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TEACHING AND LEARNING IN HIGHER EDUCATION.**



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The use and perception of multimedia projector for teaching and learning in higher education

by

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This dissertation is submitted in partial fulfilment of the requirements for the degree of Masters of Education in Higher Education

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DEDICATION

This study is dedicated to my husband Titos without him, I would not be women I am. He is my special gift that I will always cherish and love, who gives me support and encouragement endlessly throughout my life. Without the encouragement he gave me as well as the support when I was overwhelmed by work and my studies, I could have given up somewhere along the way. This project is also dedicated to my Eish daughters Moeisha, Aleisha and Aneisha who are the source of my strength, the pillars of life. The sleepless nights I had were just for you, so that one day I could stand up before you and give you direction and guidance as you grow. To my sister Gamuchirai, without your support this journey was going to be more difficult. Thank you for doing chores when the load piled up. And lastly to my parents Mr Chimwa, Mrs Chimwa and Mrs Chivige, thank you for your prayers and guidance.

May our dear Lord bless. With all my heart I love you all. God bless you and I love you all

ABSTRACT

Nowadays, many teachers and students desire to use multimedia projectors in their classrooms. Through the use of a multimedia projector students will not have to crowd over a laptop or a desktop monitor to see a multimedia presentation during learning. A multimedia projector can improve teaching and learning process. When using PowerPoint presentation, it was concluded that teachers save more teaching time. They will not have wasted time taking notes on paper and writing on the chalkboard as well as waiting for learners to take notes on the board.

The main purpose of this study was to explore the use and perception of the multimedia projector for teaching and learning in higher education. The study examined the usefulness of the multimedia projector in teaching and learning in higher education, explored the attitudes of higher education learners towards the use of a multimedia projector in teaching and learning and determine the teachers' perception on the use of multimedia projector in high education teaching process. The study described the benefits to both teachers and learners when they use multimedia projector in teaching and learning in high education using five lecturers and ten students. The research technique used on this study was the qualitative method. The findings of this study indicated that the use of multimedia projector for teaching and learning can help both teachers and students when used effectively. The research concluded that both lecturers and students had positive perceptions and were finding the multimedia projected more useful when used effectively in teaching and learning in high education.

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ABBREVIATIONS

CALL: Computer Assisted Language Learning

CBST: Centre for Business and Secretarial Training

CD: Compact Disc

CMTL: Cognitive Theory of Multimedia Learning

DVD: Digital Versatile Disc

EFL: English as a Foreign Language.

ICT: Information and Communications Technology

LCD: Liquid Crystal Display

OSRO: Office of Student Research and Outreach

VARK: Visual, Aural, Read, and Kinesthetics

VCR: Video Cassette Recorder

CHAPTER ONE: INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

A projector or image projector is a computer outputs device that projects image (or moving images) onto a surface, commonly, a white background(projection screen)(White, 2017). According to White (2017), “a multimedia projector is a compact, high resolution, full-colour projector capable of projecting text, images, videos and audio content. A projector features inputs from a computer, DVD player, VCR, CD player and storage device”. It is a computer output device that can be used to display information generated by a computer or a Blu-ray player on the screen or wall (White, 2017). Projectors produce better quality pictures when projecting on a plane white surface. A projector can be used to show presentation in the form of slides or videos in the classroom such that all learners can see (De Groot, 2002).

Multimedia projector can be used as a technology tool to transform the way teachers teach and students learn and enhance learning (Srivastava, 2012). Mamun (2014) explained that, “the lecturer can perform various actions with multimedia projector such as dragging, clicking, pasting and copying items; taking handwrite notes, transforming them into texts and highlighting those texts; adding annotations, notes and drawings and saving them to be printed out and shared; showing picture animations and educational videos to the whole class; saving and recalling current and previous screens, revisiting, reviewing and amending when required; using contents available on a website”p15.

The most common type of projector used in the classroom is the multimedia (Vaughan, 2011). In a classroom, a teacher can use the multimedia projector to film the lesson and can be able to integrate and select video sequence to slide-show notes and pages (Joshi, 2012). Multimedia projector provides the opportunity for the teacher to present teaching material in text graphics and video which helps stimulate learners to construct knowledge on their own and motivate them to learn (Sieber & Andrew, 2011). According to White (2017), “multimedia projector provides a complex multi-sensory experience in exploring our world through the presentation of information through text, graphics, images, audio and videos” p2.

De Groot (2009) explained that, “students no longer have to crowd around a computer monitor for training, viewing of presentations or websites, as multimedia projectors are becoming the centrepiece of classroom technology hubs that directly engage students and add impact to each lesson”.

This chapter however presents the background; theories that supports and problem statement, research. The chapter further discuss the research objectives; the research questions which guided this research and the significance of the study. The chapter wrap up with the scope of the study, limitations of the study and conclusion.

1.2 BACKGROUND

Ground breaking in technology has brought changes in teaching and learning methods. Teaching and learning have been made more effective with the use of new technology in the classroom. The use of computers, internet, multimedia projectors and smartboards has made more impact in the teaching and learning activity (Young, 2008). Beebe, (2004) mentioned that “Information Communication and Technologies (ICT) are becoming an integral part of national education policies and plans”p2.

According to Naidu and Biswal, (2010) “presently, traditional educational approaches have resulted in a mismatch between what is taught to the students and what the society needs. As such, many institutions are moving towards problem-based learning as a solution to producing graduates who are creative, can think critically and analytically, and are able to solve problems”. Institutions are now focusing on the use of multimedia technology in teaching and learning as innovative strategy that help train and develop learners’ skills to solve the real problems in society (Amin, Azim , Kalam & Salam , 2018)

Educational technology provides opportunities for teachers to meet the needs of students with various learning challenges through the use of multiple media (Dintoe, 2018). According to Udim and Etim (2016) educational technology, “ is a combination of the processes and tools involved in addressing educational needs and problems, with an emphasis on applying the most current tools: computers and their related technologies” p157. Using technology with science for real world problems, simulations, video anchored instruction can help students with their conceptions. Many teachers are using multimedia projectors to deliver lectures,

which allow them to interact with the learner in a manner that was not previously possible (Musarurwa, 2011). In support, Bhakta and Dutta, (2016) mentioned that, “most of the schools nowadays deliver knowledge and information with teaching aids like slide projector, overhead projector and LCD projector”¹³⁴. Amin *et al.*, (2018) used their study to examine, “the benefits of using multimedia projector in English language teaching classroom”^{p63}. The study helped establish the benefits of the multimedia projector when used to teach English.

This study is going to focus on the use and perception of multimedia projector for teaching and learning in higher education. Human perception helps to create intrinsic motivation with the experience from the external world, it is when humans gain an understanding of something that they perceive well and attach significance to them (Lineberger, 2009). Lineberger (2009) explained perception, “as the concerns how we make sense of the world and what happens in it. Perception is the active process of selecting, organizing, and interpreting people, objects, events, situations, and activities”. Learner and teacher’s perception on the use of a multimedia projector helps create intrinsic motivation which can influence their attitudes (Lineberger, 2009).

Learners in higher education will likely gain more competitive advantage on the global market when they are taught and acquire knowledge and skills using the latest technology (Tang & Austin, 2009). The study which Tang and Austin (2009) conducted in the United States proves that learners benefit more when they have positive perception in the use of a projector in the classroom. The use of technology in teaching and learning tends to bring real-life materials into the classroom.

Multimedia projector is a technological tool that can be used to project Power Point slide, videos, films and online experiments that can be used by lecturers in teaching and learning to project the real-life materials in the classroom (Tang & Austin, 2009). Higher education learners are now experiencing multimedia learning delivery system. Teaching and learning in higher education is being done using new educational technology tools which combines words and numbers with images and sounds that enables an effective and comprehensive communication in the learning environment (Maran, Selvaraj & Ravikumar, 2011). Maran, Selvaraj and Ravikumar (2011) defined multimedia “as a term which is combined by two words multi and media, multi refers to many that is at least two mediums can be referred to

storage, transmission communication representation, presentation, input interaction and perception meaning that it can refer to different levels of abstraction”. Nachimuthu (2012) also explained multimedia “as a combination of text, audio, still images, animation, video and interactivity content forms delivered electronically”.

According to Maran, Selvaraj and Ravikumar (2011) “Multimedia learning technology has opened a new era for the learners and teachers in higher education system and the main advantages of electronic or digital format is flexibility in combining transmitting and manipulation, customized in the elements of multimedia according to the user needs” p89, t. Furthermore, Amin *et al.* (2018) note that “Multimedia learning ensures effective use of technology and compliance with user’s requirements; a coordinated plan must be developed that defines a common vision for the role of technology in instructional programs and operations”p62.This study is going to focus on the use and perception of multimedia projector for teaching and learning in higher education and intended to generate information on the merits of the modern teaching and learning approach (Amin *et al.*, 2018).

1.3 THEORETICAL FRAMEWORK

There are many theories surrounding the use of multimedia projector in teaching and learning that includes the learning style Visual, Aural, Read/Write, and Kinesthetics (VARK) and the Cognitive Theory of Multimedia Learning (CTML). When using a multimedia projector in teaching and learning, students use the senses of seeing and hearing to process one or several channels (Peyman, Sadeghifar, Khajavikhan, Yasemi, Rasool, Yaghoubi, Nahal, & Karim, 2014) The projector can be used as teaching aid that projects visual and auditory learning material by teacher in teaching and learning. A multimedia projector is important to the learners who learn best through verbal and visual lesson. In the study done by Khongpit, Sintanakulk and Nomphonkrang (2018) in Thailand, it was found out that, “VARK learning theory enhances the learning outcome when the teaching material is designed and created using creative activities; environment that enable learning abilities and motivation to the learners”.

This study adopts the cognitive theory of multimedia learning (CTML) because of its sustainability. According to Mayer (2009) who discovered the cognitive theory of multimedia learning (CTML), “the theory centres on the idea that learners attempt to build meaningful

connections between words and pictures and that they learn more deeply than they could have with words or pictures alone”. Furthermore Mayer (2009) explained that, cognitive theory of multimedia learning (CTML) is based on three cognitive science principles of learning: the human information processing system includes dual channels for visual/pictorial and auditory/verbal processing (i.e., dual-channels assumption); each channel has limited capacity for processing (i.e., limited capacity assumption); and active learning entails carrying out a coordinated set of cognitive processes during learning (i.e. active processing assumption).

Mayer (2009), Sieber and Andrew (2011) pointed out that, “cognitive theory of multimedia learning is the theory of how people decipher words and pictures, based on the idea that people possess separate channels for processing verbal and visual material (dual-channels assumption), each channel can process only a small amount of material at a time (limited capacity assumption), and meaningful learning involves engaging in appropriate cognitive processing during learning (active-processing assumption)”. Through usage multimedia projector the learners will be able to construct and process meaningful learning material using the images and audio presentations.

A multimedia projector can be used as a tool that is student-focused and customized for collaborative learning environment. When using CTML, the learner can easily build new knowledge in trying to create logic with the presented material as an active participant (Mayer, 2009). Effective teaching and learning take place when learning content, multimedia tool and teaching approach are aligned

1.4 STATEMENT OF THE PROBLEM

Many schools have multimedia projectors which are not being effectively used by the teachers (Czerniewicz *et al.*, 2007; Musarurwa, 2011; Moakofhi *et al.*, 2017). In their study Kelvin Udim and Akon Etim (2016) mentioned that, “there is an urgent need to improve the quality of education to bridge the gap between developed and developing nations, and multimedia instruction is considered as a necessary tool for this purpose”. Multimedia projector can be used as a technology tool can be used as a multimedia instruction tool (Amin *et al.*, 2018). Teachers and learners need to be aware of the important of using a multimedia projector as a technology tool such that they will have a positive perception and benefits from multimedia projector (Maran, Selvaraj & Ravikumar, 2011).

Many research focus on the use of multimedia projector in teaching English language. Studies of the use and benefits of using multimedia projector have been done in developed countries. Conversely there is no study that the researcher had found upon the time of research that has explored the use of multimedia for teaching and learning in high education in developing countries. The gap on the literature pushed to the researcher to do this study using qualitative approach.

1.5 PURPOSE OF THE STUDY.

The main purpose of this study is to explore the use and perception of the multimedia projector for teaching and learning in higher education. This study is specifically set out to investigate the following objectives:

- 1) To examine the usefulness of the multimedia projector in teaching and learning in higher education.
- 2) To explore the attitudes of higher education learners towards the use of a multimedia projector in teaching and learning.
- 3) To determine the teachers' perception on the use multimedia projector in high education teaching process.

1.6 RESEARCH QUESTIONS

MAIN QUESTION

What is the use and perception of multimedia projector for teaching and learning in higher education?

SUB-QUESTIONS

- 1) What is the attitude of high education learners towards the use of a multimedia projector for teaching and learning?
- 2) How do teachers perceive the use of multimedia projector for high education teaching process?

RESEARCH APPROACH

The research approach used in this study was qualitative approach. It is used to gain an understanding of underlying reasons, opinions, and motivations. It provides insights into the

problem or helps to develop ideas. The research method helped in exploring the use and perception of the multimedia projector for teaching and learning in higher education. Semi structured questionnaires were developed and administered to respondents (teachers and students) through interviews. The participants were selected using purposeful sampling method from the focus group.

1.7 SIGNIFICANCE OF THE STUDY

The study is of significance to teachers, learners and stakeholders as it helps them have positive attitude towards adoption of multimedia projectors for teaching and learning. The education stakeholders and school stakeholders will also benefit from this study in understanding how important is multimedia projector when used as a teaching and learning aid in high education. They will be motivated to support with policy and infrastructure. The study also add value to the body of knowledge which other researchers may consult when considering the use and perception of multimedia projector in teaching and learning in higher education.

1.8 SCOPE OF THE STUDY

The study was done at a college in Francistown; Centre for Business and Secretarial Training (CBST) College. CBST is using traditional way of teaching even though they mix with multimedia. They have not fully adopted to the use of multimedia teaching in the classroom.

1.9 LIMITATIONS OF THE STUDY:

One of the limitations of this study was lack of time to carry out extensive research, time given which is a semester is not enough even though the researcher managed to utilize the time and finished the research. The study centered on one college only and the results may not be possible to generalized to other institutions. However, provided with the similar conditions and environment the finding will be relevant and applicable

OVERVIEW OF CHAPTERS IN THE STUDY

The study comprises of five sections which are chapters organized as follows:

Chapter 1

Chapter 1 introduces the research to the reader, summarizes what the researcher do. The introduction usually summarizes the research proposal. It informs the reader about the significance, objective and approach of the research. Outlining the research questions of the research and the limitations.

Chapter 2

Chapter one is followed up by chapter two which focuses on literature review. The researcher reviewed the available literature that related to the study. The chapter unveils the theories that supports, the benefits of using multimedia projector study and discuss the available literature and analysis of current information relevant to the topic.

Chapter 3

Chapter three presents adequate information of the methodology. The chapter focused on methods used to collect data, the procedure, there research instruments and also the sample selection. The data trustworthiness and credibility was also highlighted in this chapter

Chapter 4

Chapter four presents and analyze result. The researcher used qualitative approach data was presented using tables. Data was collected from the face-to-face interview of the participant.

Chapter 5

Chapter five recaps present the discussion of the results, educational implication (the contributions that the study have.) and proposed recommendation.

SUMMARY

This chapter is presented in different parts and sub headings. The problem that triggered the need of the study is the use and the perception of the multimedia projector for learning instructions. This chapter articulated the background of the study, discussed the theory to be used and relating more to the study. The objectives and the scope of this study are also stated in this chapter. The results of this study are important to learners, lecturers; the government and the school management. The following chapter presents the literature that is relevant to the use and perception of multimedia projector for learning instructions in higher education.

CHAPTER TWO: LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter which is chapter one has not only focused on presentation of the overview of the whole thesis, it clearly stated the statement problem, study objectives and the study questions. It also highlighted the importance of the research, which is the main purpose for carrying out the study. The first chapter also introduced theories that supports the study and adapted by this study. Chapter two focuses on the literature review, relating the available literature to this study. It also focuses on the theories that support the use of multimedia projector as an instructional technology tool in learning and teaching. It will also focus on the benefits of using multimedia projector technology tool used in learning and learning activities.

2.2 INSTRUCTIONAL TECHNOLOGY

“Instructional technology is the application of scientific knowledge and learning to the particular tasks of teaching and learning, thus according. (Smaldino, Lowther and Mims, 2019). Printed papers, charts, learning cards, textbooks, and chalkboards were some of the early unique instructional technologies. Tang and Austin (2009) out lined that, “Currently the application of instructional technologies in higher education has progressed to the use of complex multimedia products and advanced networking technologies”. A multimedia projector can be used in a classroom as a technology tool by teacher to show for example graphics developed from set of data, videos or audios of recorded lesson, word processed teaching material in form of well-organized slides or online research which help learners to have a deep learning and achieve their learning outcomes better (Biggs, 2003).

Peregoy and Boyle (2012) researched on, “using technology in improving learners’ reading and writing skills”, their results highlighted that technology tools improve students’ writing and reading skills when they are used properly in teaching and learning. They also indicated that teaching with technology tool is a more effective method of delivering compared to the traditional way because technology provide favourable environment for learning with the use of the internet which provides a better platform for educational activities. The other reason for achieving effective learning when using technology tool-learning method is the availability of internet to the learners which provide a favourable learning environment for learners’

grasping concepts and facilitation of a new platform for students to access a variety learning material.

In a study carried out by Udim and Etim (2016) discussed that, the instructional media have emerged in a variety of resources, and equipment, which can be used to supplement or complement the teachers' efforts in ensuring effective learning by students. It is recognized that conventional media technologies can no longer meet the needs of our teaching and learning processes; as a result, they are being replaced by multimedia technology. Multimedia project can be used as a tool for teaching that will enable the teachers to use modest technological tool to enhances student learning (Ashvin, 2012).

In some studies, Pun (2014) researched how the learners and English teachers benefitted from the use of the multimedia projector. The research highlighted how the multimedia projector enabled these teachers and students to share views and ideas. It also demonstrated how multimedia projector could create a learning environment that assists in improving the attractiveness in teaching and learning through text, graphics, animation, video and sound combination (Jang, 2008).

According to Shabiralyani Shabiralyani, Shahzad, Khuram and Iqbal, (2015) "Visual aids are the devices that help the teacher to clarify, establish, and correlate and co-ordinate precise conceptions, understandings and appreciations and support him/her to make learning more actual, active, motivating, encouraging, significant and glowing". In their research findings it was concluded that the use of visual aids as a teaching method can help to stimulate learners' thinking and also help to improve the learning environment when used effectively in the classroom with related and relevant content (Shabiralyani *et al.*, 2015).

The use of multimedia projector as a tool for teaching and learning in higher education can be supported by learning style theories that support learning through audio and visual sensory. Teachers must carefully identify learners' learning style so that they can be able to design instructional method in the classroom. (Pourhosein Gilakjani, 2011) defined learning style as, "the characteristic cognitive, affective, social, and physiological behaviours that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment".

When developing multimedia for learning it is important to integrate learning theories that enhances learning. The application of learning theories is necessary to support successful learning, this can be important when learners needs to master listening, speaking reading and writing (Farani, 2016). Farani (2016) carried out a study in learning theories in instructional multimedia for English and concluded that learning theories can enhance learning if they are well-planned and are integrated in instructional multimedia to support learning (Farani, 2016). According to the results Farani, (2016) proved that, “instructional multimedia can provide space for learning theories application by considering all aspects of multimedia based on students' need, for example: using relevant picture to visualize abstract concept”.

There are many theories that support multimedia learning. In this study the VARK theory and the Cognitive Theory of Multimedia Learning (CTML) are the learning theories that are used to support the use of the multimedia projector. The main theory of this study is the Cognitive Theory of Multimedia Learning.

2.3 COGNITIVE THEORY OF MULTIMEDIA LEARNING

According to Mayer (2010), “Cognitive Theory of Multimedia Learning seeks to explain the processes that takes place in the minds of learners during meaningful learning from multimedia instruction”. Multimedia instruction can be displayed or projected in a classroom using a multimedia projector. Multimedia can be explained as the used words and pictures (verbal and visual). According to Mayer (2010), “the CTML theory has clear implications for instructional design to facilitate multimedia learning, in particular for how to avoid cognitive overload”. Cognitive development helps teachers in selecting what to consider when planning a lesson instruction. (Mohamad, Yee & Tee, 2017). Cognitive development enables teachers to identify learners’ learning styles because it helps students actively construct their knowledge and build on prior knowledge. The multimedia projector helps the learners to have active interaction which will help cognitive growth (Mayer, 2014; Mohamad, Yee & Tee, 2017).

THE COGNITIVE THEORY OF MULTIMEDIA MODELS

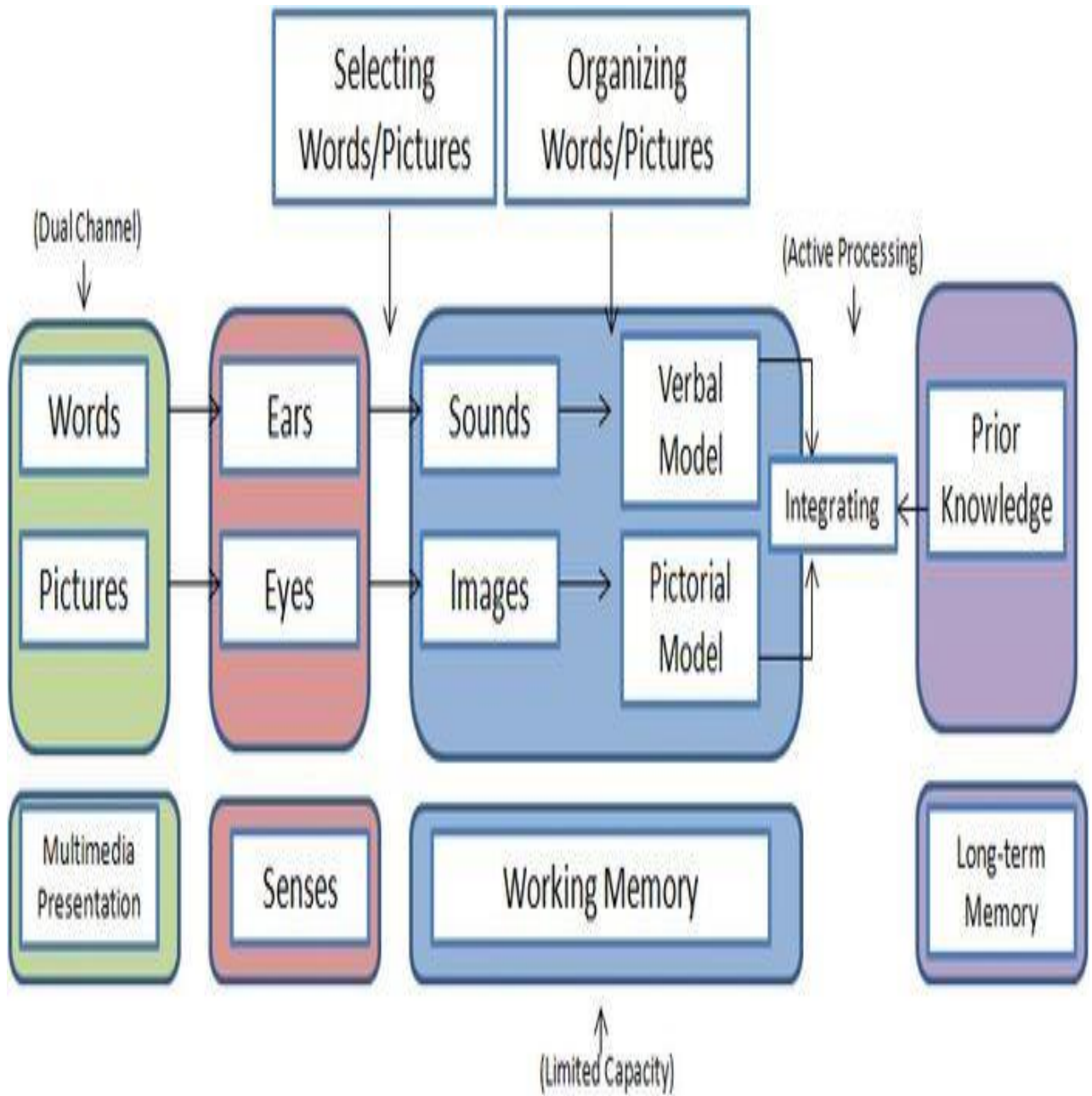


Figure 1

Adapted from (Mayer, 2010)

Figure 1 above shows the process of CMTL. There are five processes of CTML which are selection of the word; selection of pictures; organising of word; organising of pictures and integrating verbal and pictorial models. In teaching and learning a teacher can explain a topic using a video or film that has pictures and words using a multimedia projector. The learner will use the ear or eyes sensory to select the words or sounds and the working memory to organize the words or the sound. The learner uses the long term memory to makes use of the material that is presented using the prior knowledge in the long term memory. Mayer (2010) defined generative processing as the “cognitive process that is required for making sense of the presented material (selecting, organising and integrating words and images)”.

Falvo (2008) studied, “animations and simulations for teaching and learning molecular chemistry”. The study discussed the effectiveness of animations for teaching and learning molecular sciences. Animation is feature of slide presentation which can be projected through a multimedia projector. Teachers can animate their presentations when they want to apply transition in a slide show and display it for learning purposes. Animation enables the user to add in graphics and sound as objects in a slide (Gambari, Yusuf & Balogun, 2015). Animation supports the dual channel in CTML which is the picture and word. The study by Falvo (2008) pointed that, “animations and simulations visually help students understand difficult concepts related to the dynamics of complex chemical systems including molecules and reactions”. Falvo (2008) concluded that “animations assist students to better understand dynamic molecular processes in chemistry and biochemistry”. It is further explained that, “solid foundational (prior) knowledge prepares students to learn and retain structural and process concepts conveyed by animations”. The use of multimedia projector in teaching and learning can be one of the advancements in technological tools in education used in animation and simulations that will help learners to understand concepts better (Falvo, 2008).

Shamim (2018) studied, “application of Cognitive Theory of Multimedia Learning in undergraduate surgery course”. The main objective was to examine the effectiveness of a video-technology which applies the theory of CTML in teaching general surgery operations. Shamim (2018) research on “Application of Cognitive Theory of Multimedia Learning in Undergraduate Surgery Course”, concluded that, “the video-based operative sessions are effective mode of teaching general surgery operation in resource limited setting”. Majority of

the learners were satisfied with the use of CTML. Learners understood better when they learn through videos(Patel, 2013)

Multimedia projector can be used as a technological tool that supports multimedia learning and can be used to explain and enhances the CTML. In understanding multimedia learning Mayer and Sims (1994) investigated “the dual-coding theory of multimedia learning pertaining scientific systems, such as automobile braking systems, the human respiratory system, and the basic bicycle tire pump”. In their study, the results indicated that, “the students with high spatial ability who received a concurrent multimedia presentation (animation and narration) fared better on a transfer problem test than high-spatial ability students who were presented with a successive learning explanation or no explanation at all”. The findings from this study supported the use of dual channel in CTML. Learners have better chances to construct multimodal connection when both pictures and image are presented to them in relationship to the prior knowledge and content.

2.4 THE LEARNING STYLE (VARK)

VARK learning style inventory has the following elements (Fleming, 2002a, The VARK Categories,

TABLE 1: VARK

Learning style	Preference for:
Visual (V)	Visual learning through the use of videos, pictures, symbols and graphics information presentation.
Aural (A)	Learning through verbal interaction, for example by listening and talking
Read/write (R)	Reading and writing textual information
Kinaesthetic (K)	Kinaesthetic learning through experiences and practices.

Teachers are employing different methods of learning styles in order to achieve deep learning through student engagement in the classroom. According to Peyman *et al* (2014), “learning style is a complicated approach in which the learner should save, recall and process the concepts efficiently and effectively”. Othman and Amiruddin (2010) “Learning style is a cognitive composite, affective, and psychological factor which acts as an indicator on how individuals interact and respond to learning environment”. In an investigation of “using VARK approach for assessing preferred learning styles of first year medical sciences students” a survey from Iran, Peyman *et al* (2014) discovered that medical student preferred to learn using aural and reading/writing learning style. It was discovered after a survey using VARK questionnaire which also help learners to choose appropriate learning method to improve learning outcome. The VARK learning style help the learners to identify their learning needs and how best they can achieve learning (Hussain, 2017).

A multimedia projector can be used as an audio-visual teaching aid tool that enhances the VARK learning style (Peyman *et al.*, 2014).Mamun (2014) stated that, “Multimedia projectors affect the teaching and learning experience, several areas of influence include visual aid, greater flexibility for alternative teaching methods, enhanced teacher demonstrations, heightened student awareness and customized curriculum applications”.

Othman and Amiruddin (2010) argued that, “VARK learning style does not involve intelligence or inherent skill but is closely related to how learners acquire or understand information or new knowledge”. Hussain (2017) stated that, “VARK learning style also can be perceived as an individual method that one uses for the purpose of acquiring knowledge, positive skills and attitude”. VARK learning style can be used to make a captivating learning classroom that helps learners stimulate their different senses in learning (Othman & Amiruddin, 2010). When using a multimedia projector learners are able to learn through videos, movies and film for example when teaching the geographical location, the teacher can project the real geographical location with its physical features through the use of google maps on the internet. The technology tools needed by teachers are computer, internet and multimedia projector. Wright and Stokes (2015) suggested that “the application of a teaching and learning approach that caters for different learning styles with an emphasis on contextual learning can be well received by students and enhances their experiences and achievements”.

2.5 THE BENEFITS OF USING MULTIMEDIA PROJECTOR FOR TEACHING AND LEARNING.

The use of multimedia projector for teaching and learning in higher education helps cultivate students' interest in studying, helps to learners to understand the learning concepts and helps in teacher and improves students participation in learning activities (Amin *et al.*, 2018). Teachers can use multimedia projector to give more colorful, stimulating lectures (Patel, 2013).

Most teachers are using Power Point slides projection through multimedia projector (Gambari, Yusuf & Balogun, 2015). Power Point slides have become more popular in teaching and learning process and can be used across all educational levels (Amin *et al.*, 2018). PowerPoint can be used in teaching and learning setup to enable and offer a better way of sharing knowledge to the learners. Hashemi, Azizinezhad and Farokhi (2012) mentioned that, "when used thoughtfully, PowerPoint can enhance teaching sessions by providing a roadmap, reinforcing what the teacher has said, allowing the teacher to use graphics and other multimedia to clarify understanding and to support different learning styles". Gambari, Yusuf and Balogun, (2015) also stated that, "what makes PowerPoint presentations so effective is that the teacher can be able to add complementary and multisensory events designed to spark an emotional response among learners and helps maintain learner's attention, improving cognitive achievement". Multimedia projector is the technological tool that can be used to project PowerPoint slides in the classroom (de Groot, 2009).

Learners understand better if the teacher uses the visual tool as their teaching aids. (Ozaslan and Maden (2013) in their study of "the use of Power Point presentations at in the department of foreign language education" concluded that, "PowerPoint presentations help teachers to draw students' attention during the lesson, which increases the effectiveness of learning process". In their study they also reported that, teachers showed a positive attitude towards the use of PowerPoint presentation and they were planning to use it in their teaching process.

Kausar, (2013) focused on, "significance of multimedia projector as well as audio visual aids for learning English and announced that the learners are facing numerous troubles in learning

English language and think it is complex to learn English language except the use of any audio or visual aids”. The work presented that audio visual aids should be used in an English language classroom to benefit teachers and learners. Multimedia projector can be used in teaching activities as technology too that provides audio visual teaching aid to the learners with different disabilities. It can also be used to cater for learning who have different process method of understanding. (Kausar, 2013). In the study of “students' perspective of the use of audio visual aids in Pakistan”, Kausar (2013) concluded that, “the use of audio visual aids stimulates thinking and improves learning in a language classroom in the views of Pakistani university students”.

A study conducted by Zhang, (2013) looked at, “how EFL teachers in China used CALL (Computer Assisted Language Learning) and factors affecting the use of CALL”. The computer use was mainly for PowerPoint presentations projected using a multimedia projector. The findings suggested that, “additional trainings were needed through professional development activities to help teachers better understand CALL pedagogy and to integrate ICT in their teaching”. The study supports the need for teachers training.

Nasaruddin and Ismayatim (2013) in their study on the, “factors that affect the usage of multimedia in teaching”, discovered if used effective multimedia can be used by teachers as an instructional aid tool that can help them create a variety of teaching method a learning style that can help them save time when preparing teaching notes and when teaching in a class.

Multimedia projector can be used to broadcast or share push notifications for various purposes including assignments due date or exam dates set for a particular classroom. Feierman and Kahl (2019) mentioned that, “if projectors are to be tied into a network, and the projectors support advanced networking (like Crestron), it will allow a school or district or university to be able to take advantage of emergency broadcasts or simple announcements”. Networking multimedia projector can allow the presentation over LAN and also scheduling. This feature mainly helps the teachers to organise their work. If well programmed the multimedia projector connected to the network, can work as a reminder to both teachers and learners. A multimedia projector can also be used over a network for collaboration with other similar projectors at the same, or even distant locations (Feierman & Kahl, 2019).

Ranasinghe and Leisher (2009) studied “the benefit of integrating technology into the classroom” discovered that, “teaching student the use of technology as a learning tool enhances their learning” and they also mentioned “integrating technology into the classroom is an approach to develop better understanding of basic concepts provided it is applied appropriately”. The results of the study of “effectiveness of audio-visual aids in teaching lower secondary science in a rural secondary school” carried out by Tang (2018) reflects that, “audio-visual aids are effective in increasing the understanding of students as indicated in the significantly improved marks for post assessment in the experimental group”. In their report they reported that they, “observed learners were more attentive when the teachers played an audio-visual aid and the majority of their students who participated agreed that audio-visual aids increased their interest and ability to remember the contents”. The participants also showed motivation on learning when learning is done using audio-video aids.

According to Amin *et al* (2018) in their studies of the benefits of using multimedia project and their the outcome of their research specifies that, “multimedia projector encourages the students and benefited them to reduce their nervousness. Multimedia projector makes the classroom more dynamic and lively as the students can get visual and audio learning through it”. If multimedia projector is used properly learners and teachers tends to benefit as it can be used as a technological tool in the classroom.

SUMMARY

The use of multimedia projector in teaching and learning enable the integrates pictures, audio, and video into the curriculum to improve and invigorate learning process. Teachers and learners can benefit more different ways if they can have a positive attitude towards the use of the multimedia projectors as the audio visual aid in teaching and learning. The integration of multimedia projector in teaching and learning can help learners to achieve their learning outcome if teachers and learners have a positive perception of the use in teaching and learning.

The chapter presented the literature review as it relates to the study. The chapter focus on the benefits of the use of multimedia projector, multimedia projector as an instructional method,

the CTML and VARK theories. The following chapter explain the methodology used in this study.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 INTRODUCTION

The previous chapters focused on the literature review. This chapter explains the methodology and procedures that were used in carrying out the research effectively. The chapter has eight sections and discusses the method that the researcher used in data collection. Section one is research approach; section two research design; section three data collection; section four subject selection and description; section five data collection procedure; section six credibility of the study and section seven data analysis and section eight ethical considerations.

3.2 RESEARCH APPROACH

According to Kaur, Singh and Chan (2014) “research approaches are plans and the procedures for research that span the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation”. The three commonly used research approaches are quantitative, qualitative and mixed method. Apuke (2017) explained quantitative research method as, “a method that deals with quantifying and analyzing variables in order to get results and it involves the utilization and analysis of numerical data using specific statistical techniques to answer questions like who, how much, what, where, when, how many, and how”. Cohen, Manion and Morrison (2011) also defined quantitative research “as a systematic investigation of phenomena by gathering quantifiable data and performing statistical, mathematical, or computational techniques”. Quantitative research is mainly conducted in the social sciences using the statistical methods.

Bacon-Shone (2015) defined qualitative research as “an inquiry process of understanding based on a methodological tradition of inquiry that explores a problem, which enables construction of a complex, holistic picture, analyses words, reports detailed views of informants and conducts the study in a natural setting”. “Mixed method is a research method that focuses on collecting, analyzing, and mixing both quantitative and qualitative data in a single study or series of studies”, thus according to Bian, (2007)

This research was carried out using a qualitative research method. Qualitative methods sought to find information from the lecturers and learners their perception and of multimedia

projector in teaching and learning in higher education. The method that was used obtained participants' views and provide a rich descriptive detail of what the learners and teachers believed (Saunders, Lewis & Thornhill, 2009). The advantages of using qualitative research method as stated by Rahman (2016) is that, "it produces the thick (detailed) description of participants' feelings, opinions, and experiences; and interprets the meanings of their actions". When using qualitative approach, it becomes possible to understand attitudes, this study focused on the perception of teacher and learners which can be also determined by attitude (Rahman, 2016; Gaille, 2018). Qualitative approach helped the researcher to explore more on the perception of the learners and teachers when they use multimedia projector for teaching and learning in high education. Qualitative approach also helps capture the change in learners' attitude when a multimedia projector is used in learning.

3.3 RESEARCH DESIGN

According to Padilla-Díaz (2015) research design is "a plan for selecting subjects, research sites, and data collection procedures to answer the research question(s)". According to Bian, (2007) there are several types of qualitative methodologies for example, "biography; phenomenology; grounded theory; ethnography and case study". Mccaslin and Scott (2003) described phenomenology as "the study of the shared meaning of experience of a phenomenon for several individuals and also as understanding of meaningful concrete relations implicit in the original description of experience in the context of a particular situation as the primary target of phenomenological knowledge" Grounded theory is the study where by the researcher creates a theoretical analytical scheme of a phenomenon, a philosophy that elucidates some action, interaction, or process. Mccaslin and Scott (2003) described ethnography as a "study of an intact culture or social group (or an individual or individuals within a group) based primarily on observations and a prolonged period of time spent by the researcher in the field, ethnographer listens and records the voices of the informants with the intent of generating a cultural portrait".

Baharein and Noor (2008) referred case, "to an occurrence, an entity, an individual or even a unit of analysis and case study to an empirical inquiry that investigates a contemporary phenomenon within its real life context using multiple sources of evidence". (Heale and Twycross (2018) see case studies as, "being concerned with how and why things happen, allowing the investigation of contextual realities and the differences between what was

planned and what actually occurred” p64. Case study is not intended as a research of the whole group. Rather it is planned to center on a specific issue, feature or unit of analysis.

The research design that was applied in this study was the case study as each participant represents a case. Case study research design helped in exploring how learners and lecturers in higher education perceived the use of a multimedia projector when used in learning. (Bian, 2007) defined a case study, “as a research that involves studying a small number of cases in great depth in the expectation that this gives deep insights into the process”. What prompted the researcher to adopt case study is that a case study is a descriptive and analysis of the situation and in terms of data collection it is flexible which applies to the researcher’s scope of study (Cohen, Manion & Morrison, 2007).

3.4 DATA COLLECTION

According to Kabir (2016) data collection refers to, “the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes” regardless of the type of research (qualitative, quantitative or mixed method). Accurate data is important and essential to preserve the research integrity (Kabir, 2016). Data is collected in form of primary and secondary data (Wahyuni, 2012). The primary data is generally collected using semi-structured interviews by the specialists in the observed topic when using a case study (Wahyuni, 2012). According to Wahyuni (2012), “the secondary data constitute internal publications provided by participants to the researchers and publicly available data which are relevant to the topic being observed”. The main aim of data collection is to have quality evidence that can be interpreted using analysis techniques answering the research questions (Batmanabane & Kfour, 2017). The most popular qualitative methods of data collection are interviews, focus groups, and observations.

“Qualitative data collection methods are exploratory in nature and are mainly concerned with gaining insights and understanding underlying reasons and motivations” thus according to Wahyuni (2012). Van Eeuwijk and Angehrn (2017) stated that, “A Focus Group Discussion (FGD) is a qualitative research method and data collection technique in which a selected group of people discusses a given topic or issue in-depth, facilitated by a professional, external moderator”. The focus group method helps the researcher to identify different and

information about people's attitudes and perceptions, knowledge and experiences of through sharing and interaction with different people. According to, Van Eeuwijk and Angehrn (2017) "the technique is based upon the assumption that the group processes activated during an FGD help to identify and clarify shared knowledge among groups and communities, which would otherwise be difficult to obtain with a series of individual interviews". Focus group can be used when the researcher need to have a general consensus or share knowledge amongst a group of people and when time is limited to carry out individual interviews.

The main purpose of an interview is to enable the interviewees with share their viewpoints or perception and knowledge concerning a specific social phenomena being observed by the interviewer. The participants in the study will share knowledge to the researcher through the conversations held during the dialogue process (Wahyuni, 2012; Schober, 2018). According to Wahyuni (2012), "the interview method is most often selected as the main method for collecting empirical data of the relevant practices. The interview procedures encompass all procedures from designing the interview questions and developing the interview guides, to the process of interviewing".

The researcher used both focus group and interview to collected data. Focus group was used to collect data which was used in purposeful sampling. When conducting the focus group, the researcher held a discussion that guide to selected difference participants who are treated as different cases in this study. The interview was used as research instrument to collected data which was analysed in chapter four.

3.4.1 RESEARCH INSTRUMENT

The interview is the research instrument that was developed and used to collect data for this study. Interviews are techniques that are used to get information from respondents. Eze (2016) described interview as, "a two-way oral communication between interviewee and interviewer where interviewer asks the participant (interviewee) questions to collect data and to learn about the ideas, beliefs, views, opinions and behaviors of the participants"p123 For Cohen, Manion and Morrison (2011) defined interview is "initiated by the interviewer in research in order to glean information which is significant to a research which can be between two or more people"p412.

According to (Eze, 2016), “the aim of qualitative interview is to see the world through the eyes of a participant, and it can be the main method of obtaining data and a valuable source of information when it is used correctly”. Interviews which have direct bearing on the research aims of the study may be employed as the most vital tool of collecting information for the research (Cohen, Manion and Morrison, 2011).

The benefits of using interviews as a research tool are: a) interviews can provide answer to the areas where the researcher cannot observe the participants very well, b) interviews permits the respondents to describe their personal information in detail, c) the interview has a room to ask specific question which help to get the type of information being explored (Creswell, 2014). The other benefits of interviews are that “they allow the interviewer to collect accurate information directly from the source which are also focused and centered on the focal point of the topic” (Eze, 2016).

The disadvantages of using interviews as a research instrument are: a) when dealing with more sensitive topic on interview it brings emotional charges, as in the case “exploring passion killing and its implications on the academic wellbeing of university students in Botswana and Namibia” which Eze (2016) explored was more sensitive. Creswell (2012) mentioned that, “there are issues to balance which shock inexperienced researchers about the difficulty of conducting interviews. The data collected may contain biased information because of poorly phrased questions. However, should be checked through establishing dependability by using the audit trail”.

These are three main format of interviews namely the unstructured, semi-structured and structured. The structured interviews according to Gudkova (2017), “consist of a series of pre-determined questions that all interviewees answer in the same order.” Data analysis usually tends to be more straightforward because researcher can compare and contrast different answers given to the same questions. Unstructured interview is also called the discovery interviews. According to Barrett and Twycross (2018) “an open or unstructured interview will often be based on a single question, with the interviewer and interviewee then shaping the conversation in real time, rather than following a prewritten schedule”. The interviewer in the semi-structure have set questions to be asked before the interview and also

some additional questions might be asked during the interview such that the interviewer will get more understanding or more clarity.

In this study the researcher used the semi structured interview to explore the use and the perception of multimedia projector for teaching and learning in higher education. According to Wahyuni (2012) “the main feature of an interview is to facilitate the interviewees to share their perspectives, stories and experience regarding a particular social phenomena being observed by the interviewer”. The interviewer prepared the set of questions to be asked before the interview (appendix 3 and appendix 4) and also asked some additional questions during the interview that helped the interviewer to get more understanding and clarity. According to (McCammon Ben, 2012), “the semi-structured interview guide provides a clear set of instructions for interviewers and can provide reliable, comparable qualitative data”. “Semi-structured interview technique offers a balance between the flexibility of an open-ended interview and the focus of a structured ethnographic survey” thus according to McCammon(2012). The advantage of semi structured interview as explained by Barrett and Twycross (2018) is that, “it helps to capture key areas while still allowing flexibility for participants to bring their own personality and perspective to the discussion”.

They are many different types interviews which a researcher can use to conduct semi-structured interviewlike telephone interviews, video links, face-to-face and web (Ryan, Coughlan & Cronin, 2009). Telephone are interview where the interview has oral interview through the use of telephone (Easwaramoorthy and Zarinpoush, 2006). Telephone interview can be more appropriate where the subjected to be discussed is not very sensitive and non-verbal communication is less important. Video link interview it can be used where face to face interview is not possible. Video links interview can be done using Skype, Whatsapp video call and other social media (Nehls, Smith and Schneider, 2014). Face-to-Face in the most used in our traditional formal interviews. Face-to-face interviews are often used to explore sensitive topics and where the researcher need to pay attention to non-verbal behaviour (Dintoe, 2018; Schober, 2018). Face-to-face are very costly and labour intensive but they are the method to use when the researcher need to collect high quality data. In this study the researcher used face-to-face interview.

3.5 SAMPLE SELECTION AND DESCRIPTION

Sampling involves selecting individual units from a larger. They are two sampling procedures which are probability and non-probability. Probability uses random techniques while non-probability is not based on randomization (Eze, 2016). The researcher used non-probability sampling, participants were purposely selected to reflect particular features of a population, within the sampled population.

The study was carried out at a college in Francistown Centre for Business and Secretarial Training (CBST). CBST currently uses the both the traditional and multimedia method of teaching in the classroom. A semi structured interviews was designed and administered by the researcher. The semi structure interview questions were distributed to lecturers and students who were the participants of the study.

In this study the researcher used purposive sampling to select the participates. The purposive sample is also called a judgement, selective or subjective sampling. The selection of the sample relies on the researcher's own judgement. The researcher chose purposeful (or purposive) sampling with an intention of representing certain characteristics selected from focus group. According to Kielmann, Cataldo and Seeley (2010) "this approach reduces the role of judgement within a larger sample, and provides a credible cross-section from that sample". When selecting the participants, the researcher also used common sense to ensure that all the departments at CBST College were represented. According to Habib, Pathik and Maryam logic, "common sense or sound judgement can be used to select a sample that is representative to a larger population".

The sample size consisted of five lecturers teaching different modules and ten students doing different courses at CBST College. The sample consisted of seven female and eight male participants. All participated in face-to-face, semi- structured interviews. The researcher assigned codes so that the participants were easy to identified them. Lecturer male participants were identified as LT M1 to LT M2, lecturer female were identified as LT F1 to LT F3, while students' male were assigned STM1 to STM6, and student female STF1 to STF4. these participants were selected from the focus basis on their knowledge about the use of multimedia projector.

3.6 DATA COLLECTION PROCEDURES

Data collection procedure is the process and procedure the researcher underwent when collecting data. Data was collected in two parts. The first data the researcher collected was through a focus group which the data was used to as a guide to select purposeful sampling. The second part of the data was collected during the interviews.

The focus group was selected and the researcher organised the group. The focus group discussion was done before the interviews. The group discussion was an interactive session with nine lecturers and fifteen learners held at CBST to get a generalised response about the use of technology tool in education including the multimedia projector. They had a discussion on the use of technology tool mainly focusing on multimedia projector. The focus group discussion enabled the researcher to have diverse opinions and was able to use the responses to select the participants. The interviews involved asking the participants questions, listening and recording.

Before collecting data from participants, the researcher applied and was given permission from the Ministry of Education (appendix 6) and Botho University (appendix 5) to carry out the study. Upon receiving the permission, the researcher visited CBST manager and sought consent to carry out the research at the institution. The researcher visited the college to administer the interview questions and also to observe the use of multimedia projector at the college. The interviews were conducted by the researcher students and lecturers who consented.

3.7 DATA TRUSTWORTHINESS AND CREDIBILITY

According to Habib, Pathik and Maryam (2014) “qualitative research data trustworthiness is all about establishing the credibility, transferability, dependability and confirmability of the study”.

3.7.1 CREDIBILITY

Credibility is how confident the qualitative researcher is in the truth of the research study's findings. The researcher used the triangulation method as the researcher collected data from different cases for ensuring credibility. Baharein and Noor (2008) mentioned that

“triangulation involves using multiple data sources in an investigation to produce understanding”. Habib, Pathik & Maryam (2014), also mentioned that “triangulation allows the researcher to improve the accuracy of conclusions by relying on data from multiple methods”. To ensure credibility, the researcher asked the participants to read again the questionnaire which they answered such that they can confirm their understanding and also to check for some errors before submitting the research questions. The researcher only asked relevant and right questions for the study to avoid misleading the respondent in order to get valid answers.

3.7.2 TRANSFERABILITY

Transferability is how the qualitative researcher demonstrates that the research study’s findings are applicable to other contexts. The research study’s results can be applicable to other contexts Johnson (2008) other context refers to the, “similar situations, similar populations, and similar phenomena”.

3.7.3 CONFIRMABILITY

Confirmability is the degree of neutrality in the research study’s findings. In this study the results were based on the teachers and learners’ responses and no slightly potential of bias or the researcher showed no personal motivations. The participant audited the interview transcript by reading them again when checking for errors.

3.8 DATA ANALYSIS

The method of this study is qualitative. According to Cohen, Manion and Morrison, (2011) “qualitative data analysis involves the explanation of the information collected, drawing conclusions from the definitions presented by participants, taking into considerations patterns, categories, themes and regularities”. Qualitative method does not apply statically method of data analysis rather it is the opposite of quantitative method.

THE PROCESS OF DATA ANALYSIS

Steps of data analysis.

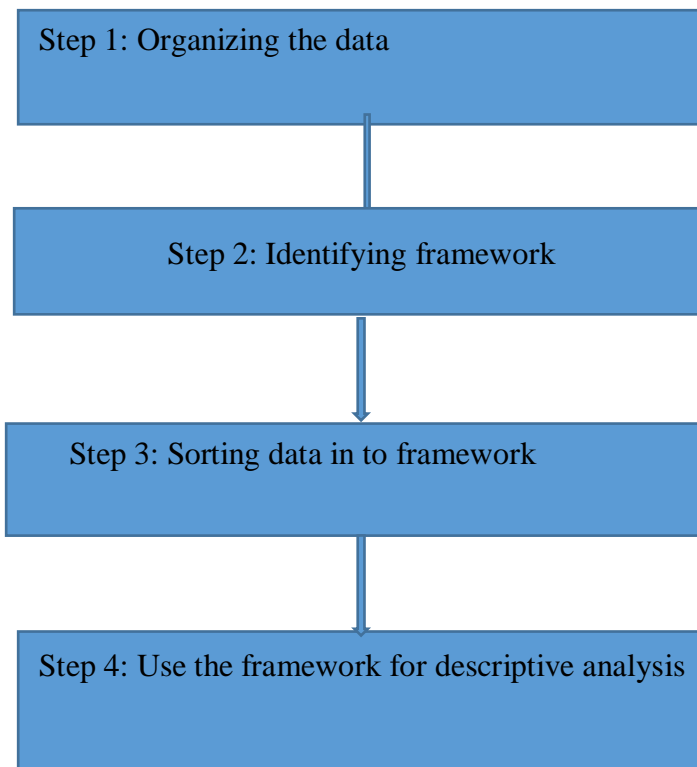


Figure 2

The researcher used the above steps in in figure 2 when carrying the data analysis procedures which were done after data collection.

According to Batmanabane and Kfourri (2017) “qualitative data refers to non-numeric information such as interview transcripts, notes, video and audio recordings, images and text documents”. They are mainly five qualitative data analysis categories mentioned by Batmanabane and Kfourri (2017) which are: “a) content analysis; b) narrative analysis; c) discourse d) framework analysis and e) grounded theory analysis. In this research the researcher used both content analysis and framework analysis”. Content analysis is the process of categorization of data, the process is done at step 1of the data analysis procedure (fig 2). In this study the researcher used Framework analysis to carryout Step 2; Step 3; and

Step 4. Step 2 (fig 2) Identifying framework. The researcher identified the themes. According to Hanberger (2016) themes are ideas categories that appears from a group of lower level data points.

After completion Step 2 (fig 2) in data procedure the next step was Step 3 (fig 2) which involved sorting out of data in to framework. It involves the identifying themes, patterns and relationships. The last step was Step 4 (fig 2) which involved use of the framework for descriptive analysis. At this stage the researcher used the primary and secondary data comparisons. This is a technique where the researcher matches the results findings of the data collected with the finding of the literature review and discuss them.

3. 9 ETHICAL CONSIDERATIONS

The conduct of this study was directed by Botho University's Code of Ethics through the Office of Student Research and Outreach (OSRO) (Botho University, 2017). The study falls under Ministry of Education. The ministry was conducted seeking approval of the research permit which is one of the requirement for the research to carry out the study. Prior to the permit the researcher was received an approval letter from Botho university which is the home institution.

The researcher only carryout the study after receiving all the required documents as recommended by the government. The research permit only granted upon ethical approval.

The researcher treated all the participants fairly and equally. The researcher did not use any offensive, discriminatory, or other unacceptable language. All the information provided by the participants was confidential and was used for this study only. Contributors were guaranteed that their information they were providing was not going to be disclosed. The researcher provided the environment that made the participants feel safe and respond freely and with confident.

During the research , the examiner had the responsibility to respect the rights, values and desires of the contributors (Creswell, 2014). There was a need for the researcher to consider the scientific and moral values of human being related to the area of study. (Creswell, 2014) mentioned that "respecting people`s humanity and dignity even if it means that information may be lost, it is of great importance to make the truth known".

3.9.1 RISK OF HARM.

During the research, the researcher was responsible for the safety of the participants during the research period. When conducting the research, the participants were able to respond freely. Fouka and Mantzorou (2011) mentioned that “data collection process in qualitative research is an on-going and evolving process, with the likelihood of proximity and friendliness between the participant and the researcher”. Before conducting the researcher, the researcher described and any possible physical harm or discomfort that could have occurred to the participants during the research.

3.9.2 VOLUNTARY PARTICIPATION.

In this study the participants participated voluntary without the researchers’ interference in their decision making. The researcher sought informed consent from relevant stakeholders. Neuman (2014) pointed some information to be included in the consent form such as;

- “Summary of the purpose and procedure of the research, including the expected duration of the study.
- Statement of any risk or discomfort associated with participation.
- Guarantee of anonymity and the confidentiality of records.
- Statement that participation is completely voluntary and can be terminated at any time, without incurring any penalty”. (Appendix 2)

3.9.3 ANONYMITY AND CONFIDENTIALITY.

Fouka and Mantzorou (2011) mentioned that, “the issue of confidentiality and anonymity is closely connected with the rights of beneficence, respect for the dignity and fidelity”. All the participant’s information remains private and they were only for study. They not going to be used again for what so ever reasons. The information is strictly confidential and private. The researcher assured the participants that their personal information confidential (Creswell, 2014).

The researcher respected the privacy of the participants. Fouka and Mantzorou (2011) emphasised, “getting the informed consent of the participants is a very important component

of the research process”. Therefore, the researcher explained to the participants the purpose of the study and exactly what was expected of them and that they were able to drop from the study at any time. To avoid privacy invasion, the researcher had to explain all the research procedures clearly to all participants so that they would have all the necessary knowledge.

SUMMARY

This chapter deliberated on the ethical consideration which includes risk of harm, anonymity and confidentiality. The research participants were purposefully selected from the focus group. It also focused on the method of data collection research approach and design. Data trustworthiness and credibility was also discussed as well as the transferability and confirmability. The succeeding chapter which is chapter 4 focused on the presentation and analysis of the data.

CHAPTER FOUR: PRESENTATION AND ANALYSIS OF RESULTS

4.1 INTRODUCTION

The preceding chapter, chapter 3 focused on methodology. This chapter, focus on the presentation and analyses of results from the participants during the research. Data presentation and analysis was done to clearly show and pinned down the results. This help reader clearly understands the significance of the study. The researcher analyzed data using the themes developed from the sub questions. There were two sets data collected. One set was collected from the lecturer addressed the perception and the other set was from the students addressed attitude toward the use of multimedia projector. Data analysis is sectioned in two sections the lecturers and student data analysis and it was sub sectioned in to section A which presents bio- data and section B is the qualitative analysis.

The researcher used purposive sampling to select the participants after focus group discussion. The research sample consist of five lecturers who were lecturing different interviewed and ten students doing different levels of education. Five interviewees and five narrative documents containing five questions were filled in by the participated lecturers. Ten narratives with three questions were answered by students who were purposefully selected as participants.

4.2 DATA PRESENTATION AND ANALYSIS

In a qualitative study the information to be reported is called findings. Collected data was organised using the research questions. Data analysis is the procedure where by the researcher has to explain or interpret the research findings (Cohen, Manion & Morrison, 2007). In this study the researcher used themes which involve the use of the research questions. The researcher grouped data using the research question so that he could draw an analysis observing the data similarities and difference. The study analysis usedwas drawn from the research sub question which are: a) student attitude towards the use of multimedia projector and b) teachers' perception towards the use of multimedia projector for teaching and learning.

The interview questions for lecturers included demographic information which assessed lectures participants' gender, age, qualification, level of students which they teach, years

worked they worked at CBST College and position held in the institution and the narrative questions (appendix 3). The interview questions for students included demographic information which assessed students' participants' gender, age, course and level they are in and narrative question (appendix 4).

LECTURERS RESPONDENTS AT CBST

TABLE 2: DISTRIBUTION OF LECTURERS' RESPONDENTS BASED ON GENDER

VARIABLES	NUMBER OF LECTURERS
GENDER	
FEMALE	3
MALE	2
TOTAL	5

Table2 data shows the gender of lectures who participated. Three lectures participated where female and two male lecturers. These results reflect that they are more female lecturers than male at CBST College.

TABLE 3: DISTRIBUTION OF LECTURERS' RESPONDENTS BASED ON AGE.

AGE	NUMBER OF LECTURERS
21-35	3
36-45	2
46-60	0
TOTAL	5

Table 3 shows distribution of lecturers' respondents based on age. The results show that 21-35 age group contains the majority of the lecturers with 3 lecturers while 2 of the lecturers' age group fall between 36-40. None of the lecturers' age group fell between 46-60. Almost all the lecturers are still at their active and productive age since they all fall in the middle age and can be willing to try new technology, explore new teaching methods. In some study Nasaruddin and Ismayatim (2013) pointed that, "teachers in the age group of more than 50 years have a lower ICT adoption rate in their teaching profession and senior respondent finds it difficult to handle the software that requires them to study the features prior to the class". In this study teachers fall between the age of 21 to 45 of which it is a good age range to adapt to the new change of technology. The use of multimedia projector would be quickly adopted by the teachers at CBST college since they are all be low the age of fifty (Nasaruddin & Ismayatim, 2013)

TABLE 4: DISTRIBUTION OF LECTURERS' RESPONDENTS BASED ON STUDY LEVEL OF STUDENTS.

STUDY LEVEL OF STUDENTS	NUMBER OF LECTURERS
LEVEL 1	3
LEVEL 2	1
LEVEL 3	1
TOTAL	5

Table four reflect that most of the lecturers were teaching students who were at level 1. The results show that 3 of the lecturers were teaching level 1, 1 lecturer was teaching both level 1 and level 3.

TABLE 5: DISTRIBUTION OF LECTURERS' RESPONDENTS BASED ON YEARS WORKED AT CBST.

LECTURES YEARS WORKED AT CBST	NUMBER OF LECTURERS
1-2 YEARS	1
3-4 YEARS	4
5-6 YEARS	0
7- 10 YEARS	0
TOTAL	5

Majority of the lecturer respondents, had 3 to 4 years working experience at CBST and only 1 of the lecturer participants has been working at CBST for only 1 to 2 years.

TABLE 6: DISTRIBUTION OF LECTURERS' RESPONDENTS BASED ON QUALIFICATION.

LECTURER'S QUALIFICATION LEVEL	NUMBER OF LECTURERS
CERTIFICATE/ NCC	0
DIPLOMA	3
DEGREE	2
MASTERS	0
TOTAL	5

According to the data collected most of the lecturers' qualifications showed 3 possessed diploma qualifications, while 2 possessed degree and none of the lectures respondent possessed a national certificate or a master's degree. The implication of the results shows that the institution consists of qualified staff.

TABLE 7: DISTRIBUTION OF LECTURERS' RESPONDENTS BASED ON POSITION AT CBST.

LECTURER'S POSITION AT CBST	NUMBER OF LECTURERS
HEAD OF DEPARTMENT	0
SENIOR LECTURER	3
LECTURER	2
TOTAL	5

Most lecturers (3) held lecturer position and (2) of the teaching staff were senior lecturers. None of the respondents was a head of department because the head of department as CBST college do not lecture they only focus on the management duties.

INTERVIEW QUESTIONS

TABLE 8: RESPONSES FOR INTERVIEW QUESTION 1.

What are the technology tools that you use in teaching?	
LT F1	Digital camera; projector; printer and computer
LT F2	Computer; printer and projector
LT F3	Projector
LT M1	Projector and laptop
LT M2	Computer; printer and projector.

Question 1 shows that all of the interviewees (lecturers) were using technology tool that included a projector, digital camera, printer, desktop computer, laptop and tables in their teaching contrary to the study done by Nasaruddin & Ismayatim (2013) which showed that teachers were not using multimedia tool.

TABLE 9: RESPONSES FOR INTERVIEW QUESTION 2.

How often do you use multimedia projector in your teaching per week?			
Once	B. Twice	C. Thrice	D. Fourth
LT F1	Twice		
LT F2	Thrice		
LT F3	Thrice		
LT M1	Once		
LT M2	Thrice		

The interview results show LT F2, LT F3 and LT M2 use multimedia projector thrice per week whilst LT F1 use the multimedia twice and LT M1 uses the projector once per week. This shows that lectures were using multimedia projector more often.

TABLE 10: RESPONSES FOR INTERVIEW QUESTION 3.

What are the benefits of using a multimedia projector in your teaching?	
LT F1	<ul style="list-style-type: none"> • Help in organizing the teaching notes. Saves time when teaching using slides.
LT F2	<ul style="list-style-type: none"> • Better use of class teaching time. Multimedia projector can be used to be free teaching time that can be used when writing on the board by bringing well prepared notes to the lesson
LT F3	<ul style="list-style-type: none"> • Helps organize the teaching content using slide and makes it easy when clarifying a point by clicking a previous slide.
LT M1	<ul style="list-style-type: none"> • It is a better way of teaching since children learn easily when using visual aids.

LT M2	<ul style="list-style-type: none"> • It helps to express ideas creatively and have a better interactive experience
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From the interviewees' responses, it shows that lecturers benefit more when they use multimedia projector in teaching. Multimedia projector can be used to project PowerPoint presentation which lecturers use to organise their lesson, save teaching time, better interaction and expressing of their ideas in a more creative way.

LT F1 mention that "multimedia projector helps in organizing the teaching notes. Saves time when teaching using slides, while LT F2's responds in support of that; LT F3 point out that multimedia is also helpful in organising and makes it to clarification of content, further more with the benefits LT M1 mention that, "It is a better way of teaching since children learn easily when using visual aids. LT M2 also mentioned that, "it helps express ideas creatively and have a better interactive experience". All the participants approved that the use of multimedia can bring benefits to the lecturers.

TABLE 11: RESPONSES FOR INTERVIEW QUESTION 4.

How do you perceive the importance of using a multimedia projector in teaching activities?	
A. Poor B. Good C. Better D. Excellent E. Outstanding	
LT F1	Better
LT F2	Outstanding
LT F3	Outstanding
LT M1	Excellent
LT M2	Excellent

None of the participants had poor perception towards the importance of using a multimedia projector in teaching. From the data collected LTM1 and LTM2 ticked excellent on the perception of the importance of using a multimedia projector for teaching activities. LT F2 and LT F3 ticked outstanding whilst LT F1 ticked good.

The results reflect there is no negative perception towards the use of multimedia projector in teaching. The responses show that the lecturers were aware of the importance of the multimedia projector. Carbon (2014) stated that, “sensory perception often the most striking proof of something factual. When we perceive something, we interpret it and take it as ‘objective’, real”. Normally people use what they have experience to judge or to have positive perception which helps them make decisions and act upon an action (Carbon, 2014). Teachers need to have positive perception on the importance of the use of multimedia projector for teaching and learning so that they can be motivated to use them more often (Ju & Mei, 2018).

TABLE 12: RESPONSES FOR INTERVIEW QUESTION 5.

What are the factors that may cause you to get motivated and be more productive when using multimedia projector?	
LT F1	<ul style="list-style-type: none"> • Availability of speed internet connection. • Need of training. A training in using more computer software that will help in class management and computer skills.
LT F2	<ul style="list-style-type: none"> • Having electricity all the times. • Better computer software that enables class management. • More computers or laptops. • Availability of internet.
LT F3	<ul style="list-style-type: none"> • More computers or laptops. • Availability of internet.
LT M1	<ul style="list-style-type: none"> • Availability of equipment to connect the multimedia projector. • Availability of support and easy to use hardware and software.
LT M2	<ul style="list-style-type: none"> • Having electricity all the time. • Better computer software. • More computers or laptop. • Availability of internet

According to the responses given, the availability of resources needed when using multimedia projector motivates the interviewee to use multimedia projector and the interviewees will also be more productive. The results show that most lecturers suggest the availability of electricity, better computer hardware and software, availability of internet as factors that motivates them and be more productive when using multimedia projector. LT F2; LT F3 and LT M2 stated that lack of internet and computers are some of the factors that demotivated them and also make them less productive when using a multimedia projector.

The availability of resources can help lectures be more effective and efficient when using technology tool (Singh and Samli, 2014). LT F1 mentioned that, “need of a training in using more computer software that will help in class management and computer skills”.

LT M1 stated that, there is need for the “availability of equipment to connect the multimedia projector and availability of support and easy to use hardware and software”. Amin *et al.* (2018) discussed the need for a technically trained teacher who can help in setting the multimedia class when using multimedia. In their study teachers were facing a challenge of lack of knowledge on how to use multimedia projector effectively in the classroom. Amin *et al.* (2018) suggested that teachers should check their audio or video material twice to avoid some visual unexpected tracks from the internet before presenting it in class otherwise they can be shameful.

When lecturers are motivated they can be more productive and have positive attitude towards the use of multimedia projector. It would be easy for lecturers to produce best outcomes when motivated and have the anxiety to make their lessons more creative when using a multimedia projector (Sauermann, 2016).

TABLE 13: RESPONSES FOR INTERVIEW QUESTION 6.

How do you enhance student learning with multimedia projector?	
LT F1	<ul style="list-style-type: none"> • Make better use if time in the classroom. I no longer waste time writing notes on the board. Save time by not erasing and rewriting again. • I prepare my lesson content before the lesson and organize them in PowerPoint that I will have to project in the classroom and save more of teaching time
LT F2	<ul style="list-style-type: none"> • Greater teaching versatile. Multimedia projector enables the use of films and images when teaching that will students to grasp more easily. • It also helps as a visual and audio learning aid to learners when teaching.
LT F3	<ul style="list-style-type: none"> • By giving students active task to complete. • By providing a watching and listening list to complete existing reading list. • By using a jigsaw task to encourage peer learning and debate.
LT M1	<ul style="list-style-type: none"> • Improve student participation through projecting their presentation. It helps them to be engaged and not idle. • It improves their presentation skills.
LT M2	<ul style="list-style-type: none"> • Using multimedia incorporate raw data, website and other information when research content. • By organizing information to appear text, charts and videos that could be understood by learners

Lecturers were asked how they enhance student learning with the use of multimedia projector for teaching, all of the interviewee’s responses showed that multimedia projector can enhance

student learning when it is used effectively. Lecturers mentioned that they could save time, greater teaching versatility, improve students' participation and by organising information.

LT F1 stated that “multimedia projector makes better use of time in the classroom. I no longer waste time writing notes on the board. Save time by not erasing and rewriting again and I prepare my lesson content before the lesson and organize them in PowerPoint that I will have to project in the classroom and save more of teaching time”. This shows that lectures can have a better use of the teaching time hence take more time explaining and asking questions (Kelvin Udim & Akon Etim, 2016). A well organised lesson enable the teacher to clearly explain and layout all the learning concept for learners to understand (Cosgun Ögeyik, 2017).

STUDENTS RESPONDENTS

PART I

TABLE 14: DISTRIBUTION OF STUDENTS' RESPONDENTS BASED ON GENDER

VARIABLES	NUMBER OF LEARNERS
GENDER	
FEMALE	4
MALE	6
TOTAL	10

Table 12 data above shows the number of male students who participated in the research was 6 and the total number of female learners who participates was 4. The total number of learners who participated was 10.

TABLE 15: DISTRIBUTION OF STUDENTS' RESPONDENTS BASED ON AGE.

STUDENT AGE RANGE	NUMBER OF STUDENTS.
15-20	1
21-25	4
26-30	4
31-35	1
TOTAL	10

In the students' respondents' age analysis, it was evident that the higher population 4 learners' participants fell both between 21-25 and 26-30 years while 15-20 and 31-35 were both having one learners in each range. The age analysis shows that most students are in their middle age and this can show that they can easily catch up with technology. According to the results of (Nasaruddin and Ismayatim (2013) one of the factors that affect the adoption of ICT in school is the age of the teachers. The results of the study reflected that teachers who were older than fifty years tend to take long to adopt to technology changes (Nasaruddin & Ismayatim, 2013). The same can happen to the students who will be older that fifty years. The use of multimedia projector will be quickly adopted by both teachers and students at CBST college since they were all below the age of fifty

TABLE 16: DISTRIBUTION OF STUDENTS' RESPONDENTS BASED ON COURSES

NAME OF THE STUDENT COURSE	NUMBER OF STUDENTS
CERTIFICATE IN OCCUPATIONAL HEALTH AND SAFETY	2
CERTIFICATE IN SECRETARIAL	2
CERTIFICATE IN SECURITY MANAGEMENT	3
CERTIFICATE IN RECORDS MANAGEMENT	3
TOTAL	10

Table 15 above shows that 3 of the respondents were studying towards both a Certificate in Records Management and Certificate in Security Management while 2 of the respondents were studying towards Certificate in Secretarial and 2 were studying towards a Certificate in Occupational Health and Safety.

TABLE 17: DISTRIBUTION OF STUDENTS' RESPONDENTS BASED ON STUDY LEVELS

LEVEL OF STUDENTS	NUMBER OF STUDENTS
LEVEL 1	2
LEVEL 2	4
LEVEL 3	4
TOTAL	10

Table of the level of students' analysis shows that 4 of the respondents were on level 2; 4 of the participants were doing level 3 whilst 2 of the despondence were on their first level. The learners at level three were about to finish and they could benefit more on multimedia projector when doing their project presentation.

PART II

TABLE 18: RESPONSES FOR INTERVIEW QUESTION 1.

What are the technology tools that are used in classroom when you are learning?	
STF1	Computer; projector and tablet
STF2	Projector; digital camera and computer
STF3	Computer, tablet; trace board projector
STF4	Projector; digital camera and computer
STM1	Projector and computer
STM2	Projector, computer and tablet
STM3	Computer; projector and trace board
STM4	Tablet, computer and projector
STM5	Computer; tablet and projector
STM6	Laptop; projector and tablet

Question 1 of the students' interview, shows that technology tools were being used in classroom when student were learning. The technology tool included projector, digital camera, printer, desktop computer, traceboard, laptop and tables in their teaching. According

to the data collected a computer and a projector were technology tools commonly used in the classroom while traceboard was least used.

TABLE 19: RESPONSES FOR INTERVIEW QUESTION 2.

How does the use of multimedia projector enhance your learning?	
STF1	<ul style="list-style-type: none"> • Clear visual and audio aid help us to pay more attention for example when a case study is presented in video or film you can easily understand better or relate scenario better.
STF2	<ul style="list-style-type: none"> • The use of video or photographs makes the lesson more enjoyable and makes learning fun.
STF3	<ul style="list-style-type: none"> • It is easy to understand the concept well when they are visually presented.
STF4	<ul style="list-style-type: none"> • It enables us to have visual and colorful learning experience during learning period and makes us pay more attention.
STM1	<ul style="list-style-type: none"> • It helps us to have collaborative learning and having a flipped learning approach with pre-session in class and post session tasks
STM2	<ul style="list-style-type: none"> • It easy to understand the learning concept when being taught using video.
STM3	<ul style="list-style-type: none"> • The use of audio and video in multimedia projector makes the concept more understandable. • By helping to visualize real life situation and learning motivation is increased as I am able to see the relevance of skills.
STM4	<ul style="list-style-type: none"> • The use of images, videos and animation together with text helps us in understanding, identifying and solving problems more easily.
STM5	<ul style="list-style-type: none"> • It provides a visual aid that helps clearly understand the concept being taught. • It also allows to have a visual and colorful learning experience when being taught in a classroom, thus helps us memorize the concepts
STM6	<ul style="list-style-type: none"> • The use of verbal and visual representation of concept lead to a deeper understanding when using multimedia projector

When asked how the use of multimedia projector enhance student learning, all interviewee indicated that multimedia projector could improve the quality of learning when used in the classroom. Most interviewees mentioned the benefit of integrating visual and audio aids in learning. STF1 said that, “Clear visual and audio aid helps us pay more attention for example when a case study is presented in video or film you can easily understand better or relate scenario better”. STF2 mentioned that, “the use of video or photographs makes the lesson more enjoyable and makes learning fun”, whilst STF4 said that “it enables us to have visual and colourful learning experience during learning period and makes us pay more attention”.

According to the data collected, STF3; STM2; STM3 STM4; STM5 and STM6 are agreeing that the integration of visual and audio aids help learners understand the learning concept, memorise the concept, help in problem solving and makes learning fun while paying attention. When students enjoy the lesson they tend to be engaged which help them grasp more concepts, pay more attention and have positive attitude (Amin *et al.*, 2018). Learner tends to understand more when they pay more attention.

Udim and Etim (2016) mentioned that, “multimedia provides a means to supplement a presenter’s efforts to garner attention, increase retention, improve comprehension, and to bring an audience into agreement which consequently results in learners remembering.” Agreeing to Udim and Etim (2016), STF3 mentioned that “it is easy to understand the concept well when they are visually presented”. Also agreeing with Udim and Etim, (2016) STM5 also stated that “multimedia provides a visual aid that helps to clearly understand the concept being taught and it also allows us to have a visual and colourful learning experience when being taught in a classroom, thus helps us memorize the concepts”.

TABLE 20: RESPONSES FOR INTERVIEW QUESTION 3

What are the advantages of learning using multimedia projector?	
STF1	<ul style="list-style-type: none"> The combination of video, text, sound and graphic design in a class helps students to be more engaged and also increase the concentration span

STF2	<ul style="list-style-type: none"> • It provides a better interactive learning experience, for instance if you need clarity you can use webcam to communicate with other students and the lecturer to get more clarity.
STF3	<ul style="list-style-type: none"> • Videos and images help to understand the learning concept more easily. • Notes are easier to understand when they are clearly presented using PowerPoint slides.
STF4	<ul style="list-style-type: none"> • Interactive presentations keep us engaged and helps us to concentrate better.
STM1	<ul style="list-style-type: none"> • Enables deeper understanding. Increase positive emotions. • Improves problem solving and accesses to a variety of information
STM2	<ul style="list-style-type: none"> • Watching a learning video together as a class improves learning collaboration and helps to get more concentration when learning
STM3	<ul style="list-style-type: none"> • It helps in taking better notes. • It helps in project presentation and reduce need to make notes since they can be displayed to the whole classroom and shared electronically
STM4	<ul style="list-style-type: none"> • It helps to create memorable visual images and increase memorable learning content
STM5	<ul style="list-style-type: none"> • Projects are easier to organize and programs using PowerPoint for presentation and it is easier to take note notes during slide show. • You are able to take better notes when reading clear and well organized projected text.
STM6	<ul style="list-style-type: none"> • Multimedia projector enables you to have effective collaboration techniques. • It also when doing project presentation and improves design skills.

All students who were interviewed shared the same sentiments that the use of multimedia projector has many advantages that helps them understand the learning concepts. STM5 stated that, “projects are easier to organize using programs like PowerPoint for presentation and it is easier to take important notes during slide show” and most students came with responses that are related. The interviewees highlighted advantages such as making it easier when note taking, help to have effective collaborative learning, help in project presentations and help to have interactive experience. This means that lecturers should use multimedia projector so that learners can have better quality education.

SUMMARY

Chapter focused on data presentation, the primary data was collected from both the lecturers and students who participated with some brief explanations. The lecturers’ demographics analyzed were gender, age, teaching level of students, and their qualification The students’ demographics analyzed were gender, age course and level of study. The demographics of the sample were presented in tables.

This chapter, presented results were tabulated to clear show data so that the research can be able to draw the analysis quickly (in tables) from lecturers, benefits of using a multimedia projector, perception of the importance of using a multimedia, factors that may cause lecturers to be more effective and more productive, and how lectures can enhance student learning with a multimedia projector. The chapter also presented the finding (in tables), from students, how the use of projector enhances their learning and the advantages they have when multimedia projector is used in their learning activities.

Most learners’ responses agree that multimedia projector brings many benefits when used for teaching and learning. Lecturers also agrees that multimedia projector enhance students learning when used for teaching and learning. Multimedia can be used as an effective instructional medium for teaching and learning (Kelvin Udim & Akon Etim, 2016). The next chapter focus on discussion and interpretation of results.

CHAPTER FIVE: DISCUSSION AND INTERPRETATION OF RESULTS

5.1 INTRODUCTION

In the previous chapter 4, all the data gathered from interviews conducted by the researcher was analysed. Themes were identified on the systematically categorized data from interview transcriptions. This chapter concludes this report. A summary of the research is presented, and findings of the study are discussed and interpreted. The chapter presents the proposed recommendations for the study that will help teachers, learners and other stakeholders in higher education to have a positive attitude towards the use of use of multimedia projector.

5.2 DISCUSSION OF FINDINGS

The aim of this study was to explore the use and perception of the multimedia projector in teaching and learning in higher education. The study objectives were to examine the usefulness of the multimedia projector, explore the attitude of learners towards the use of multimedia projector and to determine teachers' perception on the use of multimedia projector in teaching and learning in high education.

Multimedia projectors were highly rated by both teachers and students. The findings show that students and teachers reported favorable feedbacks about the use and perception of multimedia projector. According to the research results multimedia projector enhances students learning, the use of images, videos, audio and animation together with text was more helpful to learners in understanding, identifying and solving problems during learning. It was evidenced that; students can enjoy learning when learning content is projected on the screen using a multimedia projector. It provided a clear visual audio learning aid that benefited learners in paying attention especially when the learners had to learn through a video which they could easily related to. This reflects that there is a positive learners' attitude towards the use of a multimedia projector. Langat (2015) defined attitudes, "seen as more or less positive and encompass emotions, beliefs, values and behavior and hence affect individual way of thinking, acting and behaving which has a lot of implications to teaching and learning".

A study done by Ashaver (2013) highlighted that, "there are numerous benefits that students derive from the use of audio-visual aids, but quick understanding weighed more". In this study majority of the students aired that the visual and audio learning aids that supported the

use of multimedia projected helped them understand and concentrate more. Also to similar to my findings, Leander, Phillips and Taylor (2010) in their study discovered that, “learners were interested in learning using visual representations and learners had proved a success in physics problem solving”.

The results also show that, students benefit more when lecturers use multimedia projector in such a way that it enhances learning. The results show that visual and audio learning help learners learn better and have a clear understanding of the concepts. The learners also pointed out that the use of multimedia projector help them to visualize real life situations and learning motivation was increased as they were able to visualize their learning activities. This is consistent with what was found in previous studies by Amin *et al* (2018), they discovered that, “when learners are taught using a multimedia projector listening audio in English help them more for practicing correct accent as well as to speak like a native speaker and watching video motivated them in reading in various ways”. Many student participants at CBST College reported positive effect of multimedia projector.

The use of multimedia projector for teaching and learning enables educators to create well organised notes for teaching in the classroom using bulleted PowerPoint. Learners pointed out that they were able to take better notes when the notes presented to them are clear and well organised. When using PowerPoint, the teacher can easily repeat the point and explain more on that point by just clicking a previous slide.

In this study most learners mentioned the benefits of understanding the learning concept when multimedia projector was used for teaching and learning. The results reflect that learners get motivated when learning using multimedia projector. In support to the result Patel (2013) carried a study about, “use of multimedia technology in teaching and learning communication skill”, his results agreed to these students’ responses. Patel (2013) concluded that multimedia that, “the ultimate goals of using multimedia language teaching is to promote students’ motivation and learning interest, which can be a practical way to get them involved in the language learning”.

Srivastava, (2012) who also used multimedia projector as tool examined, multimedia and its impact on students’ attitude. Their study results showed that, “The Edu comp Smart Class

program has an overall positive impact on students more in terms of generating curiosity and grasping complex concepts rather than capturing attention, while it helps teachers in managing time”. Edu comp smart class is one of the applications of the ICT which include the use of multimedia projector (Srivastava, 2012). Their findings are directly in line with the finding of this study. The findings indicate that, “the students who participated in the study enjoyed the use of the multimedia as an instructional tool and believed that it helped provide additional opportunities for learning”.

Both male and female lecturers used different types of technology implementations in their classes including computers and projectors. The results showed that most lecturers were using multimedia projector in the classroom as visual and audio teaching aid. The responses from the teachers shown that multimedia projector facilitated learning and teaching, and helped them organize their teaching notes and provided visual and audios that helped student to be engaged and participate more (Mollaei & Riasati, 2013). Mollaei and Riasati, (2013) mentioned that, “teachers believed that computer oriented technology was an effective way of teaching a foreign language as it encouraged students to be active in their learning”.

In relationship to usefulness, the results indicate that all the lecturers believed multimedia projector can improve their performance. Teachers strongly agreed that the use of a multimedia projector can improve students learning. According to the results lecturers pointed out that, the combination of video, text, sound and graphic design in a class help students be more engaged, increase the concentration span, improve students learning collaboration and help them understand the learning concepts better. Teachers can make use of interactive projectors in many ways such as to demonstrate math manipulatives, to show visuals for science experiments, to display maps, charts, graphs, images from textbooks, whole class participate in practice test, to display a timer for assignments, paperless handouts, live web-cams, video streaming, skype video chatting with classes around the world and viewing geography features connections using Google Earth and Google Maps (Naidu and Biswal, 2010).

In this study most teachers pointed out that multimedia projector helped them in saving teaching time. The findings showed that all the lecturers benefited from the use of multimedia projector as a visual and audio teaching aid. The results of this study reflect that the use of

multimedia projector can enhance students learning. Lectures used multimedia media projector to express their ideas clearly to the learning and help them to organize their teaching notes (Udim and Etim, 2016).

According to this a study teacher can have a greater teaching versatility when they use multimedia projector. In their study Jang (2008) examined “the effect of integrating technology with teaching strategies on observation and writing into a teacher education course in Taiwan”. The study compared pre-service teachers receiving the teaching method on “application of technology and theories” with those who received “traditional teaching”. The findings indicated that, “teachers who use ICT could utilize the various technologies and instructional theories; whereas traditional teachers demonstrated less integration of ICT and instructional theories”. Teachers can be more creative and innovative when they use multimedia projector for teaching and learning because multimedia enable the use of multiple forms media content (Patel, 2013).

When lecturers were asked about the factors that will motivate them and be more productive the results shown that lecturers were more efficient and more effective when all the resources needed for a multimedia projector were available. The resources included, electricity, speed internet, more computers and better computer skills. “Teachers primarily require access to learning resources, which can support concept development by learners in a variety of ways to meet individual learning needs”, thus according to Srivastava, (2012).

Lecturers also mentioned lack of knowledge that support the use of multimedia in the classroom. Hennessy, Harrison & Wamakote (2010) explained the resources needed for lectures to integrate ICT in their classroom. In their study they pointed out lectures’ skills need to develop new learning environment which brings change in the learning structure when lecturers successfully integrate ICT in the classroom. The use of multimedia projector brings a different classroom set up that might require new classroom management skills, innovative methods of using multimedia projector to improve learning. When using multimedia projector lecturers must have the ability to use it effectively to create collaborative, constructive and cognitive learning that help learners to have deep understanding of the learning concepts (Hennessy, Harrison & Wamakote, 2010). Teacher

development is very crucial component for a successful integration of multimedia projector in the classroom.

Nasaruddin and Ismayatim (2013) in their study where “they examined the factors that affected teacher on the usage of multimedia as teaching tool, discovered that only 9% of the participates where using multimedia in their teaching”. In contrary to this study where results showed that most teachers where using multimedia projector (Table 8). The introduction of new technology tool affects teachers’ skills hence Nasaruddin and Ismayatim (2013) suggested that teachers must be given necessary support and appropriate training that help them to adopt to the use of multimedia hardware and software. Nasaruddin and Ismayatim (2013) explained that “teachers should also be given adequate time to develop new skills and to incorporate these new advancements to the improvement of technology-based instructions”. Teachers can use a multimedia projector when they have the knowledge and skill on using it to enhance student learning and get motivated in the technology tool. There is need bring awareness to the management so that they can help teachers with resources such as time and finance to develop themselves (Nasaruddin and Ismayatim, 2013).

Multimedia projector can be used by lecturers to design and organize their activities and lesson using a variety of multimodal resources that support it. It can also be used as a teaching method that enables teacher to save teaching time. Multimedia projector provides a technology based beneficial learning and teaching environment to both learners and teachers in higher education.

With the use of multimedia projector in teaching and learning, it can help teachers to get students attention, increase retention and help leaners in understanding the learning concepts. Leaners will be able to remember what they have seen thorough images and videos and what they have heard. Multimedia projector is now permeating the educational system as a tool for effective teaching and learning.

5.3 EDUCATIONAL IMPLICATIONS

The practical implications of this study is helping the institution to enhance educational system by integrating the use of multimedia projector such that they can increase the quality

of teaching and learning. The research was important as it showed the usefulness of multimedia projector in teaching and learning in high education.

The study was also important to the government and the school management in making and implementing strategies that help and motivate lecturers to use multimedia projector in their teaching activities. The study will also add value to the body of knowledge which other researchers may consult when considering the use and perception of multimedia projector in teaching and learning in higher education since there was a gap in the literature on the general use of multimedia projector in teaching and learning in high education.

5.4 RECOMMENDATIONS

The finding of study suggests that the use of multimedia projector is very important in teaching and learning. It is a great challenge for lecturers to use multimedia projector without all the necessary resources. From the responses given by the lecturers, it showed that the lecturers could be motivated more to use multimedia projector if all resources such as electricity and computers are available.

Teachers needs all the necessary support to create a multimedia classroom using a multimedia projector. Some teachers need the knowledge and resources. Teachers should be encouraged to develop themselves with the management to acquires skills that will support the use of multimedia in the classroom. It is recommended that the institution management should help to secure all the necessary resources as a way of supporting the lecturers to use multimedia projector for example purchasing a standby generator to use when there are power cuts and also purchase more computers. Teachers primarily require access to learning resources, which can support concept development by learners in a variety of ways to meet individual learning needs. More research to be done in a similar study to further explore these benefits in a different learning environment capturing more respondents.

SUMMARY

The research examined the use and perception of multimedia projector in teaching and learning in higher education. This study was specifically set out to investigate the following objectives: to examine the usefulness of the multimedia projector in teaching and learning in higher education, to explore the attitudes of higher education learners towards the use of a

multimedia projector in teaching and learning and to determine the teachers' perception on the use multimedia projector in high education teaching process. To be able to achieve the mentioned, the following research questions were asked: What is the use and perception of multimedia projector in teaching and learning in higher education? What is the attitudes of high education learners towards the use of a multimedia projector in teaching and learning? How do teachers perceive the use of multimedia projector in high education teaching process? Using a sample of five lectures and ten students from all the departments at CBST College.

The study was qualitative in nature even though some information was quantified and presented on tables and other results were organized by research questions. The theoretical framework was based on the Cognitive Theory of Multimedia Learning supports the use of the multimedia projector and the VARK theory. The theories describe the importance of the use of multimedia projector in teaching and learning.

The findings of this study indicates that the use of multimedia projector in teaching and learning can help both lecturers and students when used effectively. The research concludes that both lecturers and students had a positive perception and were finding the multimedia projected more useful when used effectively in teaching and learning in higher education. The teachers' responses indicated the need for more resources that support the use of multimedia projector when teaching. Multimedia projector enabled teachers to design and organize activities and lessons using a broad variety of multimodal resources and to engage students' cognitive and innovative potentials into the learning process. Institutions of higher education should integrate multimedia projector and exploit its exciting benefits.

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APPENDIX 1: INTRODUCTION LETTER

BOTHO UNIVERSITY

Botho Education Park, Kgale,

P.O. Box 501564,

Gaborone, Botswana.

Telephone: +267 363 5421 / 363 5422 / 363 5446.

Fax: +267 391 3187858.

This study explores the use and perception of the multimedia projector in teaching and learning in higher education. The study will be carried out at a college in Francistown; Centre for Business and Secretarial Training (CBST). Technology has changed the teaching and learning methodologies (Saravanakumar, 2018). The use and perception of multimedia projector as a technological tool in teaching and learning will be discussed in detail in this study.

Quality education depends on the development of information technology in several provision such as enlarging the motivation of learner, enrichment of basic skills and increasing teacher training in technology (Saravanakumar, 2018). The purpose of this study is to explore the use of use and perception of the multimedia projector in teaching and learning in higher education.

Pamela Chivige

Researcher student No. 1817412 (Botho University)

*NB: For verification please feel free to contact my supervisor: **Dr Ifeoma Eze.***

Contact details: 3919999 / 3635438.



APPENDIX 2: INFORMED CONSENT FORM

BOTHO UNIVERSITY

Botho Education Park, Kgale,

P.O. Box 501564,

Gaborone, Botswana.

Telephone: +267 363 5421 / 363 5422 / 363 5446.

Fax: +267 391 3187858.

The purpose of this research study is to explore the use and perception of multimedia projector in teaching and learning in higher education. I understand that the research is being carried out in part fulfilment of the requirements leading to the award of Masters in Education Studies.

I _____ agree to be interviewed and take part in this study. I understand that my participation is on a voluntary basis and I am free to withdraw from the study at any time. I also understand that all the information I provide will be confidential and my name will be anonymous throughout the study.

I agree to have the interview recorded.

Signature of participant: _____

Date: _____

Name of witness: _____ (Please print)

Signature of witness: _____

Date: _____

I, Ms. Pamela Chivige, hereby confirm that the participant has been fully informed of the nature of this study and what is expected of him/her in the course of the data collection.

Researcher's name: _____

Researcher's signature: _____

Date: _____

Pamela Chivige

Researcher student No. 1817412 (Botho University)

*NB: For verification please feel free to contact my supervisor: **Dr Ifeoma Eze.***

Contact details: 3919999 / 3635438.

APPENDIX 3: TEACHER INTERVIEW QUESTIONS

PART I

Please circle the item that is most applicable to you.

1. Gender
 - a. Female
 - b. Male
2. Age
 - a. 21 – 35
 - b. 36 – 45
 - c. 46 – 60
3. Which level of students do you teach?
 - a. level 1
 - b. level 2
 - c. level 3
4. How long have you worked for CBST college?
 - a. 1 - 2years
 - b. 3 – 4
 - c. 5 – 6
 - d. 7 – 10
5. What is your qualification level?
 - a. Certificate / NCC
 - b. Diploma
 - c. Degree
 - d. Masters
6. What is your position in the organizational structure?
 - a. Head of Department
 - b. Senior Lecturer
 - c. Lecturer

PART II

This section contains Six (6) interview questions.

1. What are the technology tools that you use in teaching?
2. How often do you use multimedia projector in your teaching per week?
3. What are the benefits of using a multimedia projector in your teaching?
4. How do you perceive the importance of using a multimedia projector in teaching activities?
5. What are the factors that may cause you to get motivated and be more productive when using multimedia projector?
6. How do you enhance student learning with a multimedia projector?

APPENDIX 4: STUDENTS INTERVIEW QUESTIONS

PART I

GENDER:

AGE RANGE:

- a) 15-20
- b) 21-25
- c) 26-30
- d) 31-35
- e) 36 and above.


COURSE:

LEVEL:

PART II

1. What are the technology tools that are used in classroom when you are learning?
2. How does the use of multimedia projector enhance your learning?
3. What are the advantaged of learning using multimedia projector?

APPENDIX 5: BOTHO PERMISSION LETTER.

BOTSWANA: Gaborone Campus: Suite 14/14, Top View Plaza, P.O. Box 501564, Gaborone, Botswana ☎ Tel: +267 391 9989 ☎ Fax: +267 318 1858	Francistown Campus: 778 14/14 Top View Plaza, P.O. Box 1451, Francistown, Botswana ☎ Tel: +267 244 0698 ☎ Fax: +267 244 0695	LESOTHO: Maseru Campus: Maseru Mall, West Wing, Tloane, P.O. Box 7752, Maseru 100, Lesotho ☎ Tel: +266 2224 7500 / 6231 2521 / 5378 9361 ☎ Fax: +266 2231 3521	NAMIBIA: Windhoek Campus: Sibelo Higher Education Institute, Office No. 1001, Aussenpost Plaza 11, 13, Dr. Augustus Neta St., EF 820906 P.O. Box 41071, Aussenpostplatz, Windhoek, Namibia ☎ Tel: +264 61 81 254533 / 254453 ☎ Fax: +264 61 81 254453	ESWAZINI: Manteni Campus: Plot No. 1206, Riverside Mall, Manteni, eSwatini, P.O. Box 5260, Manteni, Eswatini ☎ Tel: +268 2505 2288 ☎ Fax: +268 2505 2288	BLENDED & DISTANCE LEARNING CAMPUS: ✉ Email: td@bothouniversity.ac.za 🌐 Website: online.bothouniversity.com	 BOTHO UNIVERSITY EXCELLENCE LEADERSHIP INNOVATION
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Ref: 00214/LTRE/GB/2019

27 November 2019

TO WHOM IT MAY CONCERN

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH


This is to confirm that Pamela Chivige, Student ID 1817412, is a student at Botho University, studying for a Masters in Higher Education.

The student would like to conduct research under the topic, **“The use and perception of multimedia projector in teaching and learning in higher education”**.

In light of the above, The Faculty of Health and Education at Botho University seeks your permission to allow her to carry out this research and accord her the necessary support as it will help in the completion of her studies.

The information collected will be used solely for this research and will be treated with a high level of confidentiality and anonymity.

Yours sincerely



Mr. Tom Atonga
Manager, Library, Teaching and Research Excellence Department (LTRE)
Office of Quality Management (OQM)
Botho University – Gaborone Campus

BOS ISO 9001:2015 Certified Organisation
www.bothouniversity.com

APPENDIX 6: RESEARCH PERMIT

Telephone : 3655400 / 3655483
Fax : 3914271
E-mail: botsemotci@gov.bw



Block 6, Government Enclave, Headquarters
Private Bag 00517 Gaborone

MINISTRY OF TERTIARY EDUCATION, RESEARCH, SCIENCE AND TECHNOLOGY

REF: MOTE 1/18/6 VII (9)

22 January 2020

Ms Pamela Chivige
Noka Farm
Plot Number 37221
Monarch
Francistown

Dear Madam

APPLICATION FOR RESEARCH PERMIT:


"The Use and Perception of Multimedia Project In Teaching AND Learning in Higher Education".

Reference is made to your application on the above captioned matter. Your application for Research Permit for the proposed research titled: **'The Use and Perception of Multimedia Project in Teaching and Learning in Higher Education'** has been granted. The permit is valid for one (1) year. You are kindly advised to peruse section 4.4 to 5.0 of the 'Guidelines for Application for Research Permit' in Botswana and ensure you comply with any applicable visa and residence permit requirements.

Any changes in the proposed research should be communicated, without fail, to the Permanent Secretary, Ministry of Tertiary Education Research Science and Technology citing above reference. The Botswana Government reserves the right to request at short notice further information during the study.

By copy of this letter, the Director of Research Science and Technology is advised to take note of this development and ensure that deliverables to government are timely met.

Yours faithfully


Dr Kekonne E. Baipoledi
For/Permanent Secretary



cc: **Director of Research Science and Technology**



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