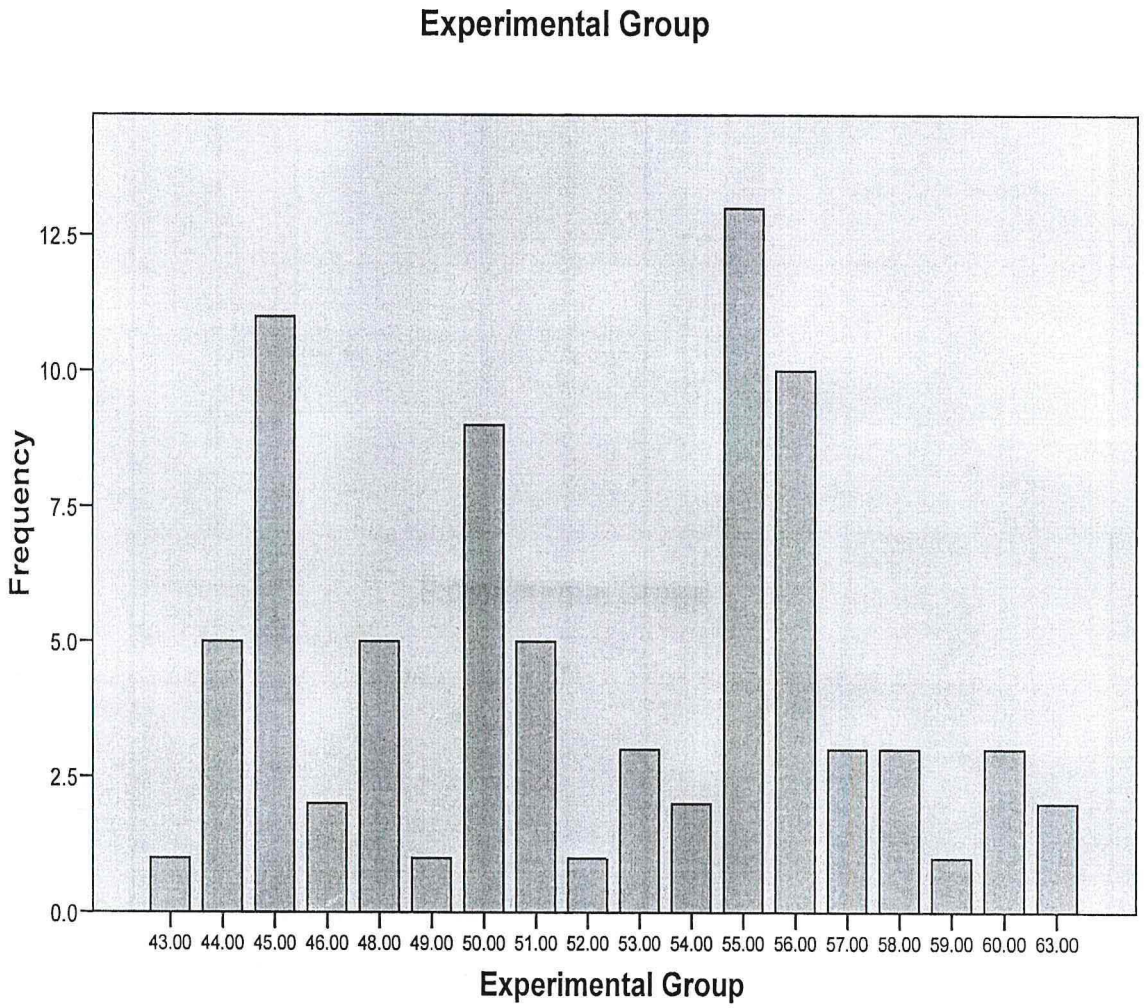


Fig 4.4 Shows Scores of participants in the experimental group for Phonics.

The figure above shows the scores of learners in the experimental Group with the highest mark at 63% and 43% as the lowest. The mark with the highest frequency was 55% and closely followed by 45% and 56%. These results show a better performance when compared to the control group scores.

Experimental Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	43.00	1	1.2	1.3	1.3
	44.00	5	6.2	6.3	7.5
	45.00	11	13.6	13.8	21.3
	46.00	2	2.5	2.5	23.8
	48.00	5	6.2	6.3	30.0
	49.00	1	1.2	1.3	31.3
	50.00	9	11.1	11.3	42.5
	51.00	5	6.2	6.3	48.8
	52.00	1	1.2	1.3	50.0
	53.00	3	3.7	3.8	53.8
	54.00	2	2.5	2.5	56.3
	55.00	13	16.0	16.3	72.5
	56.00	10	12.3	12.5	85.0
	57.00	3	3.7	3.8	88.8
	58.00	3	3.7	3.8	92.5
	59.00	1	1.2	1.3	93.8
	60.00	3	3.7	3.8	97.5
	63.00	2	2.5	2.5	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

Findings on the Observation of Digital Animations and Phonics.

There was evidence of active participation of learners in the follow up activity and the responses were in line with the digital animation. The animations were in the English language.

4.3.3. Presentation of findings for Digital Animation and Vocabulary Development.

H_o. 3.There are no statistically significant differences as ($\alpha \leq 0.05$) in the level of phonemic awareness between the scores of the experimental group who learned phonics through using digital animation and the scores of the control group who learned the traditional way.

To test this hypothesis, the researcher used a Pearson correlation as the following table shows.

Table 4.3 Shows Findings for Hypothesis 3

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Vocabulary	.00	80	49.7375	5.81518	.65016
	1.00	80	52.7000	6.21635	.69501

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Equal variances assumed	.166	.684	-3.113	158	.002	-2.96250	.95170	-4.84220	-1.08280
Equal variances not assumed			-3.113	157.302	.002	-2.96250	.95170	-4.84227	-1.08273

Mean differences = -1.51250 Standard deviation = 5.81518 P- Value = 0.002

t – Value = -3.113

The p-value of 0.002 shows that there is no statistically significant difference between the pre-test and post-test scores which rejects the null hypothesis stated in the study.

Vocabulary

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Control Group	80	38.00	62.00	49.7375	5.81518
Experimental Group	80	44.00	76.00	52.7000	6.21635
Valid N (listwise)	80				

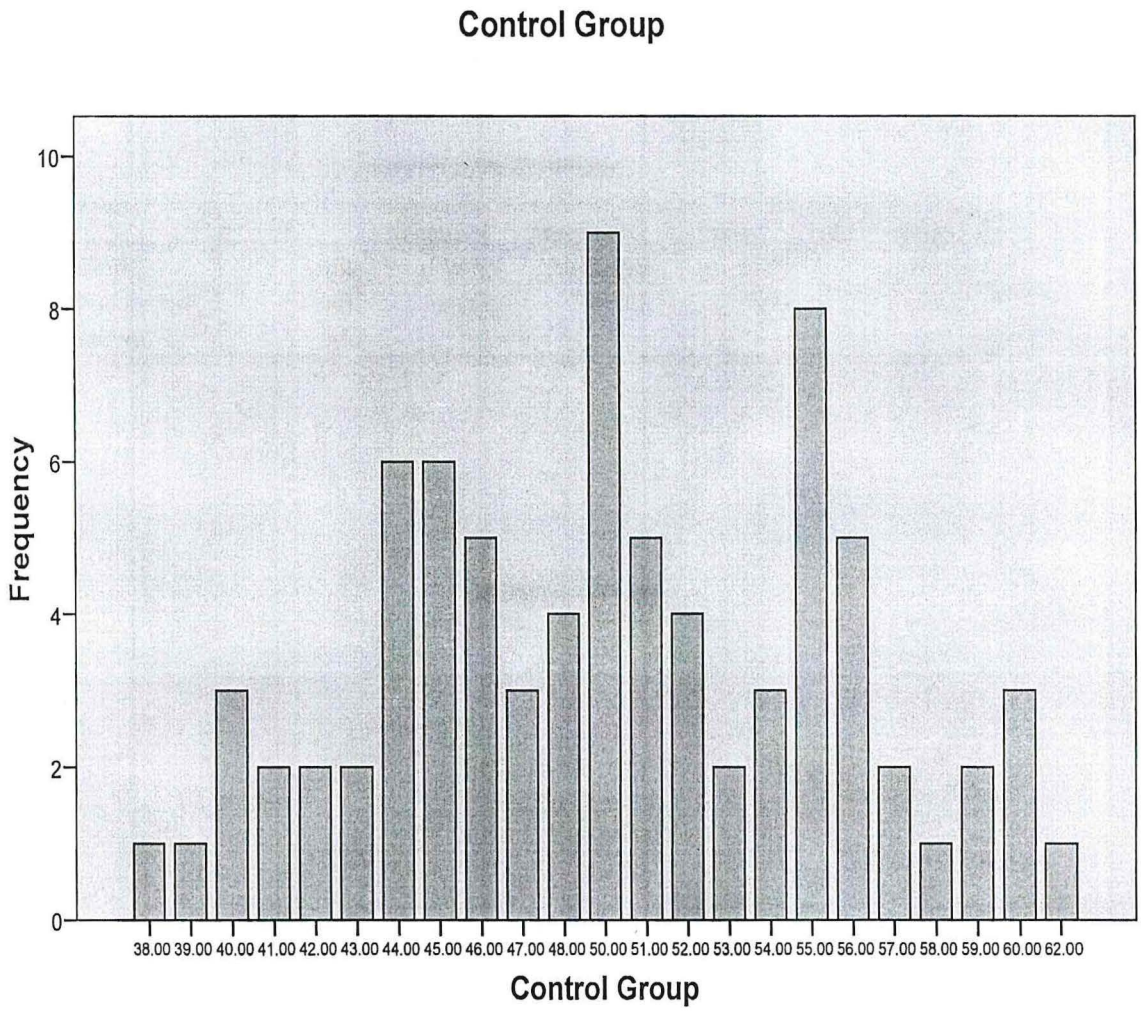


Fig 4.5 Shows Scores of participants in the Control group for Vocabulary.
Scores above show that 38% was the lowest mark with 1 participant, and 62% was the highest mark with the same frequency. 50% registered the highest frequency and closely followed by 55% for the control group.

Control Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	38.00	1	1.2	1.3	1.3
	39.00	1	1.2	1.3	2.5
	40.00	3	3.7	3.8	6.3
	41.00	2	2.5	2.5	8.8
	42.00	2	2.5	2.5	11.3
	43.00	2	2.5	2.5	13.8
	44.00	6	7.4	7.5	21.3
	45.00	6	7.4	7.5	28.8
	46.00	5	6.2	6.3	35.0
	47.00	3	3.7	3.8	38.8
	48.00	4	4.9	5.0	43.8
	50.00	9	11.1	11.3	55.0
	51.00	5	6.2	6.3	61.3
	52.00	4	4.9	5.0	66.3
	53.00	2	2.5	2.5	68.8
	54.00	3	3.7	3.8	72.5
	55.00	8	9.9	10.0	82.5
	56.00	5	6.2	6.3	88.8
	57.00	2	2.5	2.5	91.3
	58.00	1	1.2	1.3	92.5
	59.00	2	2.5	2.5	95.0
	60.00	3	3.7	3.8	98.8
	62.00	1	1.2	1.3	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

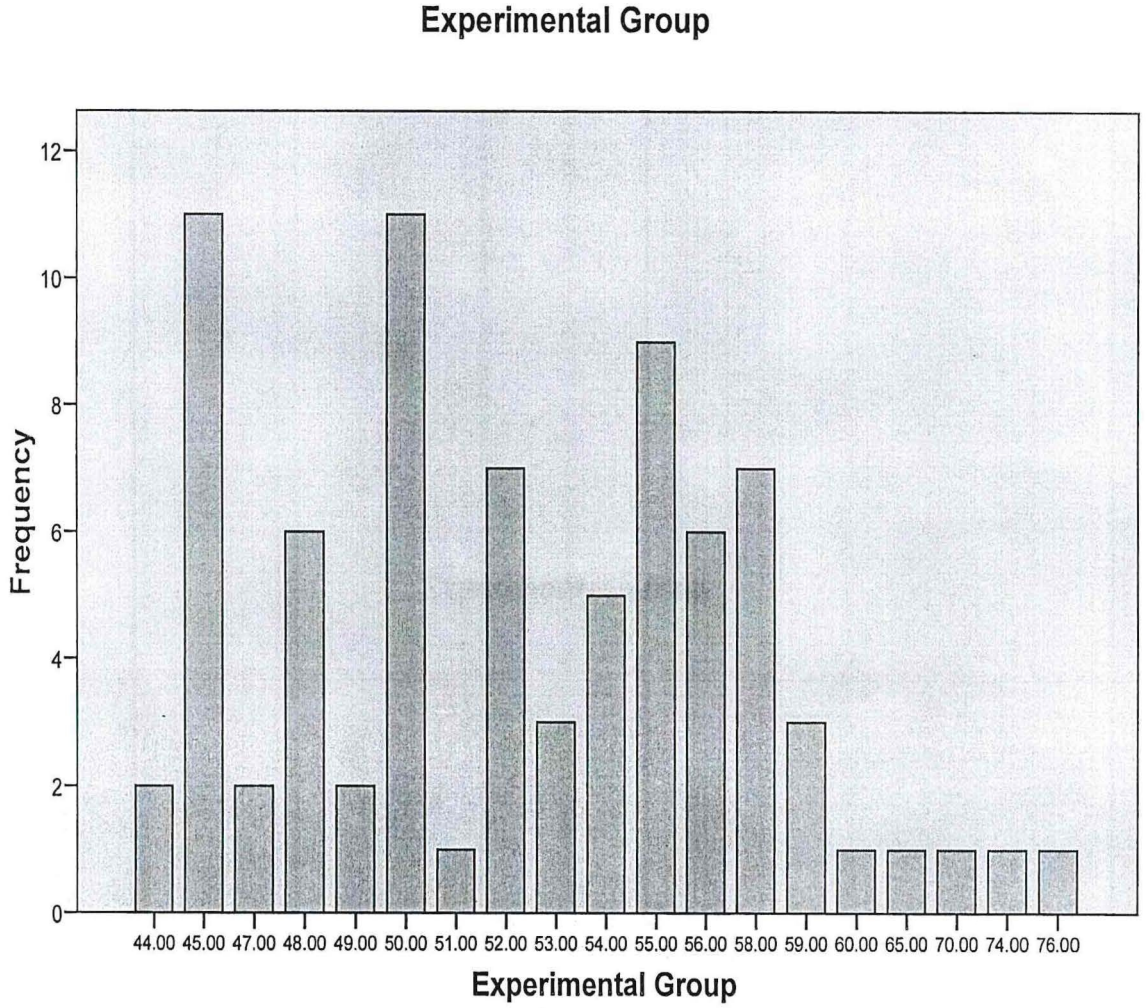


Fig 4.6 Shows Scores of participants in the Experimental group for vocabulary.

The above figure shows that the majority of the learners scored 45% and 50%. The lowest mark was 44% and the highest was 76%. This shows a big difference between the two groups of participants.

Experimental Group

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	44.00	2	2.5	2.5	2.5
	45.00	11	13.6	13.8	16.3
	47.00	2	2.5	2.5	18.8
	48.00	6	7.4	7.5	26.3
	49.00	2	2.5	2.5	28.8
	50.00	11	13.6	13.8	42.5
	51.00	1	1.2	1.3	43.8
	52.00	7	8.6	8.8	52.5
	53.00	3	3.7	3.8	56.3
	54.00	5	6.2	6.3	62.5
	55.00	9	11.1	11.3	73.8
	56.00	6	7.4	7.5	81.3
	58.00	7	8.6	8.8	90.0
	59.00	3	3.7	3.8	93.8
	60.00	1	1.2	1.3	95.0
	65.00	1	1.2	1.3	96.3
	70.00	1	1.2	1.3	97.5
	74.00	1	1.2	1.3	98.8
	76.00	1	1.2	1.3	100.0
	Total	80	98.8	100.0	
Missing	System	1	1.2		
Total		81	100.0		

Findings on the Observation of Digital Animations and Vocabulary Development

The responses of participants during the assessment of vocabulary showed that digital animations had a positive impact on the performance. The experimental group was more lively than the control group. They were more participatory during assessment activities.

Summary of the differences in the scores of the control and Experimental group in literacy.

Group Statistic

	Group	N	Mean	Std. Deviation	Std. Error Mean
Comprehension	.00	80	47.9750	5.50023	.61494
	1.00	80	49.4875	4.82870	.53986
Vocabulary	.00	80	49.7375	5.81518	.65016
	1.00	80	52.7000	6.21635	.69501
Phonics	.00	80	50.2000	5.32346	.59518
	1.00	80	51.8500	5.14868	.57564

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
		Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Comprehension	Equal variances assumed	.452	.502	-1.848	158	.066	-1.51250	.81830	-3.12871	.10371
	Equal variances not assumed			-1.848	155.395	.066	-1.51250	.81830	-3.12892	.10392
Vocabulary	Equal variances assumed	.166	.684	-3.113	158	.002	-2.96250	.95170	-4.84220	-1.08280
	Equal variances not assumed			-3.113	157.302	.002	-2.96250	.95170	-4.84227	-1.08273
Phonics	Equal variances assumed	.007	.932	-1.993	158	.048	-1.65000	.82801	-3.28540	-.01460
	Equal variances not assumed			-1.993	157.824	.048	-1.65000	.82801	-3.28541	-.01459

CHAPTER 5

DISCUSSION, CONCLUSION AND RECOMMENDATIONS.

5.0. Introduction.

The aim of the study was to examine the differences in the performance of learners that learn literacy through the use of digital animations in the enhancement of literacy skills among primary one learners in Mukono Municipality. The study investigated the two learning methods used in schools for literacy skills enhancement that is digital animation and the traditional method of teaching. Data collection, analysis and presentation of findings were guided by the research hypothesis:

1. There are no statistically significant differences in the scores of literacy skills of the experimental group who learned comprehension of short stories through using animation techniques and the scores of the control group who learned in the traditional way.
2. There are no statistically significant differences in the literacy skills of learners between scores of the experimental group who learned phonics through digital animation and the scores of the control group who learned phonics in the traditional way.
3. There are no statistically significant differences in the literacy skills scores of learners of the experimental group who learned vocabulary through digital animation and the scores of the control group who learned in the traditional way.

This chapter presents a summary, discussion of the findings, conclusions, recommendations and suggestions for future research pertaining the use of digital animations in enhancing literacy skills in primary one in Mukono Municipality. In this study, this chapter deals with the

interpretation of the statistically analyzed data of the hypotheses of the study presented in chapter four. In the light of the statistical results, the researcher concluded the following findings:

5.1. Discussion on Digital Animations and Reading Comprehension.

There are no statistically significant differences at ($\alpha \leq 0.05$) in the skills level between the pre-tests and post-scores of reading comprehension.

Mean differences = -1.51250 between the pre-test scores and post tests were as indicated.

According to the findings, P- Value = 0.066which shows that there are no statistically significant differences in the scores of pre and post tests.

t – Value = -1.848

Degrees of freedom = 158

According to the findings, there was no effect on the performance of reading comprehension due to the use of digital animations. This may have been due to the presentation of digital animation in a social cultural context that is applicable to the western world than in the Ugandan setting. A child comprehends better if exposed to content that is in line with the environment they are familiar with for instance when explaining the different weather conditions in Uganda and in the United states, it is easier for a child to perceive what they have experienced.

The content of digital animations may have had an overload on the cognitive abilities of some learners which could have led to the experimental group not performing better.

Conscious learning is acquired through reading instruction while the subconscious learning is through the digital animation intervention which clearly explains the above results.

The scores of reading comprehension showed no difference which may also have been due to the language in which they were presented. According to Clark (2013), children comprehend better when first taught in their native language.

5.2. Discussion on Digital Animations and Phonics.

The Mean differences the two groups was = -1.65000 P- Value = 0.48 t – Value = -1.993

Degrees of freedom = 158

The peak value of 0.48 indicates that digital animations had a significant effect on the acquired phonological knowledge. The results of this study conform to the results of previous theoretical and empirical studies, which refer to digital animations as an invaluable innovation in the teaching and learning process in general.

According to the findings on the performance of learners on phonics, the learners improved which may be linked to the audio emphasis of words and repetitive nature of the digital animations. It gave the learners an opportunity to understand the content well and use different senses in learning which is ideal.

The combination of a picture, a sound, word and a song exposed the learners to a variety of content which was teaching the same concept. Learners found something they could be interested in.

5.3. Discussion on Digital Animations and Vocabulary.

The Mean differences of -1.51250 indicate that the digital animations had a significant effect on the vocabulary development of the learners.

P- Value = 0.002 t – Value = -3.113 Degrees of freedom = 158

The peak value of 0.002 indicates that digital animations had a significant effect on the acquired vocabulary development. The results of this study conform to the results of previous theoretical and empirical studies, which refer to digital animations as an invaluable innovation in the teaching and learning process in general.

New vocabularies presented through the digital animations were easily adopted by the learners because of the forms in which they were presented that is in both written and sound. It gave an opportunity for the learner to look and say, hear and re-say putting different senses of learning into use. The learners were able to listen and watch repetitively and imitate the audio pronunciation of words and also write.

5.4. Conclusion:

Digital animations are a modern strategy that is worth being used in teaching literacy. The technique can also be used to explain complex meaning and difficult terminology. Learners' ability to get the gist, the main idea and inference through using animation films allows them to achieve high results and scores. In addition, classroom environment changes from the monotonous traditional class to an interesting, active and warm classroom where there are technologies (LCD, computer, white board...etc.) is a motivation to the learners.

In conclusion, with the findings from this study it is imperative to note that the content and social cultural context of a learner contributes to the learners ability to comprehend, develop both phonics and vocabulary knowledge.

It is therefore critical for any digital animation developer to put into consideration the audience that is supposed to use the animation before designing the content. Its only through this that learners will benefit from the use of digital animations in enhancing any learning skill.

5.5. Recommendations:

In the light of the findings, the study discovered that the digital animations can develop literacy skills but at different rates. Reading comprehension, phonics and vocabulary content should be developed with a consideration of the learners that are meant to use the animations. Curriculum designers and decision makers should consider providing guidelines in relation with the syllabus with full stories in line with the thematic curriculum that can guide animators to enhance reading comprehension, phonemic awareness and vocabulary.

The study also found out learners easily improved in the performance of phonics and vocabulary aspects and recommends that digital animations are developed in an accent and pronunciations learners are familiar with which may have a bigger impact on the learners than the current results.

The study discovered that the content and contexts of the digital animations are not localized and therefore the recommendation is animations are developed in line with the curriculum, with local audios and contexts that learners can identify with. They should include the animation films of the short stories to improve and reading comprehension Skills.

Recommendations for further researches:

The Ministry of Education should conduct further researches to investigate the effectiveness of similar programs in different subjects and at different levels of education in Uganda.

Further studies should be conducted to investigate the strategies and techniques employed by teachers in Uganda while using modern technology.

Further studies should also be conducted on developing digital animations in the local language to supplement on the other interventions through the use of the digital animation.

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APPENDICES.

LEARNER'S TESTS

APPENDIX A: Digital Animations and Reading Comprehension.

The researcher is a student of Kyambogo University who is undertaking a study on a topic; Digital Animation and its role in enhancement of literacy skills among learners in selected lower primary class schools in Mukono Municipality. This is to kindly request you to spare some time and respond to this interview. I would like to ask a few questions regarding this topic. All your responses will be treated with utmost confidentiality.

Age _____

Class _____

Gender _____

Pre- test (comprehension)

Story One.

When I was young, we used a candle for light at home. I enjoyed burning papers, grass and sticks. I would run with fire and then put it off. One time, I used a polythene paper to light fire.

As I threw it away, the bits of the burning polythene paper fell on my hands. Oh! I can't tell you the pain I felt. From that day, I fear fire.

I don't play with fire. Fire can burn.

1. What is the story about?

   _____

2. The person in the story enjoyed burning grass, _____ and

   _____

3. What did the child use to light the fire?

   _____

4. Where did the bits of the burning polythene paper fall?

   _____

5. What caused the pain on the child's hands?

   _____

6. Is it good for any child to play with fire?

   _____

7. Fire can _____
8. How many people are written about in the story?

   _____

9. Is the child in the story going to play with fire again?

_____

10. What happens to paper when thrown in fire?

_____

Story Two.

One day, Musa came to school in rain. He was wet and cold. A teacher gave him one of the school's sports uniform to wear. He was then warm and happy. The teacher advised the pupils to carry umbrellas, jackets, sweaters, stockings and shoes. During the hot weather, always put on light clothing and read under trees.

1. What is the name of the boy in the story?

   _____

2. How did he come to school?

   _____

3. What happened to his clothes?

   _____

4. What did the teacher give him to wear?

   _____

5. Write things pupils should carry when it rains?
   i) _____
   ii) _____
   iii) _____
   iv) _____
6. Write the kind of clothing should learners put on during the hot weather.

   _____

7. How many learners are mentioned in the story?

   _____

8. Who cares for the learners when at school?

   _____

9. How many types of weather do you find in the story?
   i) _____
   ii) _____
10. Draw and name 3 clothing used in the rainy season.

Story 3.

Long time ago, the sun thought it was the greatest and said, "I am great, I make people warm. I dry their clothes'. The rain said 'No I am the greatest, I make plants grow. I give people and animals water' then the clouds asked, are you the greatest? No I don't think so! I am the greatest. I cover the sun and give people a shadow, I help to form rain'. The wind shouted 'No, no, no I am the greatest'. Since then, all of them saw that it was good to work together as a team. They were all important.

Questions.

1. What is the story about?

   _____

2. What makes peoples clothes warm?

   _____

3. The rain makes plants grow and give people _____
4. What made the statement 'No, no, no I am the greatest'?

   _____

5. Give the elements of weather in the story.
   i) _____
   ii) _____
   iii) _____
   iv) _____
6. Name the types of weather you know.

i. _____
ii. _____
iii. _____
iv. _____

7. Is it important to the elements of weather to work together? _____
8. What do clouds form?

   _____

9. Write a sentence using each of these words.
   rain _____
   sun _____
   wind _____

Story 4.

One Monday morning, Rita was going to school. She saw dark clouds forming. The wind was blowing hard.

She tried to run very fast but the rain got her on the way. She got into the class very wet. She was feeling very cold and shivering. The teacher gave her a green sweater. During break time, she played with her friends. She felt warm and began to sweat. She then put off the sweater and took it back to the teacher. She thanked the teacher for helping her.

Questions.

1. What is the name of the child in the story?

   _____

2. On what day was she going to school?

   _____

3. She saw dark _____ forming on her way to school.
4. What did she do when the wind started blowing hard?

   _____

5. What had happened to her while she was running?

   _____

6. What do we put on when feeling cold?

   _____

7. What color was the sweater Rita was given when feeling cold?

   _____

8. How did Rita feel after playing with her friends at break time?

   _____

9. Who gave Rita a sweater when she was feeling cold?

   _____

10. What did Rita say when she took back the sweater?

    _____

Post-Tests.

Story One - The Dove and the ant.

One hot day, an ant was walking near a river bank. The poor ant lost its balance and fell inside the water. Aw... aw! Help me... please help me.....

She screamed for help. As the flow of the river was too strong she was carried away. Someone please help me. A dove was watching all this from a nearby tree. The ant was struggling for life in the water. The dove felt very sad for the little ant.

Someone please help me. Help me.... He said to the ant. Don't worry my friend, I will save you. The dove quickly plucked off a leaf and dropped it into the water near the struggling ant. The ant moved towards the leaf and climbed up there. And the ant reached to the shore safely. The thankful ant said.....I will always be grateful to you for saving my life.

Few weeks later the ant saw a bad hunter with the gun. The hunter was targeting at the dove sitting on the tree. Guessing what he was about to do to the ant quickly bit him on the heel. "Ouch, you pathetic ant, what have you done?" The ant walked away happily as she was able to help the dove in return.

Questions.

1. What is the title of the story?

   _____

2. What was the weather the day when the ant was walking near the river bank?

   _____

3. What sound did the ant make when it fell in the water?

   _____

4. Who helped the ant when it fell in the water?

   _____

5. How did the dove feel when the ant fell in the water?

   _____

6. What did the ant say after being saved by the dove?

   _____

7. Complete the sentence from the story. The bad hunter was targeting the _____ sitting on the tree.

8. What was the bad hunter holding in his hands?

_____

9. "Ouch...you pathetic ant. What have you done?" Who made this statement?

_____

10. What do we say when we have been helped?

_____

Story 2. 'The Visit to the Zoo'.

Mom says, 'Hurry! Hurry! We have to reach there before noon'

They leave at 10 o'clock. They go by car. It is beautiful red car. The car stops at the traffic signal. A pigeon sits on the car. Emma says, "Look! It is so cute" The puppy runs across the road. The car starts and the pigeon flies away the car.

There are lions in the zoo. A lioness is running after the cub. Many pigeons are flying above the buildings. The car reaches the zoo. Dad buys tickets from the counter at the gate. They start the tour of the zoo. Emma says, "Look! The bear is resting under the tree. It is like a big teddy bear".

They are many monkeys on the tree. A monkey comes down to take banana from a boy. Emma says, "Wow! Peacocks are so beautiful. Can they fly over big buildings?" Dad says, "No! They can't fly very high". There are lions in the zoo. A lioness is running after the cub. Crocodiles are resting near the lake in the sun. Emma says, "Ears of elephants are so large!"

There are many giraffes in the zoo. Jack says, "Dad! Dad! That giraffe is taller than other giraffes". Now all are tired. They take rest beneath a huge tree. Mom takes out the food from the basket. Everyone enjoys the picnic at the zoo.

1. In which picture is the pigeon sitting on the car?

2. In which picture is the bear resting under the tree?

3. In which picture is the pillow on the bed?

APPENDIX B:

Hypothesis 2: Digital Animation and Phonics.

The researcher is a student of Kyambogo University who is undertaking a study on a topic; Digital Animation and its role in enhancement of literacy skills among learners in selected lower primary class schools in Mukono Municipality . This is to kindly request you to spare some time and respond to this interview. I would like to ask a few questions regarding this topic. All your responses will be treated with utmost confidentiality.

Age _____

Class _____

Gender _____

Pre-tests. Digital Animation and Phonics.
Pre-test 1.

1. Choose the word that has short /i/ sound.
   a. pin
   b. nine
   c. kite
2. Does it need a silent 'e'?
   hat
   a. yes
   b. no
3. Choose the word that has the short /e/ sound.
   a. see
   b. set
   c. eat
4. Choose the best word to fill in the blank.
   Pat will _____to the park.
   a. run
   b. fun
   c. pup

Consonant and Blends.

5. Which word has one syllable?

a. boxes
b. classes
c. grapes

6. Find the word with the 'ai' blend as in mail.
   a. clean
   b. mad
   c. maid
   d. gate
7. The _____ is flying high in the sky.
   a. plate
   b. plan
   c. plane

Listening and speaking skills.

8. Find the word.
   a. mud
   b. ash
   c. but
   d. damp
9. Which word is spelled correctly?

a. gta
b. tag
c. tga

Pre-Test 2. (Digital Animation and Phonics)

Choose the best word to fill in the blank.

1. She had to _____ to the store.

a. zap
b. zip
c. yip

2. The bird will fly _____

a. bun
b. up
c. tup

3. Please close the _____ when you leave.
   a. gate
   b. gem
   c. game
4. Choose the sound the teacher is saying.
   a. sh
   b. x
   c. ee
   d. th
5. Which word does not belong with the short /o/ sound?
   a. blob
   b. stop
   c. toe
   d. top
6. Which word has a short vowel sound?

a. sip
b. sign

7. How many syllables are in the word father?
   a. 3
   b. 2
   c. 4
   d. 1
8. Which one does not belong with the short /a/ sounds?
   a. tap
   b. bad
   c. sat
   d. cake
9. Which word has the long 'a' sound?
   a. tape

b. tap
c. tip
d. top
10. I _____ up at 7 o'clock in the morning.
a. wake
b. wade
c. wave
11. Which word has the long 'o' sound?
a. cop
b. top
c. cone
d. hop

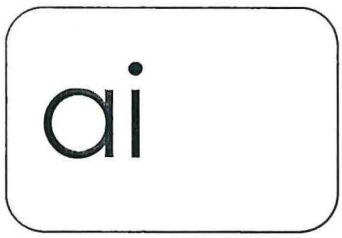
Post Test 1.

A child cannot hear well and keeps saying./ai/? The doctor checks the child's ears and finds a lot of waz. She gives the child some ear drops. Now the wax has gone there are not more /ai/ s.

Action.

The learners pretend not to hear well, cupping their hand over their ear, saying/ai/?

Flash card



hear the sound/ flash the card

Blend the words with ai sound.

aid	aim	bait
fail	laid	maid
main	nail	paid
rail	rain	sail
tail	plain	brain

Which of these pictures/words does not contain the /ai/ sound?

ink	cloud	train	snail

Call out these sounds below, and ask the learners to write them sound.

ai	b	f	u	g	m

Call out these words below, ask the learners to write them down.

aid	rail	pain	bait

Song

My ear hurt.

I was in pain.

/ai/?/ai/?

my ear hurt.

I was in pain.

What did you try to say?

Play the song the experimental group.

Read the Phases

a snail trail

ten black cats

a bad stain

a rag in a bag.

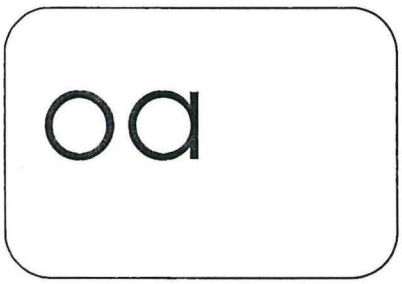
Post Test 2.

Story line: - A goat is very angry. The birds and squirrels in the oak tree are stealing his oats. He buttes the oak tree hard and CRASH! The tree falls on the goat. Some passing learners see what happens and say, /ao/! They run to the farmer, who frees the goat.

Action

The learners put their hand over their mouth, as if they are looking at the poor goat, saying , /oa/!

Flash card



Blend these words.

oak	oats	boat
coal	boat	coal
coat	foam	goal
goat	load	loaf
moan	boat	soak

Which of these words or pictures does not contain the oa sound?

goat	clouds	coat	boat

Call out the word below, ask the learners to write them down.

oak	moan	soap	coat

Song

Oh, did you see

thebilly goat?

/oa/ - /oa/ - /oa/,

/oa/ - /oa/ - /oa/.

Oh, did you see

thebilly goat,

under the old oak

tree?

Play the song the experimental group

Read the phases

a main road

a rock in a pond

a cross goat

a big snag

APPENDIX C.

Hypothesis 3.**Digital Animations and Vocabulary Development**

The researcher is a student of Kyambogo University who is undertaking a study on a topic; Digital Animation and its role in enhancement of literacy skills among learners in selected lower primary class schools in Mukono Municipality . This is to kindly request you to spare some time and respond to this interview. I would like to ask a few questions regarding this topic. All your responses will be treated with utmost confidentiality.

Age _____

Class _____

Gender _____

Learner's vocabulary Pre-tests.

Pre-test 1.

Mom frowned when she saw the cat on the table. How did mom feel when she saw the cat?

a. She was unhappy.
b. She was afraid.
c. She was sleepy.

1. Fill in the blank vocabulary. We are _____ how to fly a kite.
   a. laughing
   b. listening
   c. learning
2. The _____ chick needs its parents.

a. Your

b. you

c. young

4. You have to wait _____ supper is over to play game.

a. until

b. under

c. upper

5. Phil is six _____ old.

a. yarn

b. years

c. yellow

6. What does the word 're-tell' mean in the sentence below? Can you retell the story we read?

a. tell better

b. tell again

c. tell after

7. What does the word 'bat' mean in the sentence below? The bat flew from the tree to tree.

a. a winged animal.

b. a stick for hitting a ball.

c. to swing wildly.

8. What does the word 'right' mean in the sentence below?

Ray put the right answer on his home work.

a. Opposite of left.
b. correct
c. wrong

9. Which word is made of two smaller words?

a. jumping

b. also

c. outside.

10. What is a cub?

a. a baby bear

b. a baby monkey.

c. a baby zebra.

d. a baby cat.

Pre-test 2 (Vocabulary).

Fill in the blank vocabulary.

1. We are _____ how to fly a kite.
a. laughing
b. listening
c. learning

2. The _____ chick needs its parents.
a. your
b. you
c. young

3. You have to wait _____ super is over to play games.
a. until
b. under
c. upper

4. Phil is six _____old.
a. yarn
b. years
c. yellow

5. Choose the best word to fill in the blanks.
The boy took a _____ to see his dad.
   a. flight
   b. fly
   c. flip

6. The moon comes out at _____
a. new
b. night
c. next

7. Her puppy is so is so _____
a. plays
b. played
c. playful

8. You write with a _____
a. book
b. ruler
c. eraser

9. I _____Tim singing a song.
a. learn
b. heard
c. because

9. Brush your teeth _____ you go to bed.
a. before
b. been
c. better

10. I had to go to bed _____ I was sleepy.
a. when
b. then
c. because

11. We learn in a _____
a. classroom
b. restaurant
c. office

12. To ask a question you _____
a. sit down
b. raise your hand
c. stand up

13. A _____ is someone you do not know.
a. family member
b. best friend
c. stranger

14. _____ is a good boy.
a. he
b. He
c. she

15. Lemons, butter and the sun are.....

a. green
b. yellow
c. way

16. My new reading teacher is a _____

a. rat
b. bat
c. man

17. My kite went up _____ in the sky.

a. lie
b. pie
c. high

18. You have to _____ your mom's hand to cross the street.

a. hold
b. high
c. better

19. Gram put on her new _____ socks.

a. fuzz
b. fuzzy
c. fuzzed

Learners Post-test (Digital Animation and Vocabulary)

Post-Test 1.

1. What does the word 're-play' mean in the sentence below?

They will replay the game on T.V.

a. not play
b. play again
c. play better

2. Choose the best word to fill in the blank space.

The boy took a _____ to see his dad.

a. flight
b. fly
c. flip

3. The moon comes out at _____

a. new

b. night

c. next

4. What a wonderful feast this is!

What does feast mean?

a. a large meal.
b. to make a small hole in something.
c. to become less hard.

5. What is a hut?

a. a big airplane

b. a small house

c. a small toy

6. I hardly know the answer! What does hardly mean?

a. wicked

b. large meat

c. no or not, barely

7. What does the word 'review 'mean in the sentence below?

a. view again

b. view better

c. do not view

8. They were rejoicing that the wicked witch was gone! What does rejoice mean?

a. a great joy

b. a large meal

c. a form of words used as a magical charm

9. A pencil is

a. Something you drink with

b. Something you write with

c. Something you wear

10. What might make you giggle?

a. getting tickled.

b. eating a meat ball hero.

c. baking cookies with your mum.

Post-test Two.

Fill in the blank vocabulary.

1. She is going _____ me to the beach.
a. with
b. what
c. where

2. The girl has a _____ dress.
a. saw
b. many
c. blue

3. Sam _____ the bag.
a. wished
b. tucked
c. packed

4. My best friend _____ Sam.
   a. is
   b. in
   c. of

5. I want _____ one!
   a. that
   b. a
   c. the

6. My mom gave _____ of us a big bug.
a. hold
b. bold
c. both
d. me

7. The coat I wore last year is _____
a. tie
b. tire
c. tight

8. How are _____doing?
a. he
b. the
c. you

9. I can not _____ the cat!
   a. find
   b. fist
   c. eat

10. She loves the lights during the Christmas _____
a. open
b. down
c. season

11. It has _____ a long time since we had all of our friends in school.
a. bin
b. been
c. be

12. She is going _____ to the river to play.
a. grow
b. new
c. down

13. Do you have enough _____ to buy the train?
a. phone
b. where
c. cash

14. The plants will _____ with lots of sunlight.
a. new
b. grow
c. season

15. The apple will _____
a. fall
b. rang
c. come

16. _____ way did he go?
a. Down
b. Which
c. New

17. My mom bought a new blue _____ today.
a. van
b. rat
c. man

18. Use a _____ to track the moon cycles.
a. what
b. shell
c. graph

19. When _____ it be time for dinner?
a. will
b. were
c. has

20. _____ the dog into the house because it is cold.
a. bring
b. Bring
c. wing

APPENDIX D – VALIDITY RESULTS.

Item Statistics

	Mean	Std. Deviation	N
1	10.5000	5.91608	20
Rater1	3.5500	.68633	20
Rater2	3.7000	.80131	20
Rater3	3.7500	.71635	20
Rater4	3.7000	.65695	20
Rater5	3.5500	.94451	20
Rater6	3.6000	.94032	20

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	21.8500	9.713	.039	.726
Rater1	28.8000	43.537	.235	.143
Rater2	28.6500	45.608	-.011	.195
Rater3	28.6000	43.411	.234	.141
Rater4	28.6500	42.450	.380	.114
Rater5	28.8000	43.221	.163	.147
Rater6	28.7500	41.566	.304	.104