ELECTRONIC MUSIC DEVICES AND SOFTWARE IN MUSIC TEACHING AND LEARNING AT THE DEPARTMENT OF PERFORMING ARTS, KYAMBOGO UNIVERSITY

BY

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DECLARATION

This Dissertation is my original work and has not been presented for a degree award in any other University.

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DEDICATION

This research report is dedicated to my wife Rebeca Ijokole and my beloved Mother Mrs. Georgina Kaahwa.

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LIST OF ACRONYMS

AC: Alternating Current

B. ED: Bachelors of Education

BAA: Bachelors of Arts in Arts

BPA: Bachelors of Performing Arts

BTE: Bachelors of Teacher Education

DEPE: Diploma in Education Primary External

DC: Direct Current

DES: Diploma in Education Secondary

DI: Digital Immigrants

DJs: Disco Jockey

DAW: Digital Audio Workstation

DPAKYU: Department of Performing Arts Kyambogo University

EMDS: Electronic Musical Device and Software

FGD: Focus Group Discussion

GAME: Master of music Education

GMAM: Master of Arts in Music

GTTCK: Government Teacher Training College

HoD: Head of Department

ICT: Information Communication Technology

IMs: Instructional Materials

MDD: Music, Dance and Drama

MIDI: Musical Instrument Digital Interface.

MT: Music Technology

LTR: Lecturer

ITEK: Institute of Teacher Education Kyambogo

PGDE: Post Graduate Diploma in Education

PGDTE: Post Graduate Diploma in Teacher Education.

STD: Student

OPERATIONAL DEFINITION OF TERMS

Teaching/learning of music: Instruction and practice of knowledge and skills in music production, composition, recording, playing and notation.

Electronic Music Devices: Music gadgets that function with the aid of electricity to produce, compose, record, play, and notate music.

Synthesizer: An electronic music instrument that generates and modifies sounds electronically and can imitate a variety of other musical instruments

Software: Programs installed in the computers which allow them (computers) to perform the action of composing, recording, playing, producing and notating music

Stakeholders: Personnel involved in the process of teaching and learning Music at the Department of Performing Arts, Kyambogo University. They include students of music, lecturers and head of department

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ABSTRACT

This was a study to examine how Electronic Music Devices and Software (EMDS) were used to enhance music teaching/learning at the Department of Performing Arts, Kyambogo University. The study aimed to evaluate how available EMDS were utilized in teaching/learning music, examine the effect of use of EMDS in teaching/learning music, and find out the challenges that hampered utilization of EMDS in teaching/learning music. A mixed study design both qualitative and quantitative was used, where both the Laird's Sensory Theory and the Peter Principle's Theory were applied in trying to understand variables of the study. The response rate of 78 respondents (100%) participated, where purposive sampling and simple random sampling techniques were used. The study employed questionnaire, interview, and document review, observation, and focus group discussion methods to collect data. Data was analyzed in themes, by coding and sorting similar responses. According to the findings, lecturers used the available EMDS to teach students both theory and practical skills in music, the use of EMDS had a positive effect on music teaching/learning, and inadequacy in knowledge, electricity power supply, internet connectivity, and virus attacks hampered the use of EMDS to teach/learn music. The study recommended; lecturers to be skilled more in using EMDS, timely repair of EMDS, and provision of alternative power supply to run EMDS continually. Further studies could be conducted to explore attitude of stake holders in using EMDS to teach/learn music

CHAPTER ONE

GENERAL INTRODUCTION

1.0 Introduction

This study examined how electronic music devices and software were used to enhance teaching and learning of music in the Department of Performing Arts at Kyambogo University. This Chapter provides a general background of the study, statement of the problem, study objectives, research questions and scope of the study. It also gives significance of the study, theoretical and conceptual framework, limitations and operational definitions of key terms are also articulated in this chapter.

1.1 Background of the Study

Effective teaching and learning of music in education institutions in this modern era is facilitated by the use of electronic music devices and software. Electronic music devices are those that accomplish their purpose of creating, recording and producing music electronically (Watkinson, 1995). They include musical objects such as synthesizers, electronic guitar, Mp3 players, CD/DVD players, USB players, desk top computers, lap tops, studio microphones and speakers, among others. And music software refers to computer package which allows all the elements related to music to be written, edited, arranged, recorded and reproduced according to the rules (Nart, 2016).

The study uses the phrase Electronic Music Devices and software (EMDS) synonymously with Music Technologies (MT). It is commonly known that the use of MT in teaching and learning simplifies the development of music concepts Miles and Huber (2010). In this regard, Amadioh (2009) states that instructional materials supply concrete concepts making learning more permanent and offer a reality of experience which stimulate self-activity. Electronic music devices are part and parcel of the instructional materials which teachers of

music world over use in their lessons as they positively impact on the level of knowledge, skills and attitudes developed among learners.

Studies have not been conducted especially examining the use of electronic music devices and software in enhancing the teaching and learning of music in the Department of Performing Arts at Kyambogo University. The researcher attaches importance to this study basing on the observation of Dias and Victor (2017). According to Dias and Victor (2017), "…the use of EMDS keep students engaged, attentive, motivated, interactive and allow learners to switch learning contexts conveniently from formal to informal or personal to social" (p.16). Bakan and Gouzoauasis (2011) support Dias and Victor stating that electronic music devices and software are increasingly used in music education from elementary school to the university level across the universe. Bakan and Gouzoauasis (2011) specify that using EMDS is achieved through spending considerable time and money implementing this technology in music education.

In support of the above Baker, Lusk, and Neuhauser (2012) identify countries such as USA, UK, New Zealand and Hong Kong being those that have employed the use of electronic music devices and software in teaching and learning in schools. This shows that such countries consider time to be allotted for teaching music. World over still, it is observed that the use of electronic devices in teaching has gained momentum in the 21st Century through students' exposure in learning music using electronic devices and software (Gary, 2007). Virtually whether in or outside the school classroom setting, the use of electronic music devices has gained momentum.

One of the most important opportunities that African children have is that music is one of the subjects taught in schools. Additionally Everest and Alton (2010) assert that the use of synthesizers, iPads and computer devices in teaching music develop learners mentally. This

therefore prompted the researcher to examine how electronic music devices and software were used in the teaching and learning of music in the Department of Performing Arts at Kyambogo University.

Use of electronic music devices and software gaining momentum in the lives of the young students in the 21st Century is expounded further. This is acknowledged by Alec (2003) in the statement that students are exposed to and have grown up using the new technology from infant stage. Further, Alec (2003) recognizes that majority of students in developed countries have in one way or another, been exposed to electronic devices such as videogames, video cams, digital music players, smart phones, computers, and all other toys and tools of the digital age which have become an essential part of their lives.

On the same note, Miles and Huber (2010) recommend that allowing students to use music electronic devices in the classroom motivates them to learn and achieve more in the learning of music. Similarly Middleton and Gurevitz (2008) assert that when music electronic devices are used effectively in the classroom, it provides students with up to date music information that enable them to be innovative in playing musical instruments, acting on stage, singing, audio music recording, composition of music and notating music in staff and sol-fa while at the same time developing their music skills.

Implementation of the use of electronic devices and software has been enhanced by research, examining how this form of technology is used in music lessons, and how effective that use is in respect of students' learning (D'Escrivan, 2012; Guerino, Pang, Gkoudina, and Kyriaki, Heinze Pujakusuma, Gian Afrisando, Jacob Grunklee Chen, 2008; Middleton and Gurevitz, 2008; Pejrolo, 2011).On the same issue, Pitts and P. and Garcetti (2010) emphasize that the development and proliferation of music electronic devices and software in the music

classroom has been particularly rapid over the last decade and its presence has had major implications for music educators.

Furthermore Anil Kumar Maini (2007) is of the view that technology is deeply embedded in the contemporary lexicon of many young people's musical lives, and that the internet is their playground. Thus, young people tend to have familiarized themselves with ICT innovations before their parents and teachers have a reversal of the usual hierarchical roles. In this context Finney and Burnard (2007) wonder how the teacher's role and experience, learners' more experience than the teachers' as well as creative practices might change in different pedagogical contexts related to music education. All studies and views of the above scholars have not focused on use of EMDS in teaching/learning music, they refer to situations in educational institutions leaving out how EMDS are useful. It is the reason why this study focuses on ascertaining the application of EMDS in teaching/learning music in the Department of Performing Arts at Kyambogo University.

Electronic music devices and software have been used globally for some time now, which according to Drymonitis (2015) makes students of the 21st century 'digital natives'. They think and process information in ways that are different from those of their parents, teachers and grandparents. Similarly, Rumsey (2004) asserts that students of today do not know a world without the digital technologies associated with music making and listening. The views above indicate that digital music devices indeed enhance music learning and production, which formed the focus of this study, to establish whether it is the case in the Department of Performing Arts, and if students and lecturers have coped up with the status of "digital natives".

However, it had not been established if there were challenges in the use of electronic music devices and software in spite of their being on the increase. Brennan and April (2002) found a

challenge of finding ways to include the use of music electronic devices and music software into the curriculum. There was a challenge on how to bring into the school curriculum setting the knowledge that students develop outside of school about digital music composition and production. The digital music knowledge students acquire outside the school setting comes as a result of their own enthusiasm to dig deeper into the use of music electronic devices and software to create and produce music in class. In this regard it would be good to carry out curriculum review or change, which Hagerman (2005) suggests in the view that it is necessary if the world of the classroom is going to keep pace with the world outside be synchronized in curriculum standards. Hagerman (2005) suggests that curriculum should have a clearly defined theory which allows teachers to commit themselves intellectually to the change. In a similar view Burns (2016) suggests that a universal aspiration for all music educators is to improve the quality of musical learning and its relevance to the young learner. However, in today's ICT-driven world, music teachers are under pressure to accept that they do not know everything and that they are not the holders of all musical knowledge (Tibbetts, Saffle, and Everett, 2018)

The ICT driven society has today produced a number of Ugandan artistes who have risen to perform music that entertain the society at a fee. These artistes get training on job through apprenticeship, and regular practice of use of music electronic devices and software, but lack ability to write, read and perform music on instruments. Such developments create the feeling that so long as one has the ability to manipulate electronic music devices and software or pay someone to do it, he/she can rise to become an artiste and so have no need to be taught music and use of electronic music devices and software. However, according to Cleland and Dobrea-Grindahl (2010), an artiste is a public performer such as a dancer or singer yet a musician is one who professionally composes, produces, sings and performs on musical instruments.

The artistes' creative works and performance hinge much on use of the computers, without which one's performance fails. In this regard Nart, (2016) points out that even if ICT allows creative work, it should be noted that music performed with a computer and software will be more restricted, deficient and mechanical than a live performance. All this come due to lack of exposure and know – how (Nicolas Collins, 2006) and lacks the guidance of a teacher in the proper use of the electronic musical devices and software to make musical work more free and appealing.

The Department of Performing Arts in Kyambogo University being at the helm of music education ought to focus on enabling their graduates demonstrate competent skills in composing and notating music in staff and tonic sol-fa, playing musical instruments, singing, and audio music recording. This requires the knowledge and use of various electronic music devices and software suggested by different scholars; (Clark, 2011; M. Collins, 2004). From the establishment of Kyambogo University in 2005, the Department of Performing Arts has had and used record players, reel tape players, and Compact Cassettes or Music cassette tapes for recording and sound production of western solo pieces as well as aural skills.

In an interview with the head of department in 2018, it was reported that in 2015 the Department of Performing Arts had acquired more electronic musical devices. These include electronic keyboards or synthesizers, CD/DVD recorder and player and software like finale print music and Logic X, for teaching and learning music composition, recording, production and performance by both the lecturers and students. However, all the EMDS by the time they were brought, their technology was obsolete as it kept on changing.

It was also noted that getting these devices is one thing but putting them into effective use was a very important element, which this study focused on finding out. Thus the focus on use of electronic music devices and software and its effect in teaching and learning became very

important in assessing readiness of the Department of Performing Arts at Kyambogo University to impart knowledge and skills on digital music.

1.2 Statement of the Problem

Music Electronic Devices and Software (MEDS) have been available for use in the department of Performing Arts at Kyambogo University (KYU) by both lecturers and students. By expectation, lecturers were to use MEDS to teach students music curriculum content practically. However, no scientific investigation had been made certain how MEDS were used in teaching and learning music. Hence no one knew whether MEDS were used to teach playing music on instruments, acting on stage, singing, audio music recording, composing music and notating music in staff and sol-fa. Because of lack of this study, it was also not clear whether challenges in using EMDS to teach and learn music were faced by students and lecturers. This concealment thereby propelled the researcher to conduct this study. Otherwise, it would not have been possible to trace the efforts, potentials and practices that students and lecturers explored in their attempt to create a fundamental shift in music pedagogical practices needed in the 21st century.

1.3 General Objective of the Study

The general objective of the study is to examine how music electronic devices and software enhanced the teaching and learning of music in the Department of Performing Arts in Kyambogo University.

1.4 Specific Objectives of the Study

The Specific Objectives of the study were to:

1. Establish how the available electronic music devices and software are being utilized for the in teaching and learning of music in the Department of Performing Arts, Kyambogo University
2. Examine the effect of electronic music devices and software used in the teaching and learning of music at the department of Performing Arts at Kyambogo University.
3. Find out the challenges that hamper the utilization of electronic music devices and software in the teaching and learning of music.

1.5 Research Questions

The study was guided by the following research questions:

1. How are the available electronic music devices and software utilized in the teaching/ learning of music in the department of Performing Arts in Kyambogo University?
2. How effective are the electronic music devices and software used during the teaching and learning of music at the department of Performing Arts?
3. What challenges hamper the utilization of electronic music devices and software the teaching and learning of music in the Department of Performing Arts?

1.6 Significance of the Study

The contributions of this study are to:

Generate knowledge that will enable the Department of Performing Arts at Kyambogo University and the National Teachers' Colleges to employ appropriate knowledge and technical skills needed in the use of electronic music devices and software;

Contribute knowledge that enables Kyambogo University and other tertiary education institutions to employ appropriate human and technical resources needed to overcome the challenge of the study;

Generate knowledge and skills of use of electronic music devices and software by the music educators and leaners should embrace and apply in music creation, notation, recording, production and playing that matches with the modern music industry;

Contribute guidelines for the Department of Performing Arts at Kyambogo University and other tertiary education institutions to use in the formulation of music education program objectives and design appropriate curricula relevant to dealing with the task of the study;

Generate knowledge that enables Kyambogo University and the Ministry of Education and Sports, charged with the overall responsibility for music education in Uganda, design and implement policies leading to the encouragement and practice of modern music technology for effective enhancement of music teaching and learning.

1.7 Scope of the Study

This includes the Geographical, content and time scope

1.7.1 Geographical Scope

The study was conducted in Kyambogo University located about 8 km from Kampala City Centre along the Kampala Jinja highway. This university is accessible through the Banda trading Centre East of the University or the Kyambogo junction. One can also access Kyambogo University through Ntinda-Kiwatule road. The Department of Performing Arts is south of the Senate building, in Kyambogo University and adjacent to Stanbic Bank.

1.7.2 Content Scope

The study focused on the use of electronic music devices and software in the Department of Performing Arts in Kyambogo University. The researcher specifically examined how these devices and software promote teaching and learning of music in the Department of Performing Arts, Kyambogo University, as well as the challenges encountered by the lecturers and students while in the process of using them

1.7.3 Time Frame

The study considered a period of 09 years from the year 2010 to 2019. According to the inventory of the Department of Performing Arts, the current electronic music devices and software in use were purchased in the mentioned time frame (2010 to 2019).

1.8 Limitations of the Study

The researcher faced challenges in obtaining information from respondents with their busy schedules in their daily activities. However, through exercising patience, the researcher relied on respondents who volunteered their time to participate in this study.

Limitations in financial resources also created a set-back in the study.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents the review of the nature, content, trend, methodology of the related literature to the study. It has two major sections. The first section is theoretical review and the second section presents reviewed scholarly works organized in specific themes.

2.1 Theoretical Review

This study was guided by three theories which include the Diffusion of Innovations (DOI) by Roger (1997) as cited in (Schunk, 2012), the Laird's Sensory Theory (LSD) advanced by Laird (1985) and the Peter Principle's Theory (PPT) advanced by Peter and Hull (1969) as cited in (L.J./Hull, Alexandra, and Sischka, 2015). The DOI theory advanced by Roger stipulates the process by which "knowledge" of an innovation is communicated through certain channels and finally enters the stage of ''conformation'' over time among the members of a social system. In this study, the process which touches on all the objectives, also starts with "knowledge" of the first channel that presents characteristics of decision – making unit by the users of electronic music devices and software in the teaching and learning process. And the end of the process is the "confirmation" by both the students and lecturers as the users who accept the music electronic devices and use it in the teaching and learning music.

The Laird's Sensory Theory (LSD) advances by Laird (1985) as cited in Schunk (2012) states that learning occurs when the senses are simulated and providing visual prompts for students will enhance their learning. He emphasizes that further learning is enhanced by making your lesson a multi-sensory experience. Based on the (LSD) theory, this study uses objectives to explore the interconnection of practices and knowledge. Thus objective two examined how the electronic music devices enhance music teaching /learning in the department of

Performing Arts. In this case, the electronic music devices and software are considered as learning aids that provide visual prompts to enhance learning of music by students.

Another theory that guided this study is the Peter Principle's Theory (PPT) advanced by Peter and Hull. (1969) as cited in L.J./Hull, Alexandra, and Sischka (2015) and deals with four levels of competences namely: unconscious incompetence, conscious incompetence, conscious competence and unconscious competence. According to the Peter Theory, unconscious incompetence is a status of not knowing how to do a task without knowing you don't know. Conscious incompetence is a state of still not knowing how to do a task but now you know you don't know. For example, in objective one, one of the students and three lecturers are aware that EMDS were found at the department and they realize that they lack knowledge and skills on how to use them. Perhaps in objective three, lecturers and students could be aware of the challenges faced in utilizing EMDS in teaching and learning music but have no capacity to overcome them. This means that you are aware of the gap in your knowledge and skills. Conscious competence is a state of knowing you can do the task but it requires a lot of concentration. Finally, unconscious competence is a state of being able to perform a task without being taught, but perhaps through repeated practice. Peter suggests that the four competences could give a teacher planning a long-term teaching strategy. These could be a framework to use when thinking about students' progress.

The PPT guided objective two of this study, which focused on how the electronic music devices and software have enhanced the teaching and learning of music at the Department of Performing Arts, Kyambogo University. Both the Conscious incompetence and conscious competence of the PTT have been used to make the study content clear. The research supposes that finding out what stakeholders know and what they do not know about using the electronic music devices in teaching and learning music is necessary. The researcher also

presumes that pointing out and discussing challenges that impede the use of electronic music devices and software in teaching and learning of music in the Department of Performing Arts at Kyambogo University is constructive. These could guide stakeholders of the area of study to develop long term strategies in using electronic music devices and software in teaching and learning music.

2.2 Empirical Review

In this section, the researcher reviewed literature drawing its subtitles from the research objectives. They include availability of EMDS for teaching music is presented, effects of use of electronic music devices and software and challenges hampering the use of EMDS in teaching music.

2.2.1 Availability and use of Electronic Music Devices and Software for Teaching and Learning Music

Teaching and learning using electronic music devices and software has become essential in all the learning institutions of the 21st Century. This is particularly true in the domain of music, where technology has become a requirement in musical creation, production, expression, dissemination, promotion, and consumption (Fairchild, 2015). Similarly, Chena, Gary and Xiec (2019) are of the view that the ways we learn and teach have been dramatically influenced by technological advancement and technology used for education purpose have been progressively growing. World over, governments, education system, researchers, school leaders, teachers and parents consider technology as a critical part of a student's education. This implies that every learning institution ought to have their sets of electronic music devices and software for teaching and learning purposes.

Certainly, Tarasinska and Uziak (2016) report that there are plenty of software available for use by the music educators in order to support learning and enrich the learning environment

during the learning process. Similarly, Cevik and Alkan (as cited in Nart, 2016) are of the view that integrating technology in the music class by use of different available music devices and software like Sibelius, Finale pro, Encore, Muscore, Autoscore, Overture, Rhapsody, Music time and Magic score school makes learning more joyful and permanent. Different electronic music devices provide tools, networks and creative ways of producing and recording sound that are already in use and should be integrated fully into emerging music educational practice, (Gouzoauasis and Bakan, 2011). This would be good for teaching and learning in the area of study as well, thus putting focus on the possibility of their availability and use.

Use of different music software in teaching and learning require the availability of computers and internet connectivity. This makes music software serve the purpose of enabling a student experience a learning process with active participation through both gaining and spreading music knowledge and creating music. Besides since not every student learns in the same way and speed, the individual will be provided with different learning possibilities and experience, these in a music education organized by benefiting from this software (Brian, 2014). In this regard, findings from Nick Collins and D'Escrivá (2013) in 2009, conducted on public school teachers in United Kingdom revealed that 97% of all teacher had at least one computer for provision of software in their classrooms every day. These scholars further found that on average, classrooms had 5:3 students to every computer for provision of music software in the classroom and 93% of classroom computers had internet access. The survey above was carried out over a decade back and in a developed country, where the availability of computers, music software and internet access should be 100% by now. This scenario therefore necessitated this study to explain the position of the Department of Performing Arts at Kyambogo University in regard to the availability of computers, music software and internet access, in comparison with that of the survey stated above.

Various studies by M. Collins (2004); Harry (1996); Mantie, Gulish, McCandless, Solis, and Williams (2017); Patteson (2016), among others, had pointed out the availability and use of different electronic music devices and software. M. Collins (2004); Mantie et al. (2017) stress that the students attending our 21st century schools are product of digital age where they had spent their lives surrounded by and using computers, video games, digital music players, mobile phones and all the other tools and paraphernalia of what is also called the information age. Indeed, digital platforms and software offer music experiences to the music industry. According to Bauer (2014) these digital music devices and applications software provide a "musicky" experience that enables users to sing badly into the device and have it auto tuned and processed into a produces song, with drums, chords and backup tracks.

Furthermore, electronic music devices like synthesizers, electronic guitar, smartphones, mp3 players, Projectors, CD/DVD players and iPads have been overestimated as "revolutionary" devices that hold great potential for transforming music learning (Bailey, 2001). They also contribute to the development of skills and connect students with and without disabilities (Pejrolo, 2005). One of the chief benefits of these electronic music devices is that they enable learning anywhere, anytime. This allows a shift away from the traditional model where the classroom is the central place of learning driven by the teacher and limited to instruction within the school day. In deploying music electronic devices, the teacher is no longer at the center of the learning process and the instructional time can surpass the school day.

Similarly, Huismans (2008) observes that the application for professional digital technologies have fundamentally changed the ways that music may be taught and learned as the multiple streams of technological advancements that began at the end of the last century have made an indelible mark on global culture. An advancement of that kind is what (Rumsey, 2004b) describes as a popular application called "Ocarina" that functions as a digital flute in which

users can purse their lips and blow into the microphone while adjusting their fingers on the touch screen to produce a pleasing tone. Such digital technologies and other electronic music devices and software cited in works above formed the need for this study to examine how the available electronic music devices and software were used for teaching and learning music in the Department of Performing Arts at Kyambogo University.

The explosion of online music resources has also shaped the sphere of music learning, both in the classroom and beyond. Scholars, Cabak, (2015; Yu, Lai, Tsai, and Chang (2010) are of the view that millions of instructional music video can be found via online portals such as YouTube, used not only by individuals in informal learning practices but being actively incorporated into educational framework.

2.2.2 Effects of use of electronic music devices and software in the teaching and learning of music

The effect of the use of electronic music devices and software in enhancing teaching and learning in the music classroom in this digital driven world should not be overlooked. A number of scholars present views on how music devices can enhance the teaching and learning of music. In pedagogical practice, Regelski (2007) points out that the use of music software can change a lifetime of musical amateurism and should therefore increasingly become the goal of general music education. In this regard, Gouzouasis and La Monde's (2005) are also of the view that a digitally infused notion of music education enhance traditional approaches and practices as it provides meaningful music making opportunities for both students and teachers. Similarly, Gouzouasis and Bakan (2011) urge for the need to identify ethos for our professional and adapt appropriate music technology to new ways of encouraging and facilitating music experiences that are relevant to those we teach, and those who we would like to engage in music creation. It is therefore important for music educators

to support potential cultural transformation, welcome a critical attitude towards existing musical practices and encourage their students to enhance learning by use of music software through their own works.

On the same note, Larsen – Cabak (2015) is of the view that the line between music listeners as mere audience member, and music listener who readily becomes an arranger is no longer visible as the tool and software of music creation have become so accessible. Similarly, (Williams, 2018) in his view states that the music making we are observing today, emerges from a notion of the "embodied person actively engaged in the world" in which we live. The development and proliferation of digital technology in the music classroom has been particularly rapid over the last decade. Its presence has had major implications for music educators (Bauer, 2014). Similarly Hosken (2011) asserts that creative practices enhance effective use of technology and software in the music classroom, and what teachers and their students learn from these experiences.

Furthermore, Gouzoauasis and Bakan (2011) are of the view that other than the art and skills of music being an endowment of only few talented people in the society, the electronic music devices and software have made it easy for the less talented people to learn and "poses" such music art and skills in a very big cross section of the population in society. This proves a boost to classroom instruction, where due to individual differences, some learners fail to cope with the skills and speed of learning among the talented ones. On this note, Roads (2015) asserts that the use of electronic music devices provide many positive outcomes for the students, staff and the community. It not only improves writing skills and gravity of students' research but also increases student interest in learning and ownership of the learning process. They further say it creates reduction in lecture and presentation instruction and an increase in project based learning activities.

Newell and Holland (2007; Strong (2014) acknowledge that the use of audio and video recordings, both in creating music and viewing them, is also common. Bartlett and Bartlett (2014) state that audio and video recordings call for the need to have music audio and recording devices as tools to improve self-assessment. Furthermore, (Williams, 2018) examined the use of audio recordings among instrumental learners, where students reported greater use of them than professionals, particularly for elements including goal setting and developing an interpretive style.

According to Hilary and Tim (2005), when devices like tablets and iPads with music software are used in classroom, they have a profound impact on teaching and learning as it becomes more student centered and student friendly allowing for more creativity of the student. Furthermore, there is emerging evidence to suggest that apps have a significant potential to support the learning process (Ching, Camas, and Magnes, 2009). This implies that numerous apps and music software available allow students to work independently, in groups and as part of the whole class. Developing arrange of knowledge and skills. Thus with an increase in the use of electronic music devices and software, creative processes are possible when used in either formal or informal learning.

Electronic music devices and software can be used in various ways where it helps both teachers and students to enhance the teaching and learning of music. In this regard Hilary and Tim (2005) emphasize that a technology- based teaching and learning offers various interesting ways using different devices and software that will make the learning process more fulfilling and meaningful. According to Thierry et al. (2013), the use of music electronic devices provides many positive outcomes for students and staff. Similarly, M. Collins (2004) suggests that a universal aspiration for all music educators is to improve the quality of musical learning and its relevance to the young learner by use of technology that

effectively matches the educational needs of his or her students. On the same note, Alexander (2017) is of the view that music electronic devices and software not only eradicate many of the access issues but also reduce the need for teacher expertise and provide evidence of enriched learning instantly.

Furthermore, a number of studies by scholars below emphasize the use of Information Communication and Technology (ICT) in teaching and learning. Early accounts of technology integration focused much of their interest on increasing the availability of computers in schools (Steve, 2014) and not how it should enhance music teaching and learning. However, Miles, Huber, and Runstein (2005) assert that the use of ICT in teaching enhances the learning process and maximizes the students' abilities in active learning. Ghavifekr and Rosdy (2015 and Jamieson-Proctor et al. (2013) believe that the usage of ICT in teaching and learning process could improve students' achievement. Brennan and April (2002) comment that the correlation of teachers' belief and the use of ICT are high making more important especially in pedagogy which could increase the achievement of the students, their creativity and thinking skills.

Works of scholars above looked at the use of Information Communication and Technology (ICT) in general terms and did not put music education in regard. This study, however, focused on the use of electronic music devices and software relevant and related to music education. Among other concerns, the study analyzed the effect of the use of electronic music devices and software in the teaching and learning of music at the department of Performing Arts at Kyambogo University.

Furthermore, whether these devices help lecturers to design their lesson plans in an effective, creative and interesting approach that would result in students' active music learning.

2.2.3 Challenges that hamper the utilization of electronic music devices and software in teaching and learning of music

A challenge, is a demanding or difficult situation that needs mental or physical effort in order to successfully overcome it (Holland, Wilkie, and Mulholland, 2013). This study sought to find out if stakeholders were facing such demanding or difficult situations or challenges while using electronic music devices and software in the process of teaching and learning music in the Department of Performing Arts at Kyambogo University.

Although, the use of technology in education is remarkable, and as a positive trend, there is a need for concern, as there are several obstacles that retrain the integration of technology in teaching and learning (Dias and Victo, 2017). This is true in that every new technology or device may always pose a challenge of its operation until well mastered. A subsidiary challenge is that of moving technology from its position as an 'add-on' in the music curriculum to a position of being embedded within the curriculum to benefit the modern students who do not know a world without the digital technologies associated with music making and listening (Brian, 2014). On this note, Freedman, (2013) states that curriculum change is necessary if the world of the classroom is going to keep pace with the world outside and make it necessary to have a clearly defined theory which allows teachers to commit themselves intellectually to its challenges.

A number of challenges in the use of music technologies have been reported, following studies carried out by scholars in Turkey. According to (Holland, Wilkie, and Mulholland, 2013) the use of computer technologies in music education is not at the desired level in Turkey and that the applications are more limited with learning notation software and obtaining general culture on the computer technologies used in music education. Similarly, in a study by Cevik and Hewitt (2008), findings revealed instructors' lack of knowledge on the

use of technology, the inappropriateness of the physical conditions of the classroom environment and the insufficiency of the number of computers for every student. In another study, Curt (2014) found that many schools across the country were making the transition to one-to-one (1:1) computing, many students did not have regular and reliable access to a computer.

Lack of appropriate technological knowledge and inconsistent computer access, makes it challenging for instructors to integrate technology into existing music lesson plans. Thus, routine access to hardware like computer, laptops or tablets as well as music software for reading and writing and internet connection is a fundamental requirement for overcoming challenges pointed out in this study. Challenges stated above are not local and hence the focus for this study to determine whether the Department of Performing Arts in Kyambogo University has managed to overcome them.

Music devices, whether electronic or not, when used inappropriately by students in the classroom can, instead of enhancing teaching and learning, become a source of distraction. This is what the study by Thierry et al. (2013) found out in Quebec, Canada, that 99% of students, using tablets reported that they found it distracting in class. Distraction may come by what Pritchard (2007) refers to as access to inappropriate internet use, which should be restricted by the instructors. According to Pritchard (2007), some teachers have found adopting the use of tablets for teaching and learning challenging, and called for the need for training on technical advices, lists of useful application, discussion of pedagogy and sufficient time to get used to the device. Not only that but Shuler (2009) adds on Pritchard's statement pointing out that reading a large amount of text and music notes on the small screen of devices like iPads or tablets and smart phones can be difficult and can cause eye strain.

The issue of affordability of lap tops and iPads or tablets arises as another possible challenge. For instance Dias and Victo (2017) note that the tablets are expensive to purchase and the cost of maintenance is even higher. Yet another problem is the risk of losing the devices through a possibility of theft at the institution. Furthermore, Kaufman and Kumar (2018 explain that tablets are more fragile than computers; parents and teachers are concerned about the damage. In addition, these gadgets are expensive and when dropped or misplaced the loss is quite big as they are costly devices. This implies use of large screen computers, laptops and proper internet control provided by an institution of learning like that in the area of study, are much appropriate for instruction and learning.

There are sometimes cases of intermittent internet connectivity without proxy servers to which Pritchard (2007) reports teachers' complaints that it sometimes causes disruption in their teaching plan due to bad network or limited range of the wireless network. As such Hew and Brush (2011), assert that teachers tend not to use technology if they are frustrated by inefficiency of the technology. The pertinent challenges of lack of appropriate music technologies, uninterrupted internet and electric power connectivity form the focus of this study to determine whether they, as well, apply to Department of Performing Arts at Kyambogo University.

Besides the challenges of distraction, small screens, inefficiency of technology, power supply and internet network, there is also lack of know-how of use of the devices and software. According to ErtmeraAnne and Ottenbreit (2012) the most commonly cited reason for lack of technology implementation in the classroom is inadequate professional development and training. If teachers feel they do not have the necessary competencies when using technology, they may feel less in control of the class, use less technology, and be unlikely to explore new possibilities that utilize technology when designing their classes (Oriji and Amadi, 2016). A

bigger challenge is that new technologies are always being developed and introduced to the market. In this regard the National Education Association (Aramaki, Matthew, E. P. Davies Kronland-Martinet, and Ystad, 2018) suggest that even if a school were to hire only teachers who were literate in current classroom technology, countless new technologies will be developed during their teaching careers, and they will need to undergo additional training to keep their skills current.

A study by Ghavifekr and Rosdy (2015) on schools in Ireland and Canada revealed that teachers who did not develop sufficient confidence avoided using ICT because they were worried of getting embarrassed that the students knew more about the technology than they did. Such teachers therefore prefer to overcome the challenge by use of the traditional teaching methods that are free of technological applications. In this regard, Hilary and Tim (2005) are of the view that sticking to traditional teaching methods, teachers who are less effective with technology maintain a feeling of control in the classroom, will not have to prepare to face the challenges of instructing “digital natives” in a digital environment. They therefore fail to impart core values that students need to achieve in an active music teaching and learning environment (Ghavifekr et al., 2015). This research is geared towards establishing whether lecturers at the department of Performing Arts in Kyambogo University are digital natives who have moved on the rapid pace to harness and apply the electronic music devices and software in ways that are meaningful to both music curriculum and youth culture.

Further Kajuna (2009) points out some impediments that affect the effectiveness of learning. Kajuna lists them as lack of enough computers, absence of sound computer knowledge and skills of teachers and students, absence of adequate and effective teachers’ professional development programs on technology, and lack of effective technology planning. In regard to

lack knowledge and skills Lorencowicz, Tarasinska, and Uziak, (2014), note that students from an underprivileged environment, either school or home, may tend to use computers less frequently due to their limited knowledge, exposure and experience prior to entering university. The same challenges may apply, not only to students but also to teachers from underprivileged environments as using technology highly depends on the level of computer skills.

Although many of the challenges as described above are appreciated by teachers, there is little evidence about what their music teachers know about technology in regard to their practice, how they deploy, or might deploy, this knowledge in the classroom, and what they learn from doing so. As with the implementation of any new technology in education, there are challenges and mismatches in the classroom.

Scholars' views cited above are derived from studies carried out in European and African countries using general technologies particularly in music teaching and learning. Hence, the need to find out if challenges in the use of EMDS were faced in teaching and learning music in the department of performing arts. It also made it inevitable to find out whether devices and software were used to meet objectives of the study. This was meant to expose students and lecturers to the use of electronic music devices and software for the purpose of enhancement of the entire music education through the use of modern technological advancement.

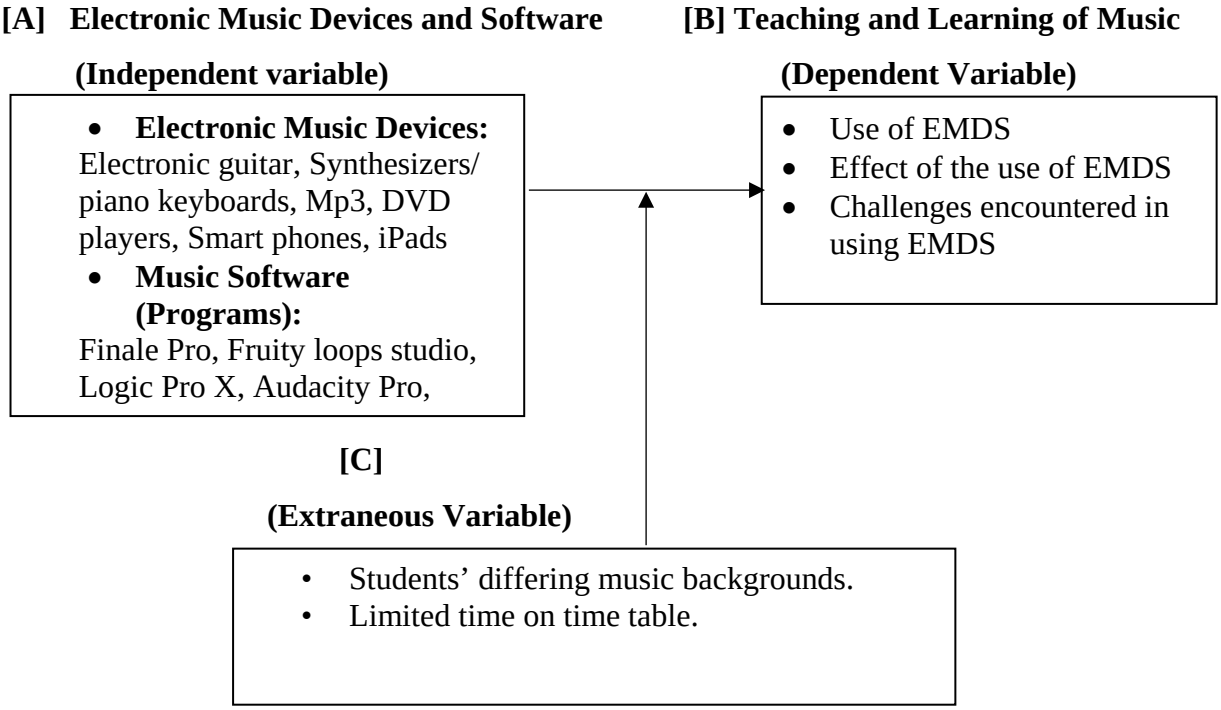
2.3 Conceptual Framework

A conceptual framework is an interconnected set of ideas (Svinicki, 2010). A model in which concepts under study are linked (Mugenda, 2003). A structure with fundamentally connected variables presenting concepts that form a body of knowledge (Rocco and Plakhotnik, 2009). According to Adom, Hussein, and Joe, (2018), a conceptual framework is a "structure which

the researcher believes can best explain the natural progression of the phenomenon to be studied" (p.439). In explaining this study, I developed a conceptual framework grounded in learning theories. I first identified and explained the theories (2.1 above) that relate to the concepts of my study. Secondly, I have illustrated the conceptual framework model diagrammatically, as shown below. Then I explained how the study used the concepts of the model in relation to the theories.

In the objectives of this study, the researcher attaches importance in finding out the nature of electronic music devices and software available for use, how they enhance music education and the challenges they pose in teaching and learning in the Department of Performing Arts at Kyambogo University. Due to the ways in which electronic music devices and software should be used in teaching music, Laird's Sensory Theory (LSD) and The Peter Principle's Theory (PPT) were used to guide this conceptual framework. Laird's Sensory Theory (LSD) states that learning occurs when the senses are stimulated and providing visual prompts for students will enhance their learning. Peter Principle's Theory (PPT) deals with four levels of competences namely: unconscious incompetence, conscious incompetence, conscious competence and unconscious competence. These theories touch on the key elements of the objectives of the study: availability and use of the devices and software, how they enhance teaching and learning and challenges they pose in the process of music education, as shown in the conceptual framework model below.

FIGURE 1.1: Relationship between Electronic Music Devices and Software and the Teaching and Learning of Music



A Conceptual Framework Adapted from The Peter Principle Theory: Peter & Hull (1969).

In figure 1 above, the researcher illustrates the relationship between electronic music devices and software, which form the Independent Variable, and Teaching and learning of music, which form the Dependent Variable in the Department of Performing Arts at Kyambogo University. In the above figure, the dependent variable [B] relies on the application of electronic music devices and software of the Independent Variable [A]. When these devices in [A] are available and put into use, the cause is enhancement of learning shown by the arrow pointing from [A] to [B]. This shows that the need to search for the available electronic music devices and software used in the teaching and learning music in the Department of Performing Arts at Kyambogo University explains the researcher's concern. The illustration in [A] above shows that electronic guitars, Synthesizers or electronic music keyboards, tablets, among others are necessary for use in teaching music. In addition, the software such as Finale Pro, Fruity loops studio and others are crucial in the teaching and learning of music.

Secondly, the researcher illustrates the need to explore how the electronic music devices and software have supported [B] and enhanced the teaching and learning of music in the Department of Performing Arts at Kyambogo University. The underlying concepts in the search for this concern gotten derived from the phrase namely; 'How electronic music devices and software have enhanced the teaching and learning of music.' This phrase was presented to mean 'the contribution of EMDS in enhancing teaching and learning of music.'

Thirdly, the illustration guides this inquiry in finding out the challenges in [C] faced in the use of electronic music devices and software in teaching/learning music. The concept guides in capturing challenges across categories of stakeholders involved in ensuring the use of EMDS in teaching music. The researcher's concern was on challenges encountered by students, lecturers and head of department in teaching and learning music using EMDS.

However, in the course of interaction between independent [A] and dependent variable [B], extraneous variables [C] are likely to crop up and interfere with the action of [A] upon [B]. The extraneous variables include intermittent power and internet supply, computer viruses, and challenge of limited know-how on technologies among educators and students.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter gives a description of how the whole research process was carried out. It focused on the research design, the study population, sampling strategies, data collection methods, research procedure, validity and reliability of research instruments, and methods of data collection. The methodology section is an important component of research that essentially maps out the methods used during the research work.

3.1 Research Design

Research design refers to the overall strategy employed to integrate different components of the study in coherent and logical way, to effectively address the research problem. It entails the collection, measurements, and analysis of data (Newby, Research Methods for Education, 2014).

The researcher used a cross sectional survey design. According to Amin (2005), this is one of the most commonly used research design in social sciences and is used to gather data from a sample population at a particular time. Sorensen (2010) is of the view that this design helps to define better and understand respondents' opinions and attitudes when gathering information from a sample population at a particular time.

The researcher also used qualitative and quantitative approaches when collecting data. This is because the mixed approach allows respondents give their opinions and allows a big population to be investigated (Leavy, 2017). Also both approaches complement each other (Hyun, 2012) and they are used for triangulation purposes (Creswell, 2007). The approach helped the researcher to get a clear picture of the domain being investigated. Qualitative and quantitative approaches help to obtain comprehensively the study variables (Sons, 2009)

3.2 Study Population and Sampling Technique

3.2.1 Target Population

Best and Kahn (2006) define study population as a group of individuals with one or more characteristics of interest to a researcher. This is the large population to whom the research study results are to be generalized (Burke & Larry, 2010). This research targeted a populated of 82 respondents within the Department of Performing Arts in Kyambogo University.

3.2.2 Sample and Sampling Techniques

Out of the target population of 82 respondents, the research used a sample size of 78 respondents broken down as follows: 01 Head of Department of Performing Arts, 01 Craftsman, 14 Lectures of Performing Arts Department, 08 Bachelor of Education (BED) students, and 28 Diploma in Education, Secondary (DES) students. Others include 10 Bachelor of Teacher Education (BTE) students, 10 Masters of Arts in Music and Masters of Arts in Music Education students and 06 students of Bachelor of Performing Arts.

To ensure representativeness of the samples, purposive sampling was a suitable approach. Mugenda and Mugenda (2009) define sampling as a formulation of procedure of selecting the subjects or cases to be included in the sample. Thus a sampling technique is a plan for obtaining a sample from a given population (Kothari, 2014). The study used two sampling techniques namely purposive and simple random sampling, to select the respondents. Fraenkel and Wallen (2006) describe purposive sampling as a nonrandom sample selected because prior knowledge suggests it is representative, or because those selected have the needed information. On the other hand, Best and Kahn (2006), assert that the best way to achieve unbiased results in a study is random sampling. It gives choice through unpredictable means and also gives all subjects an equal chance of being selected out of the population being studied.

Purposive sampling supported the collection of valuable information from respondents who were expected to have detailed information on study concepts. Using purposive sampling method, the researcher sampled the Head of Department, all the 14 Lectures in the department, and all Bachelor of Education, Bachelor of Teacher Education, Bachelor of Performing Arts, Master of Arts in Music and Master of Arts in Music Education students. In this case the researcher consciously decided who was to be included mainly because the numbers of the category of respondents was small and all of them were selected.

Random sampling was used by first listing down, in alphabetical order, all the names of Diploma in Education, Secondary (DES) students. The next step was to randomly pick out four different digits to represent the serial numbers on the list of students. Those picked were not therefore selected to participate in the study. This enabled all DES students undertaking music education studies, except four, to stand chance for inclusion in the study.

Table 3. 1: Shows Target population, sample size, sampling strategy and research instruments that were used

Category of respondents	**Target population**	**Sample size**	**Sampling Technique**	**Instrument**
HOD	1	1	Purposive sampling	Interview
Lecturers	14	14	Purposive sampling	Interview
Craft man	01	01	Purposive sampling	Interview
Bachelor of Educ. (BED) students	8	8	Purposive sampling	Questionnaire
Diploma in Education, Secondary (DES) students	32	28	Simple random	Questionnaire
Bachelor of Teacher Education (BTE) students	10	10	Purposive sampling	Questionnaire
Masters students GAME & GMAM	10	10	Purposive sampling	Focus group discussion
BPA	6	6	Purposive	Focus group discussion
Total	**82**	**78**		

Source: Adapted and modified by the Researcher from Ary, Cheser, and Christine (2006)

3.3 Data Collection Instruments

Kothari (2014) defines data collection instruments as the tools to be used to gather data. Data for this study was collected from both primary and secondary data sources. The researcher used questionnaire guide and interview guide as primary source for collecting data and documentary review guide as a secondary source for collecting information concerning the available music electronic devices in the department of Performing Arts.

A questionnaire guide consists of questions in which the subject responds in writing (Cohen et al., 2005). Items put in the questionnaire were carefully designed in accordance with the

specifications of the research questions and objectives of the study. The closed ended questionnaire **(see Appendix I)** was designed, in the Likert scale and used for collecting data from the students. According to Cohen et al. (2005), Likert scale is a self-reporting instrument in which an individual responds to a series of statements by indicating the extent of the agreement, with each choice given a numerical value.

A closed ended questionnaire was the best instrument in this case because studies with many respondents often use shorter, highly structured questionnaires (Kothari, 2004) Secondly, owing to time and resource constraints, a closed ended questionnaire was the most ideal tool for collecting vast amounts of data from students in a relatively short time (Vanderstoep, Deirdre, 2009). In addition, since students are literate, it was much easy to use a questionnaire to collect much information in a short time from them. Furthermore, it was used following the view of Creswell (2014) that the quantitative data that emerge from the questionnaires help to establish statistical patterns of the issues under investigation, thus providing outcome data as a context for the collection of other qualitative data through interviews.

Another tool used in the collection of data was the interview guide **(see Appendix II).** An interview is an interchange of views between two or more people on a topic of mutual interest (Leavy, 2017). It can also be defined as a face to face interaction where the interviewer asks questions to the interviewee (Lodico, Spaulding, and Voegtle, 2006) "Interviews allow participants to discuss situations from their point of view" Lodico et al., (2006) also notes that interviews help the researcher to get responses instantly with ease. This method is of an advantage to the researcher because it offers an opportunity to adopt questions, clarify the question by using the appropriate language, clear doubts and establish rapport and probe for more information (Lodico et al., 2006).

Interview guide consisted of structured questions formulated basing on the study objectives. The Interview guide was useful in sourcing for first-hand information from the Head of Department, lecturers and craftsman about the use of electronic music devices and software in the teaching and learning of music. This, according to Lodico et al. (2006) makes an interview the most credible and comprehensive tool for obtaining qualitative survey data. The researcher also used the focus group discussion, and observation guides, as well as review of the secondary data to get more information. Use of a variety of instruments facilitated triangulation of data as Leavy (2017) emphasizes. It also helped to enhance validity of the study following view of Gay (2007) and for collecting comprehensive data (Sarantakos, 2005).

3.4 Data Collection Procedure

The researcher obtained a letter from the Dean of Graduate School introducing him to the respondents in the Department of Performing Arts, which permitted him to collect data. The letter was presented through the Head of Department, to each category of the respondents that were involved in the study. Their consent was therefore obtained to participate in the study. In the collection of data, respondents' fear of giving information was allayed by assuring them that anonymity and extreme confidentiality would be observed where necessary and their participation was voluntary.

3.4.1 Administration of the Questionnaires

The questionnaires were administered by the researcher himself to each category of the respondents, and that is students in different programmes in the Department Performing Arts. All the 46 questionnaires administered were received after they had been responded to.

3.4.2 Interviews

The researcher used the structured interview guide to collect qualitative data from the Head of Department of Performing Arts, one Craftsman and 14 lecturers in the department. The interviews took four days because, besides the Head of Department and the Craftsman, not all lecturers were available on the same day. Interviews enabled the researcher to observe facial expressions of the respondents and was able to judge their perceptions about the study. The instrument helped in cross checking with the information which was given in the questionnaire as well as used to generate data to support the findings from the questionnaires.

3.4.3 Documentary Review

The researcher looked at documents concerning the electronic music devices and software in the Department of Performing Arts at Kyambogo University. The list included the modern computers, synthesizers, electronic guitars, iPad, iPhone, projectors, mp3 and all related music devices kept by the Department of Performing Arts. According to (Donald Ary, 2010), documentary analysis is appropriate in obtaining already existing information on the variables published and preserved. Information obtained under documentary analysis assist in triangulation and backing up the findings.

3.4.5 Focus Group Discussion

A Focus group discussion was held with 10 Master of Arts in Music (GMAM) and Master of Arts in Music Education Students (GAME) and 6 Bachelor of Performing Arts (BPA) students, giving a total of 16 respondents. The group discussions were conducted with BPA students from 11.00 a.m. to 12.30 p.m. and GMAM and GAME students from 5.00 to 6.00 p.m. on 20th October, 2018. This group discussion was guided by use of the designed instrument for this schedule (See Appendix III). The researcher used this tool to give

opportunities for deeper discussions to come out with relevant information on the study problem. It enabled the respondents give their views freely.

3.4.6 Observations

By use of the observation tool, data on non-verbal behavior was gathered by the researcher. An observation guide (See Appendix IV) was developed to explore elements of music technology. Key concerns included available recording technology devices-model and suitability, storage facilities, local recording facilities, staff and solfa notation software, sound and video production software, appropriateness of available recording studio, students' accumulative attainment records in areas of interest and any other deemed item that will compliment to this study. In addition, he looked at the lecturers conducting their physical music lessons in their classes to have evidences on how they use the electronic music devices and software in the teaching and learning.

3.6 Data quality Control

The study put into consideration the validity and reliability of the research instruments.

3.6.1 Validity of Research Instrument

Validity refers to the accuracy of instrument used in research to collect meaningful and right data (Amin, 2005) Content validity literally means the amount of substance in the study (Cohen et al., 2005) The instruments had adequate traits due to consultations with the supervisor, colleagues and the research expert. The research expert helped in strengthening the validity of the research instruments and calculation of the content validity, (CVI). The test of content validity was established through inter judge with two research consultants. The formula was:

CVI= n/N. Where n is = number of items rated as relevant and N= total number of items in the instrument.

The CVI for the interview guide and questionnaire to be regarded as valid was accepted at above 0.7. This is because Amin (2005), suggests that in a survey, the least CVI recommended in a survey study should be 0.70 or 70%. Some adjustments were made to make the questions more valid. The results are presented in table 3.2.

3.6.2 Reliability

Reliability refers to the degree of consistency in which a measuring instrument yields when the entity being measured has not changed (Donald Ary, 2010).The strategies that were used to obtain reliability are peer debriefing, prolonged engagement and audit trails. Peer debriefing involving the researcher working with colleagues to examine the instruments and giving their views about their correctness. With prolonged engagement, the researcher spends sufficient time in the field to learn or understand the social setting while audit trials involve a thorough collection of information regarding all aspects of the research. Data was systematically checked focus maintained and there was identification and correcting errors (Donald Ary, 2010). This helped to ensure establishment of accuracy of data collected. Reliability for quantitative data was obtained by carrying out a test of reliability analysis scale (Alpha-coefficient) using SSPS 17.0. The instruments were found valid at a (alpha) above 0.7. A reliability of 0.70 indicates 70% consistency in the scores that are produced by the instrument (Siege, 2002). The use of SPSS was because of its being easy to apply and fitting a two or more-point rating scale. Results of Cronbach are presented in table 3.2 below.

Table 3. 2: Reliability and Content Validity Index

Items	**Content validity index**	**Cronbach alpha (a) value**
Audio and video recording software	0.86	0.792
Budget planning	0.80	0.755
Availability of various electronic music devices	0.83	0.682
Music notation and production software	0.79	0.751
CD/DVD players and synthesizers for aural skills and analysis sessions	0.70	0.791

3.7 Data Analysis

Data analysis entails separation of data into constituent parts or elements that are easy to interpret explain and deduce conclusion (Newby, Research Methods for Education, 2014).

This study used both quantitative and qualitative data analysis techniques. Qualitative data was sorted according to the study objectives and questions from which they emerge and hence analyzed using descriptive statistics analysis technique. According to (Donald Ary, 2010), descriptive statistics provide a simplified way of understanding and interpreting results. Quantitative analysis was used to determine the number of similar frequencies of positive and negative responses in the questionnaires. The responses item-by-item in the questionnaires were tabulated and the number of frequencies calculated.

All objectives were subjected to content analysis. Qualitative data from interviews and focus group discussions was analyzed by coding and sorting similar responses and summarizing it according to the themes and codes.

Quantitative data was edited, coded, entered into a computer using SPSS to get frequencies of similar positive and negative responses. This software was chosen because it creates data

entry screens, which look like the hard copy of the questionnaire. In addition, it allows the creation of consistency checks that helps to eliminate out of range errors of the data entry. According to Creswell (2014) in quantitative data analysis, emphasis needs to be placed on using data to suggest hypotheses to be tested.

3.8 Ethical Considerations

To be ethical is to conform to the accepted professional practices Amin (2005). Before interviews and administration of questionnaires, the researcher fully explained the objectives of the study to all the respondents. In addition, their consent was sought and their right to confidentiality assured before interviewing and distributing questionnaires. Furthermore, the researcher fully observed their right to privacy and anonymity by not asking them to write or mention their names. The researcher also thanked the respondents for their participation in the study.

CHAPTER FOUR

PRESENTATION OF FINDINGS, ANALYSIS AND INTERPRETATION

4.0 Introduction

This chapter presents the findings of the study that were focused on examining how music electronic devices and software enhanced the teaching and learning of music in the Department of Performing Arts in Kyambogo University.

The chapter presents data showing their analysis and interpretation under each of the three sub-themes derived from the study objectives. The sub-themes included: availability of electronic music devices and software, the use of electronic music devices and software in enhancing teaching/learning music and challenges in the use of these devices and software in teaching/learning music. At the beginning, the chapter presents the study response rate and demographic information as substantial evidence for data presentation and analysis.

4.1 Study Response Rate

The response rate shows percentage of respondents that participated in the study. According to Creswell (2014) response rate is presented in research results because it provides the validity of the study and failure to do so can put the validity of the study findings into question. Studies that have had high response rate provided a measure of reassurance that the findings obtained could be projected to the population from which the sample was drawn. Response rate is frequently used to compare survey quality and appropriate response rate should be at least 75% and steps need to be taken to account for possible non-response error whenever a response rate is less (Wiseman & Billington, 1984) In this study, the response rate obtained was 100%. This was derived from the description of the expected sample size of 78 in chapter three (methodology). During data collection, each of the categories of samples responded fully. They were: 01 Head of Department, 14 lecturers, 08 B.Ed. students, 06 BPA

students, 18 DES students, 06 BTE students and 10 students of Masters of Arts degree. Obtaining 100% of the response rate in this study was attributed to availability of most of the sampled respondents. Follow-up of all the respondents who were not found in their designated places of contact was made through phone calls. The table 4.1 herein shows the 100% response rate of this study as explained above.

Table 4. 1: Showing the Study Response Rate

Category of Sample	**Total number**	**Sample size**	**Response Rate**	**Percentage**
HoD Performing Arts	01	01	01	100%
Lecturers	14	14	14	100%
Craftsman	01	01	01	100%
B.Ed. students	08	08	08	100%
BPA students	06	06	06	100%
DES students	32	28	28	100%
BTE students	10	10	10	100%
Masters students	10	10	10	100%
Total	**82**	**78**	**78**	**100%**

Source: Primary data

The table 4.1 above clearly shows that this study had a high response rate. This response rate provided a measure of reassurance that the findings of this study were projected to the population from which the samples were drawn. This means that the response rate of this study presents evidence of validity of its results substantially.

4.2 Bio Data and Demographic Information

This included the gender distribution and category of respondents. The background information of respondents was presented to provide a clear picture of the nature of respondents who participated in the study.

4.2.1 Gender distribution

Table 4. 2: Gender distribution

Category of Sample	Male	Female	Total
HoD Performing Arts	00	01	01
Lecturers	12	02	14
Craftsman	01	00	01
BEd students	06	02	08
BPA students	05	01	06
DES students	23	05	28
BTE students	08	02	10
Masters students	06	04	10
Total	**61**	**17**	**78**
Percentage	**78%**	**22%**	**100%**

Source: Primary Data

The study results from the respondents indicate that there were 61 male participants constituting 78%, and 17 were female giving a percentage of 22%. This implies that both female and male participated in the study though male were many in number compared to females. This also meant that more males are recruited in the Department of Performing Arts at Kyambogo University.

4.2.2 Nature of Respondents

The nature of respondents for this study comprised three major groups namely Head of Department, staff which includes lecturers and the craftsman and students. According to the results in table 4.3 below, the respondents were: 01 Head of Department, 14 lecturers, 01 craftsman and 38 students who participated in the study. The results show that of 100% of the different groups of respondents, Head of Department was 1.3%, lecturers formed 17.9%, craftsman 1.3% and students formed 79.5%.

Table 4. 3: Nature of Respondents

Category	Sample size	Response Rate	% of Response rate
Students	62	62	79.5
Head of Department	01	01	1.3
Lecturers	14	14	17.9
Craft man	01	01	1.3
TOTAL	**78**	**78**	**100%**

Source: Primary Data

Results in table 4.3 above show that students were the majority – 62 of them constituting 79.5%, followed by lecturers - 14 (17.9%) and lastly Head of Department and craft man - 01 (1.3%) each. This response rate was considered relevant and acceptable about the study topic because it meant that mostly the students totaling 62 and constituting 79.5% of the respondents were involved in the learning of music in the Department of Performing Arts. This also shows that 14 lecturers, constituting 17.9% of the respondents were directly involved in the teaching with the use of electronic music devices and software in the same department.

4.3 The available electronic music devices and software and their use in the teaching and learning of music

The first objective of this study was to explain how the available electronic music devices and software were used in the teaching and learning of music in the Department of Performing Arts at Kyambogo University. This section therefore presents table 4.4 to show analysis of data for the first objective. Opinions of Head of Department, Lecturers, Craftsman, students of Masters, BTE, DES, BPA, and B.Ed., are presented by numbers and percentages. They are analyzed from the Likert scale categorized under strongly agree (SA), agree (A), strongly disagree (SD) and disagree (D). In the analysis of data for this study,

percentages of columns for ‘strongly agree’ and ‘agree’ were presented in the category of ‘agree’ as sum.

Table 4. 4: How the available electronic music devices are used in the teaching and learning of music

Existing electronic music devices and software and how they are used at the Department of Performing Arts	**SA**		**A**		**DA**		**SDA**		**TOTAL**	
	NO	%	NO	%	NO	%	NO	%	NO	%
Projectors for Presentations of music teaching and learning activities	42	54	27	34	7	8	2	4	78	100%
Synthesizers or Electronic piano keyboard for giving rhythms, pitch, cadences, practice	20	26	22	28	31	39	5	7	78	100%
Electric guitars for teaching and learning of music playing skills	3	4	8	10	33	42	34	44	78	100%
Smartphones and IPads with music software for writing music playing music compositions and teaching and learning.	32	41	14	17	20	27	12	15	78	100%
Smartphones and IPads for E library in citing music reading texts, writing academic work & research	32	41	14	18	20	26	12	15	78	100%
Digital video cameras for covering music performances	19	24	8	10	37	47	14	19	78	100%
Students have a Laptops with music software for learning	20	25	11	14	25	33	22	28	78	100%
Music computer production software: fruity loop studio, finale, logic pro x, notation composer, adobe audition and premier pro CC. used in music production, notation and editing.	35	46	24	28	9	12	10	14	78	100%
Department has internet connectivity, for searching information on music	8	12	20	23	15	19	35	46	78	100%
Studio monitors with headsets or headphones, microphones, used in music teaching, learning, recording and editing.	31	39	29	38	10	13	8	10	78	100%
Digital Audio Work station (DAW) software on computer used to record, edit and mix music.	17	22	0	0	27	35	34	43	78	100%
Mp3 players, DVD/ CD players, USB players used during music performances.	44	57	22	27	2	3	10	13	78	100%
Ulead studio program software was used for teaching video production and editing	33	41	27	36	10	13	8	10	78	100%
Cassette player for recording and playing cassette tapes for aural skills and analysis.	10	13	7	9	22	28	39	50	78	100%

Source: Primary Data

In the same vein the percentages of columns for ‘disagree’ and ‘strongly disagree’ were presented in the category of ‘disagree’ as sum.

Findings of the study as laid down in table 4.4 show that a number of electronic music devices are available in the Department of Performing Arts at Kyambogo University. These devices include a projector with a screen, synthesizers, computers with music software, a digital camera, and those owned by individuals like laptops, smartphones and iPads or tablets. Other devices include Mp3, DVD/CD and USB players and studio monitors with headsets or headphones. The table also shows available software which include finale, logic pro x, notation composer, Adobe audition, fruity loop and premier pro CC and audacity.

In raw one of table 4.4, the percentages of respondents in using projectors indicate that 54% strongly agreed and 34% agreed that projectors were used for music teaching and learning. Therefore, 88% of the respondents agreed that projectors were used for presentations of music teaching and learning activities in the department of Performing Arts. However, 8% strongly disagreed and 4% disagreed that projectors were used for music teaching and learning. This means that only 12% of the respondents disagreed that projectors were used for presentations of music teaching and learning activities in the department of Performing Arts. The implications could have been that some students and lecturers did not use the projector in the teaching and learning of music.

On interviewing the Head of Department, she said that there was only one projector and a screen used by lecturers when teaching different programs offered in the Department. She asserted that it was mainly lecturers handling the master’s programs who commonly used the projector and screen in their teaching.

In raw two of table 4.4, the percentages of respondents in using synthesizers or electronic piano keyboard indicate that 26% strongly agreed and 28% agreed that synthesizers or

electronic piano keyboard were used. This means that 54% of the respondents agreed that synthesizers or electronic piano keyboard were used for giving rhythms, pitch, cadences, and practice in the department of Performing Arts. However, 39% strongly disagreed and 7% disagreed, means that 46% of the respondents disagreed that synthesizers were used for giving rhythms, pitch, cadences, and practice.

This indicates that the percentage of students and lectures who participate in using synthesizers or piano keyboard is above average. In other words, many students and lecturers used synthesizers or piano keyboard for giving rhythms, pitch, cadences, and practice. When asked to differentiate between the functions of an ordinary piano and the synthesizer, one lecturer described the latter as follows:

> *The synthesizer key boards found at the Department are about six times smaller than the piano, though piano keyboards are of different sizes. The format of the front view (its manual) is similar to that of a piano. The one at the department is called Yamaha Keyboard PSR 450 by brand name. In my view, these kind of musical instruments are very useful in the teaching and learning of music. This is because the Yamaha keyboard piano PSR 450 has different function features such as play back function, Data base function, style/ rhythm setting function, Voice setting, recording function, song bank. What I know is that teaching music playing, recording, composition and notation is facilitated by the Keyboard we have.*

Another lecturer when asked the same question during the interview said this:

> *What I know is that by physical appearance, a synthesizer is an electronic musical instrument which people ordinarily refer to as a piano keyboard. A synthesizer usually has in-built speakers. However, it can be connected to an amplifier for amplification of sound signals. It can also be connected to*

a computer which is finally connected to mixer/amplifier to send sound signals to speakers or studio monitors (studio speakers) to produce sound.

Similarly, another lecturer went deep into the function of the synthesizer available in the department by saying:

One of the synthesizers found at the Department of Performing Arts is called Yamaha PSR 750E. It has 5 octaves with in-built speakers. It has all the operational functions like that one of a piano keyboard. The difference is that the synthesizer found in the Department has very many EQ (equalizers) operations burtons on the front and side view as well as MIDI in and MIDI out functions which export and import music data to and fro other musical devices. It can therefore be programed in such a way that it can create new music data in form of tone or voice and rhythms/percussions.

The descriptions of the function of synthesizers given above explain that MIDI programming function enables the synthesizer to perform another function of music production, which is using the fruity loop studio or logic pro software.

Again such descriptions by the lecturers clearly show that the synthesizer is an electronic music device with features that the ordinary piano does not have. This therefore confirms its availability and use in teaching and learning in the department. On the same note another lecturer emphasized that he uses the synthesizer only when it is necessary to do so in particular course units by saying:

"Synthesizers are used to help students during recitals, choral conducting lessons, aural skills learning sessions and examinations".

Furthermore, interview with the Head of Department reveals that these synthesizers or electronic piano keyboards were only two and so not enough to be used by all the lecturers. Secondly, they were mostly used for particular course units in particular year of study. She also added that some of the lecturers who did not have competent skills in using such devices in the teaching and learning of music, avoided employing them. During the focus group discussion sessions with students, a number of them said they had often used the synthesizers whenever there was any free electric power socket where it could be plugged. All the above responses of the lecturers and students confirm the use of the synthesizer as an electronic music device in the teaching and learning.

In table 4.4 raw three, the percentages of respondents in using synthesizers or electronic piano keyboard indicate that 4% strongly agreed and 10% agreed that electric guitars were used in the teaching and learning of music. This means that only 14% of the respondents agreed that electric guitars available in the Department of Performing Arts were used in the teaching and learning of music. However, 42% strongly disagreed and 44% disagreed, which means that 86% of the respondents disagreed with the statement. This implies that very few lecturers and students used electric guitars in the teaching and learning of music. During the interview with the Head of Department, she said these devices are available but face two problems which are: lack of a competent person to handle the teaching and learning of playing skills and lack of strings to replace the broken ones. However, during discussion with the Craftsman, he said, teaching the skills is not a problem to him but only the amplification system that need to be repaired. The Bachelor of Performing Arts (BPA) students said they have never seen any lecturer introducing this course to them. One of them said:

> *"The department has electric guitars though we rarely use them in teaching and learning of music. We are not taught how to play them and some are spoilt."*

A study of the secondary data by looking at the syllabi show that the Bachelor of Performing Arts (BPA), and Bachelor of Education (BED) programs have course units that require the use of electric guitars in the teaching and learning of music.

Results in table 4.4 raw four are presented to show the percentages of respondents in using music software on smartphones and iPad to teach and learn music writing, and playing. In the results, 41% strongly agreed and 17% agreed that music software was used on smartphones and iPad to teach and learn music writing, and playing. Therefore, 58% of the respondents agreed that software on smartphones and iPads were used in the Department of Performing Arts for writing music compositions and playing music compositions during the teaching and learning of music. However, 27% strongly disagreed and 15% disagreed, therefore 42% of the respondents disagreed with the statement. This implies the available smartphones and iPads were used to teach and learn music in the Department of Performing Arts at Kyambogo University.

In addition to the above, results in table 4.4 raw five show the percentages of respondents in using smartphones and iPad for E-library. In the results, 41% strongly agreed and 18% agreed that smartphones and iPads were used in citing music reading texts, writing academic work & research. Therefore, 59% of the respondents agreed that smartphones and iPads were used in citing music reading texts, writing academic work and research in the Department of Performing Arts. However, 27% strongly disagreed and 15% disagreed, therefore 42% of the respondents disagreed with the statement. This implies that smartphones and iPads were used for e-library work in the Department of Performing Arts at Kyambogo University.

Interview with the Head of Department and lecturers found that lecturers commonly use these gadgets and also encourage students to do likewise to widen their music knowledge horizon and research.

During interview with the Head of Department and lecturers, they agreed owning these gadgets but had never used them in their teaching as there are computers for that purpose.

Results in table 4.4 raw six show the percentages of respondents in using digital video cameras for covering music performances. According to the results, 24% strongly agreed and 10% agreed that digital video cameras were used for covering music performances in the Department of Performing Arts. Therefore, 34% of the respondents agreed that digital video cameras were used for covering music performances. However, 47% strongly disagreed and 19% disagreed, therefore 66% of the respondents disagreed with the statement.

When corroborating this information in the interview with the Head of Department and lecturers, some stated that the course units they handled did not require the use of this gadget and only two of them stated they frequently used them in some few course programs. One of the lecturers in the interview said;

> "*What I know is that the department seems to hire digital cameras especially when it comes to big functions of the university. We at times use these cameras during examinations and mostly graduation ceremony, fresher's parties, Christmas and Easter festivals where students get chance to perform to the big audiences but not in teaching.*"

This implies that the available digital video cameras were used by few lecturers and students in the Department of Performing Arts at Kyambogo University.

Results in table 4.4 raw seven show the percentages of respondents in using laptops with music software for teaching/learning music. The results indicate that 25% strongly agreed and 14% agreed that laptops with music software were used for teaching/learning music. Therefore, only 39% of the respondents agreed that laptops with music software were used for teaching/learning music. However, 33% strongly disagreed and 28% disagreed, therefore 61% of the respondents disagreed with the statement.

This implies that few students who had laptops with the music software used them for learning music in the Department of Performing Arts at Kyambogo University. The Head of Department and lecturers, when interviewed said, they have laptops but cannot use them in teaching and learning of music as a number of students lacked them. However, during the focus group discussion with the master's degree program students, they agreed that almost all their courses required the use of laptops and so each of them owns one. It seemed to indicate that some courses did not have content that required the use of laptops with music software.

Results in table 4.4 raw eight show the percentages of respondents on use of music computer production software: fruity loop studio, finale, logic pro x, notation composer, adobe audition and premier pro CC. The results indicate that 46% strongly agreed and 28% agreed that music computer production software: fruity loop studio, finale, logic pro x, notation composer, adobe audition and premier pro CC were used in music production, notation and editing. Therefore, only 74% of the respondents agreed with the statement. However, 12% strongly disagreed and 14% disagreed, therefore only 26% of the respondents disagreed music computer production software: fruity loop studio, finale, logic pro x, notation composer, adobe audition and premier pro CC were used in music production, notation and editing.

This implies that a greater number of students and lecturers use the available music Software in music production, notation and editing.

During interview with the lecturers, some of them gave lists of software they have used for music production, notation and editing in the department as fruity loop studio, logic pro x, finale, audacity, adobe audition and premier pro CC. One of the lecturers who said to have commonly used one of the software in his course units had this to say:

> *'Logic Pro - X allows Editing pitch and time, Editing an arrangement, Mixing, Automating the mix, and Controlling Logic with an iPad using Logic Remote.*

Another lecturer who said he has often at different times used either finale notepad, muscore, or Sibelius, emphasized that their function is almost similar to that of Logic Pro- x. He said:

> *'These software function by creating audio accompaniment or instrumentation by notating the music. The three software;* finale notepad, *muscore, or Sibelius, are essential in music writing in staff notation. And the notated music can then be turned to MP3 and played in audio files.'*

With a similar view, another lecturer said that:

> *'All the three software have functions for editing all the elements of music in staff notation such as note values, stem facing, note spacing, staves, clefs, music signs and abbreviations, scores, and many other elements.*

Another one said he is very comfortable with only audacity by saying:

> *Audacity is a multi-track audio editor and recorder for Windows, Mac OS X, GNU/Linux and other operating systems. Actually I know that* ***Audacity*** *can record and play sounds and import and export WAV, AIFF, MP3, and OGG files. It can also edit sounds using cut, copy, and paste features, mix tracks, or apply effects to your recordings.*

One other lecturer well versed with only audacity said:

> *The simpler software for me to use in preparing and teaching audio music is Audacity. It is a multi-track audio editor and recorder. Because of enough time I have taken using this application, I can record and play musical sounds. I ably import and export WAV, AIFF, MP3, and OGG files and play their music on my own. But this is not the same if I am to use Fruit Loop Studio. I know little yet about it. Well it may have functions like those for Audacity but I fear to get lost and confuse the students because of lack of knowledge and skill*

Although some of the lecturers as shown above, have used different software in their teaching or free time, some of them confess of need for a lot of more time and practice in the use of various music software in the teaching and learning of music. All the views and explanations by lecturers above, however, show that software that include fruity loop studio, finale note pad, muscore, logic x, are available and were used in teaching and learning of music in the Department of Performing Arts. The negative responses could have emanated from students whose programs do not have course units for use of these software. When carrying out observation and review of the secondary data, the researcher indeed found out that a number of programs did not have course units in the curriculum that would require use of Fruity loop studio software.

Results in table 4.4 raw nine show the percentages of respondents on use of internet connectivity, for searching information on music. The results indicate that 12% strongly agreed and 23% agreed that internet connectivity was used for searching information on music. Therefore, only 35% of the respondents agreed with the statement. However, 19% strongly disagreed and 46% disagreed, therefore 65% of the respondents disagreed that internet connectivity was used for searching information on music.

This implies that the internet connectivity is not used by majority of lecturers and students in the learning and teaching of music in the Department of Performing Arts at Kyambogo University.

When asked about the use of internet in their teaching the lecturers said internet connectivity is intermittent and if available, the network is very weak. As such they fail to use it as expected of them. The students on the other hand said they often use smart phones with Wi-Fi for communication, social media uploading music items and playing back music items.

In the focus group discussion with the master's degree program students, the following conversation took place:

'One of the students asked*:*

"When did we ever play music using smartphones?"

Another answered*:*

"Don't you recall when Dr. Kigozi used YouTube and played Jazz from New Orleans especially about slave trade?

Another student replied*:*

Eeeee okay, Yes Jazz New Orleans music for slave trade, Reggae time. But remember we always use smart phones, laptops, projectors during Dr. Ssempijja's music analysis and appreciation lessons.'

The above conversation confirms the small number of positive response that affirm the use of internet connectivity in the Department of Performing Arts.

During interview with the Head of Department she acknowledged the fact that through Internet surfing in the department, though the signal is weak, and with use of music software introduced to them, students have been able to compose and produce their own songs. They also composed and produced a group song called "Uganda the pearl of Africa". She further

enumerated other students who used internet and knowledge of music software to compose songs as follows. One student called Silver Namono has so far produced 10 songs, which he released to the market.

Another Bachelor of Performing Arts III student, Ronald Ngabonzira produced music videos which are in the market. Also Simon Enou composed and produced an anthem for secondary schools using finale pro-model school. Furthermore, with the use of computers installed with Adobe audition, audacity and logic pro X music software, students were able to compose, produce and perform Kyambogo Admission ceremony song titled “You are welcome” as well as one performed during the graduation ceremony. Interview with lecturers also got information that some of them said they use Logic Pro X and audacity in teaching and learning, to record aural skills tests and examinations and recording music for analysis.

Results in table 4.4 raw ten show the percentages of respondents on use of studio monitors with headsets or headphones, microphones to teach/learn music recording and editing. The results indicate that 39% strongly agreed and 38% agreed that studio monitors with headsets or headphones, microphones were used to teach/learn music recording and editing. Therefore, 77% of the respondents agreed with the statement. On the other hand, 13% strongly disagreed and 10% disagreed, therefore only 23% of the respondents disagreed with the statement.

This implies that majority of the lecturers and students used studio monitors with headsets or headphones, and microphones, used in music teaching, learning, recording and editing in the Department of Performing Arts at Kyambogo University. The lecturers on their part said the use of such gadgets fits well the music production course, which some of them do not teach. This was found to be true during the observation sessions where the researchers found out that not all courses required the use this gadget.

Results in table 4.4 raw eleven show the percentages of respondents on use of Digital Audio Work station (DAW) software on computer used to record, edit and mix music. According to the results, 22% strongly agreed and 0% agreed that Digital Audio Work station (DAW) software on computers were used to record, edit and mix music. Therefore, only 22% of the respondents agreed with the statement. Conversely, 35% strongly disagreed and 43% disagreed, therefore 78% of the respondents disagreed with the statement.

This implies that majority of lectures and students did not use the available Digital Audio Work station software to record, edit and mix music. This could mean that many students and lecturers did not use Digital Audio Work station due to lack of enough computers installed with Digital Audio Work station software.

However, the Head of Department and the majority of lecturers said that Digital Audio Work station software is used for particular course units in some programs in a particular year of study. Observation carried out in the teaching and learning of some course units concur with views of the lecturers above.

Results in table 4.4 raw twelve show the percentages of respondents on use of Mp3 players, DVD/ CD players, USB players used during music performances. According to the results, 57% strongly agreed and 27% agreed that Mp3 players, DVD/ CD players, USB players were used during music performances. Therefore, 84% of the respondents agreed with the statement. On the contrary, 3% strongly disagreed and 13% disagreed, therefore only 16% of the respondents disagreed with the statement. This implies that majority of students and lectures used the available Mp3 players, DVD/ CD players, USB players during music performances.

The lecturers on their part said due to lack of enough Mp3 players, DVD/ CD players, USB players, they find it hard to share the same system when more than one course unit requires

its use at the same time. So they have learnt to plan for use of alternate means by carrying their own from home to use in teaching and learning of music analysis, or aural skills or any other course unit that requires the use of such devices. This therefore means that the available Mp3 player and DVD/CD as well as USB player in the department is used on first come, first serve basis for particular course units in particular year of study.

Observation carried by the researcher found that the Department has only one Mp3 player, and one DVD/CD player, which is also used as the USB player. This is not enough to be used by different programs in any same given time. Furthermore, a careful look at the curricula of different programs and interview with the Head of Department and lecturers enabled me discover that not all lecturers needed to use this gadget as the course units they handled did not require its use.

Findings in table 4.4 raw thirteen show the percentages of respondents on use of Ulead studio program software for teaching video production and editing. The results indicate that 41% strongly agreed and 36% agreed that Ulead studio program software was used for teaching video production and editing. Therefore, 77% of the respondents agreed with the statement. In contrast, 13% strongly disagreed and 10% disagreed, therefore only 23% of the respondents disagreed with the statement.

These findings therefore show that Ulead and various computer music software were used in the teaching and learning of music in the Department of Performing Arts at Kyambogo University. During interview with the Head of Department and lecturers, most of them stated lack of knowledge in regard to Ulead software. Secondly, they said the courses they teach lack units for studio production.

In the focus group discussion with the Bachelor of Performing Arts students, they all agreed that Ulead studio software program was used for teaching video production and editing. On

the other hand, all the master's degree program students showed lack of knowledge of use of such a program in their courses.

Study of the secondary data discovered that syllabi of the Masters' degree and Bachelor of Teacher Education (BTE) program lack course units for music video production and editing. Thus a graphic representation in figure 1 below:

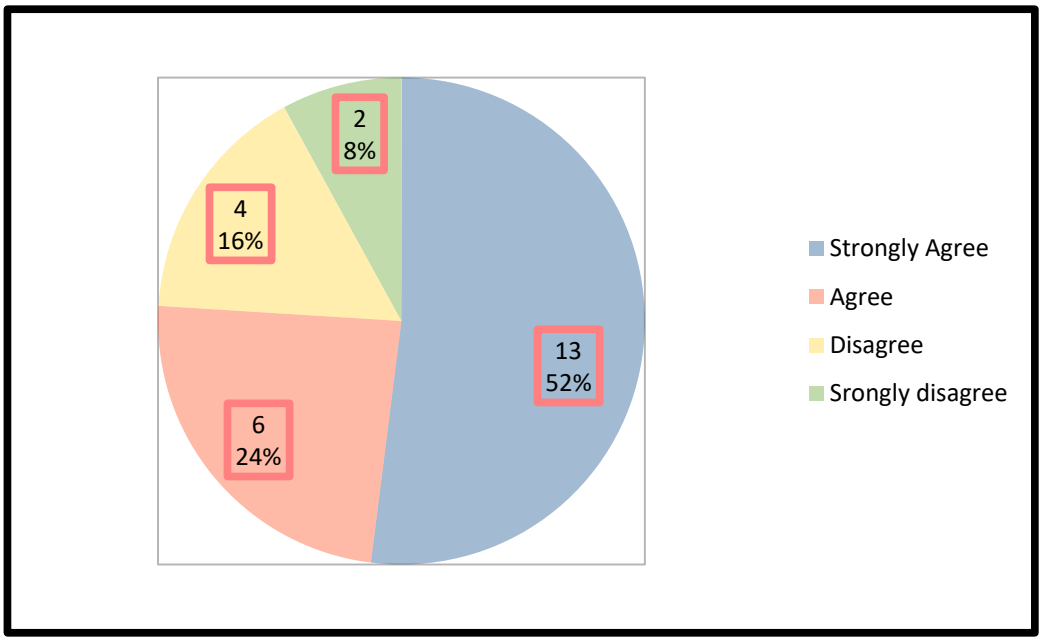


Figure 1: Graph showing whether Ulead studio program is used for teaching video production and editing

Findings as shown in figure 1 indicate that 52% represent strongly agree and 24% represent agree. Therefore, 76% agreed with the statement. However, 8% represent strongly disagree and 16% represent disagree, implying that 24% disagreed with the statement. Similarly, the findings show that majority of lecturers and students used Ulead and various computer music software in the teaching and learning of music in the Department of Performing Arts at Kyambogo University.

Findings in table 4.4 raw fourteen show the percentages of respondents on use of Cassette player for recording and playing cassette tapes for aural skills and analysis. The results

indicate that 13% strongly agreed and 9% agreed that Cassette player for recording and playing cassette tapes for aural skills and analysis. Therefore, only 21% of the respondents agreed with the statement. On the other hand, 28% strongly disagreed and 50% disagreed, therefore 78% of the respondents disagreed with the statement.

The findings above reveal that majority of students and lecturers were not using Cassette player for recording and playing cassette tapes for aural skills and analysis. However, that does not alter the fact that some students and lecturers used Cassette player for recording and playing cassette tapes for aural skills and analysis.

During interviews with the Head of Department, craftsman and lecturers, they all agreed that this device is available and is sometimes used in teaching and learning. Furthermore, during focus group discussions with the master's and Bachelor of Performing Arts students, they also agreed that the cassette player is available and is sometimes used by their colleagues.

Among all the electronic music and other devices available in the Department of Performing Arts at Kyambogo University, laptops, electric guitars, digital video camera, smartphones and iPads are least used in the teaching and learning of music. At the same time it is only the digital audio work station software, which is least used in the Department. All other electronic music devices and software were used a lot.

4.5 Effect of the use of electronic music devices on the teaching and learning of music in the department of Performing Arts at Kyambogo University

The second objective of this study was to explain the effect of the use of electronic music devices and software in the teaching and learning of music in the Department of Performing Arts at Kyambogo University. This section therefore presents findings on the above stated objective. Responses collected using the questionnaires are presented in table 4.5 below. Besides, the interview guide, focus group discussions and observation guide were used to

collect data. The table 4.5 is used to show analysis of data for objective two. In its analysis, the number of respondents and their percentages are represented in the columns of ‘strongly agree’, ‘agree’, ‘strongly disagree’ and ‘disagree’ analyzed from the Likert scale. However, on interpreting these data, percentages of columns for ‘strongly agree’ and ‘agree’ were presented in the category of ‘agree’ as sum.

In the same vein the percentages of columns for ‘disagree’ and ‘strongly disagree’ were presented in the category of ‘disagree’ as sum.

Table 4. 5: Effect of the use of electronic music devices on the teaching and learning of music in the department of Performing Arts at Kyambogo University

S N	ITEMS Effects of use of electronic music devices on the teaching and learning of music		SA		A		SD		D	TOT.	
		NO	%	NO	%	NO	%	NO	%	NO	%
1	Finale pro software has helped students in music notation, enhanced ability to create and analyze music	22	28	39	50	7	8	10	14	78	100%
2	They motivate students to learn since they have their hands on	37	47	26	33	5	7	10	13	78	100%
3	Finale pro software enables students easily writes, read, compose and harmonize music especially for coursework assignments and during examinations.	27	35	22	28	12	15	17	22	78	100%
4	Synthesizers, Mp3, DVD/CD and USB players enable lecturers make teaching and learning meaningful and joyful to students and understand the theoretical side of music	41	52	28	35	1	3	8	10	78	100%
5	Synthesizers, Mp3 and DVD/CD players help in easy teaching, learning and understanding of rhythms, cadences, arpeggios and aural skills generally.	48	61	12	15	3	5	15	19	78	100%
6	Students are able to produce music using Fruity Loop studio, Logic pro X and audacity	12	15	27	35	8	10	31	40	78	100%
7	Digital camera, smart phones and Ulead software enhance students' recording and production of videos and audio music, as well as storage of literature necessary for learning and teaching.	47	58	22	29	7	9	2	4	78	100%
8	Ease students' work and preparations during internship or school/college practice.	25	34	31	39	10	12	12	15	78	100%
9	Cassette player eases work of recording and playing cassette tapes for aural skills and analysis.	8	10	8	11	22	29	40	50	78	100%

Source: Primary data

Findings in table 4.5 raw one shows the percentages of respondents on effects of use of Finale pro software in music notation, creation and analysis of music on students. The results indicate that 28% of the respondents strongly agreed and 50% agreed that Finale pro software has helped students in music notation, enhanced ability to create and analyze music. In general, 78% of the respondents agreed with the statement. However, 8% strongly disagreed and 14% disagreed, therefore only 22% of the respondents disagreed with the statement.

This reveals that finale pro software has helped majority of students both the finale pro software has helped students to notate, create and analyze music. It implies that students had access to the electronic music devices and were able to learn using such devices.

Findings also affirm that students were motivated to learn and work faster when they use electronic music devices and finale pro software. This was revealed in results of table 4.5 raw two where 47% of the respondents strongly agreed and 33% agreed that finale pro software motivated students to participate in hands-on learning. Therefore 80% of the respondents agreed that finale pro software motivated students to participate in hands-on learning. However, 7% strongly disagreed and 13% disagreed, therefore only 20% of the respondents disagreed with the statement.

This reveal that majority of the students were motivated to learn and work faster when they use electronic music devices and finale pro software. This was shared by the Bachelor of Performing Arts (BPA) and Master's degree program students during the focus group discussions with them. It was reported that many students were committed in using the electronic devices more than paper work.

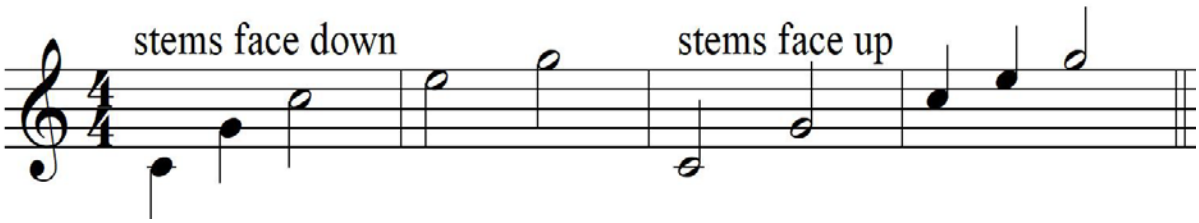
Findings in table 4.5 raw three show the percentages of respondents on effects of use of Finale pro software in enabling students easily write, read, compose and harmonize music. According to the results 35% of the respondents strongly agreed and 28% agreed that Finale

pro software enables students easily writes, read, compose and harmonize music especially for coursework assignments and during examinations. Therefore, 65% of the respondents agreed with the statement. Contrary to this, 15% of the respondents strongly disagreed and 22 disagreed that Finale pro software enables students easily writes, read, compose and harmonize music especially for coursework assignments and during examinations. Generally, only 37% of the respondents disagreed with the statement.

This means Finale pro software enables enabled majority of the students to easily write, read, compose and harmonize music. According to some students the use of electronic music devices and software like finale pro, muscore or sibelius enables them easily write, read and compose music especially when doing coursework assignments and during examinations. One of the students said that the software helps them to easily read the music written in staff and sol-fa notations during sight reading practical tests, recital time, choral and conducting lessons and their free time.

During interviews with the Head of Department, lecturers and craftsman as well as focus group discussions with the BPA and students in the Master's degree programs, all of them agreed that the use of the electronic music devices and software has had a positive effect on students in music education.

In one of the lessons I observed students notated a rhythm pattern given as an activity. The lecturer demonstrated to guide them in editing their work, gave an exercise with stems of notes in 1 and 2 facing up and in 3 and 4 facing down. He therefore asked them to edit the music by reversing the stems of notes in 1 and 2 to face down and in 3 and 4 to face up, using either Muscore, Finale notepad, or Sibelius.



Students ably used the software to change the direction of stems of staff notes as above, which presented a remarkable evidence of knowledge and skill they learnt. One of the students afterwards said that:

> *"We are usually guided to use computers and the special applications so that we get acquainted with their use in composing music. As you could have confirmed what we did in class today, we used finale Pro-X software to compose, notate, edit, and play the rhythm patterns on computers. Actually, we are inspired by the way in which the department is imparting knowledge and skills to us. Personally I can use any of the four applications to produce my own music especially audio and sheet music."*

Furthermore, findings presented in table 4.5 raw four show the percentages of respondents on effects of use of Synthesizers, Mp3, DVD/CD and USB players. The percentages reflect use of devices in enabling lecturers make teaching and learning meaningful. According to the results, 52% of the respondents strongly agreed and 35% agreed that Synthesizers, Mp3, DVD/CD and USB players enable lecturers make teaching and learning meaningful. Therefore, 87% of the respondents agreed with the statement.

On the other hand, only 3% of the respondents strongly disagreed and 10% disagreed that Synthesizers, Mp3, DVD/CD and USB players enable lecturers make teaching and learning meaningful. In other words, 13% of the respondents disagreed with the statement.

The results reveal that the use of Synthesizers, Mp3, DVD/CD and USB players enable majority of lecturers make teaching and learning meaningful.

On observing how music was learned using a synthesizer, students were often found learning how to play music that they were taught during lectures. Here is figure 2 illustrating the hands-on learning using a synthesizer.

Figure 2: One of the synthesizers in use during the teaching and learning of music

Study of the secondary data through a look at the syllabi revealed that all other programs, apart from that of the Master's degrees, have units for aural skills and music analysis. A large number of the positive response means the devices and software have a positive effect on music teaching and learning.

Furthermore, the effect of use of Synthesizers, Mp3 and DVD/CD players was revealed in results of raw five of table 4.5. Findings show that Synthesizers, Mp3 and DVD/CD players help in easy teaching, learning and understanding of rhythms, cadences, arpeggios and aural skills generally. According to the results, 61% of the respondents strongly agreed and 15%

disagreed that Synthesizers, Mp3 and DVD/CD players help in easy teaching, learning and understanding of rhythms, cadences, arpeggios and aural skills generally. This means that 76% of the respondents agreed with the statement. In contrary, 5% strongly disagreed and 19% disagreed with the statement. Therefore 24% of the respondents disagreed with the statement.

The results reveal that the use of Synthesizers, Mp3, DVD/CD and USB players enable majority of lecturers make teaching and learning meaningful.

help in easy teaching, learning and understanding of rhythms, cadences, arpeggios and aural skills generally. During interviews with the Head of Department, craftsman and lecturers, they were all of the view that students are ever engaged in the use of these electronic music devices and software during the learning process and free time. According to each one of them, these gadgets are often used in the teaching and practice of aural skills learning generally and especially understanding of rhythms, cadences, arpeggios, chords, intervals and analysis of music. At the same time, during the focus group discussions, views of the Bachelor of Performing Arts degree students were also positive in that the use of these electronic music devices and software keep them often engaged in learning. One of the students had this to say:

> *"The use of a synthesizer which has in-built speakers has eased our learning since we can only connect the device in to power and begin playing, composing our music and even recording. Well sometimes other students prefer to connect the synthesizer to an amplifier for amplification of sound signals to playing with only in-built speakers. According to me, the choice then is for the student. This alone is providing us with options*

for sound that we need. I think this is exposing us to different experiences in the field of music."

Another student also said:

"The use of synthesizers has made me able to play music through hands on nature of engagement. There is no way how teaching us to play music can be done without us also playing as taught. In this way, I think the presence of synthesizers in this department has remarkably been good. How would it feel if I had to go back home with the skills in playing piano keyboard!"

The findings and feelings of students above therefore confirm that the use electronic music devices generally and synthesizers in this case, positively impact on the teaching and learning of music.

In table 4.5 raw six, results show the percentages of respondents on effects of use of Fruity Loop studio, Logic pro X and audacity to students. According to the results, 15% of the respondents strongly agreed and 35% agreed that students used Fruity Loop studio, Logic pro X and audacity to produce music. Therefore, 50% of the respondents agreed with the statement. On the other hand, only 10% of the respondents strongly disagreed and 40% disagreed that students used Fruity Loop studio, Logic pro X and audacity to produce music. Therefore 50% of the respondents disagreed with the statement.

This means that on average some students can and others cannot use the fruity loop software to produce music. The 50% negative responses could be from students without lap tops or smartphones installed with these soft wares. In the focus group discussion with the master's degree and Bachelor of Performing Arts students, some of them stated that they still lack knowledge of use of some of the modern music technological devices and software, which they ought to use in their learning. Interviews with the Head of Department and lecturers agreed that fruity loop, logic pro x and audacity software and other modern devices give

positive effects to learning and there is therefore great need to ensure they are put in use in teaching and learning. They also confirmed that some students lack lap tops and others smartphones where this software could be installed and used in their learning.

In table 4.5 raw seven, results show the percentages of respondents on effects of use of Digital camera, smart phones and Ulead software in enhancing students' recording and production of videos/audio music, as well as storage of literature necessary for learning and teaching. According to the results, 58% of the respondents strongly agreed and 29% agreed that Digital camera, smart phones and Ulead software in enhancing students' recording and production of videos/audio music, as well as storage of literature necessary for learning and teaching. Therefore 87% of respondents agreed with the statement. On the other hand only 9% of the respondents strongly disagreed and 4% disagreed. Therefore only 13% of the respondents disagreed with the statement.

This shows that majority of students use digital camera, smartphones and Ulead software which have positively impacted on the learning of music recording, production and storage.

During the interviews with the Head of Department, lecturers as well as focus group discussions with the Bachelor of Performing Arts and Master's degree students, the same positive views were expressed. They present the view that the use of devices and software have made it easy for them to record, produce and store music. Some of the lecturers were of the view that sometimes the digital video cameras capture movie pictures which are very useful for imitation during lessons. These pictures can only be captured as clips, edited and reorganized using Ulead and used especially for teaching and learning of music. Generally, there is therefore need to use a camera in teaching and learning music in the Department as it simplifies the preparation on the side of the lecturers. It also facilitates skill development as reference is made possible by the presence of still and movie pictures. One of the students used the digital camera to record their performance for practical examination. For example

figure 3 shows the ability of a student to demonstrate skills of music recording and production. She set the camera on a stand and focused it on herself as she sung a Western solo piece. According to her, it was simple to use a digital camera to record herself and keep doing corrections until she perfects the performance. She said that that performance would not be left unrecorded. That was her most pride about the digital camera.

Figure 3: Digital camera mounted on a stand to record a vocal solo piece

In table 4.5 raw eight, results show the percentages of respondents on use of electronic music devices in enabling students' work and preparations during internship or school/college

practice. According to the results, 34% of the respondents strongly agreed and 39% agreed that students' work and preparations during internship or school/college practice was eased. Therefore 73% of respondents agreed with the statement. On the other hand only 12% of the respondents strongly disagreed and 15% disagreed. Therefore only 27% of the respondents disagreed with the statement.

This means whenever students go to field for different types of internship, the use of lap tops, tablets and smartphones installed with different music software enhances their preparation and work. The small number (27%) of the respondents that disagreed could be those without laptops or tablets or smartphones with the necessary software installed. In the interviews with the Head of Department and lecturers they said whenever they went to the field to supervise internship students who use these devices always display a high level of organization in their preparation and work. Similarly, during focus group discussions one students said that

> *"When we have Fruity Loops Studio, finale, logic pro x and Ulead installed on students' lap tops or tablets or smartphones, they help us in the creation of audio instrumental accompaniment and editing of music for use in teaching music during our internship."*

All the above findings therefore confirm that use electronic music devices and software have a positive effect on the teaching and learning of music in the Department of Performing Arts at Kyambogo University.

In table 4.5 raw nine, results show the percentages of respondents on use of Cassette player in easing work of recording and playing cassette tapes for aural skills and analysis. The results indicate that 10% of the respondents strongly agreed and 11% agreed that Cassette player eases work of recording and playing cassette tapes for aural skills and analysis. Therefore, only 21% of respondents agreed with the statement. On the other hand only 29% of the

respondents strongly disagreed and 50% disagreed. Therefore, only 79% of the respondents disagreed with the statement.

This reveals that Cassette player did not ease the work of majority of students in recording and playing cassette tapes for aural skills and analysis.

This implies that the use of cassette players in the teaching and learning of music has little effect in the teaching and learning of music. During interviews with the lecturers, they said the device often gets problems in the course of its use. As such they prefer to use the modern digital players which do not get stuck in its use.

Consequently, findings as presented in table 4.5 and explained above show that the use of electronic music devices and software in the Department of Performing Arts has a positive effect on the teaching and learning of music. The Head of Department and lecturers do agree that the use of electronic music devices, software and internet have enhanced music teaching and learning at the department through down loadable multimedia content. This, according to them, has given them opportunity to use downloaded interactive music, recorded accompaniment, editable lesson plans, formal assessment tools, instrument units and lesson resources. This has also eliminated the bulk of hard cover textbooks and simplified most of the work they used to do manually.

4.6 Challenges that hinder the utilization of electronic music devices and software in the Department of Performing Arts at Kyambogo University

The third objective of the study was to examine the challenges that hinder the utilization of electronic music devices in the Department of Performing Arts at Kyambogo University. Data was collected from the students and lecturers using the questionnaire guide, interview guide focused group discussion and observation guide. The responses were analyzed and presented in table 4.6 as was done in the first and second objectives. Therefore in its analysis,

the number of respondents and their percentages are represented in the columns of ‘strongly agree’, ‘agree’, ‘strongly disagree’ and ‘disagree’ analyzed from the Likert scale. In this section, percentages shown in columns for ‘strongly agree’ and ‘agree’ were presented in the category of ‘agree’ as sum. Similarly the percentages of columns for ‘disagree’ and ‘strongly disagree’ were presented in the category of ‘disagree’ as sum

Table 4. 6: Challenges that hinder the utilization of music electronic devices in the Department of Performing Arts at Kyambogo University

SN	ITEMS Challenges that hinder use of electronic music devices and software in teaching and learning	SA		A		SD		D		TOT	
		NO	%	NO	%	NO	%	NO	%	NO	%
1	Music department had adequate modern electronic music devices for music learning and performance	17	22	12	15	24	30	25	33	78	100%
2	Lecturers had adequate Knowledge on the application of electronic music devices and software.	35	45	17	22	12	15	14	18	78	100%
3	The department provides internet connectivity for music teaching and learning and it is always available.	5	6	7	9	41	53	25	32	78	100%
4	The department used updated and modern music software	15	20	8	10	25	32	30	38	78	100%
5	The department had adequate computers with music software used for teaching and learning sessions	15	19	20	26	22	28	21	27	78	100%
6	The department had conducive Storage facilities for the equipment and instruments	10	13	24	30	32	41	12	16	78	100%
7	Electronic music devices were very expensive for students to afford	53	67	10	13	1	2	14	18	78	100%
8	Music technology was allocated adequate time on the departmental timetable	22	28	15	19	24	30	17	23	78	100%
9	Power was always insufficient and unreliable for teaching and learning	26	32	22	28	15	20	15	20	78	100%
10	Department had adequate Instructional rooms for music teaching and learning	19	24	20	25	25	32	14	19	78	100%
11	Lecturers and students effectively used the cassette players as an electronic music device in learning and teaching.	10	13	7	9	22	28	39	50	78	100%

Source: Primary data

Of the respondents analyzed in table 4.6 raw one, 30% strongly disagreed and 33% disagreed that music department has adequate modern electronic music devices for music learning and performance. Therefore 63% of the respondents disagreed with the statement. On the other hand, 22% strongly agreed and 15% agreed with the statement. Therefore, only 37% of the respondents agreed that music department has adequate modern electronic music devices for music learning and performance.

Since majority of respondents disagreed with the statement, it implies that modern electronic music devices were inadequate. Interviews with the Head of Department, craftsman and lecturers as well as focus group discussions with the master's and Bachelor of Performing Arts degree students were also of the same view that these devices are not adequate for music teaching and learning in the department. In this regard one of the students said:

> *The department has a number of courses with lessons that are conducted concurrently. Certainly this has led to a challenge of in adequate projectors. At a certain point of time we often require to use a projector but it is common that we find it already being used by another class. Because it is not possible to stop the on-going lesson where the projector is being used, we are forced to wait and re-do the work when the projector is free.*

Of the respondents analyzed in table 4.6 raw two, 15% strongly disagreed that lecturers have adequate Knowledge on the application of electronic music devices and software and 18% disagreed. Therefore only 33% of the respondents disagreed with the statement. However, 45% of the respondents strongly agreed that lecturers have adequate Knowledge on the application of electronic music devices and software and 22% agreed. Therefore 67% of the respondents agreed with the statement

Since majority of respondents agreed that lecturers have adequate Knowledge on the application of electronic music devices and software, this was not a challenge in enhancing teaching/learning music.

During interview with the Head of Department, craftsman and lecturers, all of them affirmed having adequate Knowledge on the application of electronic music devices and software towards music teaching and learning. Similarly, during the focus group discussions with the students of BPA and Master's degree programs, they asserted that the way lecturers handle the use of these devices whenever they use them exhibit their mastery of knowledge and skills in them. Conversely one lecturer confessed of lacking knowledge in the use of a projector by saying that:

> *A projector is a very good device for use in teaching/learning music in this department despite the scarcity. But the most personal challenge I have is actually not having the knowledge and skills on how to operate it by myself. In that case each time I have to look for someone who can do it for me. Do you realize that I am challenged sometimes when technical persons are not available?*

Another lecturer also confessed that:

> *I appreciate the fact that Logic Pro –X helps us to prepare students' work professionally. However, I personally face problems in using some of the functions due to little knowledge and skills in computer work. Sometimes I get stack when I want to edit some work because I have not explored the software exhaustively. Apparently I just make use the functions such as instrumentation to create audio accompaniment (instrumentation) and record human voices.*

Furthermore, the third lecturer also said:

> *To be sincere, I have little knowledge and skills in making use of all the functions of Finale notepad, Premier Pro CC and Adobe audition software. In most cases some of us have to call help from the technical person to guide in some areas where we get stack. For instance sometimes this person may not be readily available and we are made to handwrite music. This makes our work sometimes unstandardized*

The views of these lecturers bring to light another challenge of lack of know-how in the use of electronic music devices and software. This commonly happens due to lack of exposure to these devices and software.

Of the respondents analyzed in table 4.6 raw three, 53% strongly disagreed the department provides internet connectivity for music teaching and learning and it is always available and 32% disagreed. Therefore 85% of the respondents disagreed with the statement. However, 6% of the respondents strongly agreed that lecturers have adequate Knowledge on the application of electronic music devices and software and 9% agreed. Therefore, only 15% of the respondents agreed with the statement.

This implies that students do not have access to internet services while at the Department of Performing Arts. In the focus group discussion with masters' degree program and BPA students, they reported that they always bought their personal data to use in their devices like iPhones, laptops and smartphones. On female student said that

> "*We have always complained to the authorities about lack of internet, but nothing has been done"*.

The same feelings were expressed by the Head of Department, craftsman and lecturers when they were asked about internet connectivity during interview with them.

Of the respondents analyzed in table 4.6 raw four, 32% strongly disagreed that the department uses updated and modern music software and 38% disagreed. Therefore 70% of the respondents disagreed with the statement. However, 20% of the respondents strongly agreed that the department uses updated and modern music software and 10% agreed. Therefore, only 30% of the respondents agreed with the statement.

This implies that another challenge the department had was that of lack of updated and modern music software. All software always need to be updated, without which either some of them remain in use without new elements or the operational licenses expire and are put out of use. During interviews with the Head of Department, craftsman and lecturers they said all the software used in the Department is obsolete without updating them.

In table 4.6 raw five, results indicate that 28% of the respondents strongly disagreed that the department had adequate computers with music software used for teaching and learning sessions and 27% disagreed. Therefore 55% of the respondents disagreed with the statement. Conversely, 19% of the respondents strongly agreed that the department had adequate computers with music software used for teaching and learning sessions and 26% agreed. Therefore, only 45% of the respondents agreed with the statement.

This means the department faces the challenge of lack of enough computers with music software. Those who agreed with the statement could be the ones with laptops or iPads and assumed the computers are enough. Observation of the devices available showed that the department has only two computers with only two software: finale and audacity, used by over 80 students in the department. During interviews with the craftsman and lecturers, they said that the department has to follow the given timetable for the use of the University computer laboratory, which does not therefore give enough time for hands-on by the students. One lecturer lamented that:

> *Students actually face a challenge of lack of enough practice. This is due to the few computers we have at the department. Students have to share a few computers and make sure they have practiced all the content given. If for example they are to practice editing of music elements such as pitch and time, form, mixing, and automating the mix, it requires that each student takes approximately one hour. Now because of few computers, each student takes about 15 minutes, imagine!*

When interviewed, the Head of Department also confirmed that the department has a few desktop computers which are used by many students for different course programs and some of these computers have been infected with virus. She further said,

> "*We have old versions of electronic music equipment and software and new ones are very expensive to buy. We always make requisitions for electronic music devices and software and do not get any feedback"*

In table 4.6 raw six, results indicate that 41% of the respondents strongly disagreed that the department had conducive storage facilities for the equipment and instruments and 16% disagreed. Therefore 57% of the respondents disagreed with the statement. On the other hand, 13% of the respondents strongly agreed that the department has conducive storage facilities for the equipment and instruments and 30% agreed. Therefore, only 43% of the respondents agreed with the statement.

This implies the department does not have conducive storage facilities for the electronic music devices and other musical instruments. Observation of the facilities showed only one room which is crowded with all the electronic equipment.

Interview with the Head of Department, craftsman and lecturers as well as focus group discussions with students of BPA and master's degree programs also confirmed that the

facilities are inadequate. The Head of Department further reported that the department is facing the challenge of proper storage facilities and insecurity. That some devices have been lost through theft.

In table 4.6 raw seven, results indicate that 2% of the respondents strongly disagreed that the electronic music devices were very expensive for students to afford and 18% disagreed. Therefore only 20% of the respondents disagreed with the statement. However, 67% of the respondents strongly agreed that the electronic music devices were very expensive for students to afford and 13% agreed. Therefore 80% of the respondents agreed with the statement.

This means most of the students depend on the electronic music devices and software available at the department, since they cannot afford to buy for themselves. Interviews with the Head of Department, craftsman and lecturers as well as focus group discussions also confirmed that these gadgets and software are not affordable to most of the students. It is therefore the duty of the department to get them.

On whether music technology is allocated adequate time on the departmental timetable, results in table 4.6 raw eight were used. According to the results 30% of the respondents strongly disagreed that music technology was allocated adequate time on the departmental timetable and 23% disagreed. Therefore, only 53% of the respondents disagreed with the statement. However, 28% of the respondents strongly agreed that that music technology was allocated adequate time on the departmental timetable and 19% agreed. Therefore, only 47% of the respondents agreed with the statement.

This means that time is not enough for use of electronic music devices and software during the teaching and learning of music. During interview with the Head of Department and lecturers, they all said that the biggest challenge is that students have many course units to

study and adding more time will mean reducing that of other courses. When interviewed, one of the lecturers said that:

> *'When using all the three software: Finale, Muscore & Sibelius in music writing in staff notation and editing, we are challenged by the little time to explore all of them. Each software has many functions such as editing note values, stem facing, note spacing, staves, clefs, music signs and abbreviations, scores, and many other elements, which students ought to learn but time is not available to do all that. The same applies when teaching them hands-on skills using computer or their own lap tops and tablets.*

These views show that there is urgent need to allocate more time for music technology in the time table.

Of the respondents analyzed in table 4.6 raw nine, 20% strongly disagreed that power was always insufficient and unreliable for teaching and learning and 20% disagreed. Therefore only 40% of the respondents disagreed with the statement. However, 32% of the respondents strongly agreed that power is always insufficient and unreliable for teaching and learning and 28% agreed. Therefore, only 60% of the respondents agreed with the statement.

This means that power is sometimes not on at the Department of Performing Arts. During focus group discussions with both Master's degree and BPA students, they reported facing the challenge of unreliable power supply. One of them said:

"Sometimes when we are using a projector, power goes off. Even evening lessons are sometimes missed because of power blackout." In the interviews with the Head of Department, craftsman and lecturers, they all lamented on the challenge of insufficient and

unreliable power supply that cannot enable them use the electronic music equipment for teaching and learning. One lecturer said:

> *Very often as we teach our lessons, the challenges of unreliable electricity power is encountered. This is because the department relies mostly on hydroelectric power supply. Sincerely the unreliable hydroelectric power supply in the university especially in the department jeopardies our work. There are situations when content is displayed and explanations or analysis is on-going and the power all of a sudden switch off. As we all know, that time is not reversed. Assuming you were the one teaching or even learning how would you feel? In my view, unreliable hydroelectric power supply in the university poses a challenge to the teaching and learning of music and in all disciplines in the University.*

Of the respondents analyzed in table 4.6 raw ten, 32% strongly disagreed that department has adequate instructional rooms for music teaching and learning and 19% disagreed. Therefore 51% of the respondents disagreed with the statement. However, 24% of the respondents strongly agreed that department has adequate instructional rooms for music teaching and learning and 25% agreed. Therefore, only 49% of the respondents agreed with the statement. This means that classrooms for music lessons are a challenge at the Department of Performing Arts. One of the master's degree program students reported, during the focus group discussion that they are ever disturbed when it comes to some course units, which force them to collide with other classes because of learning space. Another one said:

> *"One time the lecturer, Dr. Kigozi had to teach us from his car because of lack of room and used his smartphone as a learning aid".*

A Bachelor of Performing Arts student also said that:

Some of the rooms we use for our lectures are actually small in size. The problem of distance from the displays verses eyesight is very big especially for those with issues of long or short sightedness. Some of the rooms also do not have enough flat and free space for displaying the work. This makes lecturers to squeeze the work in smaller areas and not at the centre for all to view comfortably.

In the interviews with the Head of Department, lectures and craftsman, they revealed that the Department has inadequate instructional rooms for music teaching and learning. Most of them had this to say:

"Some of the buildings we use were constructed before independence and they are the ones were still using for instruction. We lack a modern music theater which would improve on music teaching and learning. Above all music production is below the standard of even a bed room studio as only basic recording devices of the lowest category are used. But we trying to engage our bosses to see that they provide us with modern music devices"

The above views confirm the challenge of lack of adequate room for music instruction, which cannot allow use of electronic music devices and software that are available in the department.

Of the respondents analyzed in table 4.6 raw eleven, 28% strongly disagreed that lecturers and students effectively use the cassette players as an electronic music device in learning and teaching and 50% disagreed. Therefore 78% of the respondents disagreed with the statement. However, 13% of the respondents strongly agreed that lecturers and students effectively use the cassette players as an electronic music device in learning and teaching and 9% agreed. Therefore only 22% of the respondents agreed with the statement. In the interviews with lecturers, they gave their views on challenges faced in using the radio cassettes during

teaching and learning of music in the Department of Performing Arts Kyambogo University. One of them said:

> *As you could have seen that we use the old fashioned radios in the department. The knowledge of functions of those radios especially recording and playing taped music is not a problem to me. The major problem that I face in using the radio cassette comes from the technicalities in managing inefficiency. When it gets stack, it requires a radio repairer. This means following the university procedures of maintenance and repair of items which take a very long time. All in all I feel more comfortable using the radio cassettes than the digitalized ones.*

Also during the focus group discussions with the students, one of them said:

> *The Radio Cassettes found in our department are the old type that uses cassette tapes. They are just the common radio cassettes with provision of tapes for music recording and playing. Our lecturer records rhythm patterns, tasks in melody writing, and activities in identifying chords, cadences and plays taped music using the old radio cassette. I thought moving away from the old technology would serve well compared with this old one. Sometimes the system gets stack due to inefficiency and old part. This makes us to fail to complete some lessons.*

The above findings show that the department is still using the old fashioned radio cassettes which use cassette tapes. Although lecturers concerned have knowledge and skills in operating those radios, their inefficiency poses a challenge to them. Some lecturers are not comfortable in using digitalized radio system because they feel what is at hand can serve a similar purpose.

The Head of Department on her part said that:

Unfortunately, the cassette players are becoming obsolete as there are no spare parts for their neither repair nor cassette tapes for use. If they break down then that is the end of their use.

Findings presented above therefore confirm that the Department of Performing Arts faces a number of challenges in the use of electronic music devices and software teaching and learning of music. The challenges include inadequate electronic music devices, lack of access to internet connectivity, lack of updated music software, lack of enough computers and lack of conducive storage facilities. Others include electronic music devices and software being very expensive for students to afford, lack of enough time for use of electronic music devices and software in teaching and learning, insufficient and unreliable power supply and inadequate instructional rooms for use of electronic music devices and software for teaching and learning of music.

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents discussion of the findings of the study followed by the drawing of conclusions and recommendations. The discussion has been arranged and carried out following the three research objectives that the study sought to find out.

5.1 Discussion of study findings

The discussion in this section is subdivided into the following subsections: Existing electronic music devices and software and their use at the Department of Performing Arts; the effect of the use of electronic music devices and software on the teaching and learning of music; and challenges that hamper effective utilization of electronic music devices and software by lecturers and students at Performing Arts department

5.1.1 Available electronic music devices and software and their use in the department of Performing Arts

The objective of the study sought to establish the available electronic music devices and software and their use in the Department of Performing Arts of Kyambogo University. On engaging different respondents, the study established that the existing music electronic devices at the department include synthesizers or electronic piano keyboards, projector, laptops, electric guitars, digital video camera, smartphones and iPads. The software available includes the digital audio work station, finale pro, Ulead, audacity and fruity loops. Among the electronic music devices; laptops, electric guitars, digital video camera, smartphones and iPads were least used in the teaching and learning of music. For the software; only the digital audio work station software was the least used in the teaching and learning of music in the Department of Performing Arts.

The findings reveal that electronic music devices have been used in the Department of Performing Arts at Kyambogo University in various ways. Their use included providing the students with the basics of computer operation skills, training the students to manipulate the different music software. Others included teaching music production, film editing and final production, teaching aural skills, choral and solo singing, train students the skills of playing musical instruments, garage band, and guitar. The Department also used a projector with screen during the music teaching and learning sessions, especially for displaying information, video recordings and also for displays to illustrate music concepts.

It was further discovered that the department had desktop computers installed with music software, which were used during music teaching and learning by both the lecturers and students. These computers were used especially in music production, video and audio music display, composition amongst others. This reveals a kind of expansion of EMDS in the department, which presents a remarkably good development towards music teaching and learning. Hugill (2012) supports this kind of expansion by stating that expansion of technology within society is a defining feature of the twenty-first century. In emphasizing expansion of technology, Hugill (2012) observes that it revolutionizes how people work, learn, communicate, and spend their leisure time.

The researcher agrees with Hugill (2012) based on the need to teach/learn music using EMDS. Indeed, in teaching/learning music as a case, and where technology has become a manifestation of the twenty-first century, there is need for its use of EMDS. This informs lecturers and students that EMDS should be among the requirements. EMDS facilitate music creation, production, expression, dissemination, promotion, and consumption.

Furthermore, during the interviews, it was disclosed that synthesizers as the electronic music devices were used to accompany songs in western choral and solo performances.

Synthesizers were also used to guide in creating harmonic compositions and progressions, and teaching of aural skills. In the researcher's view, it should be appreciable that using EMDS introduces lecturers and students to technology of the twenty-first century. Teaching is made simpler by the use of modern music devices since it is no exception among other courses.

Wierzbicki (2008) supports the researcher's view by asserting that music education being no exception, needs significant development of trends of modern technological classrooms. From the study finding, that some softwares were being used in teaching/learning music, modern technological classrooms were operational. The internet and other software were being used in classroom settings especially between lecturers and students to teach and learn music. They sent music contents, and coursework assignments using e-mails, whatsapp, blue tooth, zender, and phone messages. This was mainly applicable in teaching and learning of music course units whose lecturers made efforts to organize and use EMDS.

Although it should be the wish of every lecturer to use EMDS in teaching music, the knowledge gap and access to EMDS could have hindered in one way or the other. Thomas Patteson (n.d.) urges for deliberate attention to be put on individuals' understanding of how to use EMDS in teaching and learning music. Thomas Patteson (n.d.) suggests that the attention given to understanding, where modern technological devices are being used in music classroom settings; need to be applied to the same extent in one-to-one teaching environments.

Clive (2017) appreciates the one-on-one perceived skills in using technology to learn music. Information on technology use in day-to-day life, including self-perceived skill in using a range of standard technologies like smartphones, laptops, desktop computers, tablets, smart watches, televisions, audio and video recording equipment, audio playback equipment,

and motion capture technologies, as well as the degree to which they seek out, encourages one to enjoy using, and enjoy learning to use new technologies.

The use of these EMDS marked a modern trend of music technological developments in the teaching and learning of music at the department of performing arts. The marked modern trend of music technological development in the teaching and learning of music seemed to have accrued from advocacy. This is illuminated in the finding that the Department had advocated for adoption and adaption of technology to match the fast growing world (interview with Katasi, January 2019). The trend of technological advancement seems to have come to play a life term role in enhancing the teaching and learning of music. This trend is in line with the views of Regelski (2007) who says that a lifetime of musical amateurism should increasingly become the goal of general music education. In the same view Gouzouasis (2011) highlights the need to identify ethos for our profession and adapt to new ways of modernity. Emphasizing on ethos, Gouzouasis (2011) points out that identifying ethos for the teaching profession and adapting ways as such encourages and facilitates gaining of new music experiences. Gouzouasis (2011) presents his view directing its relevance to the students who study music and those who we'd like to engage in music creation.

The views of lecturers in the Department indicate that they were in agreement with Gouzouasis (2011). Lecturers expressed the need for availability and use of electronic music devices and software. However, they regret for the lack of enough EMDS such as Mp3 players, DVD/ CD players, and USB players. Because of limited EMDS, lecturers found it hard to share devices especially when more than one course unit required their use at the same time. Perhaps a number of lessons could have been missed due to limited EMDS. Students were not likely using the EMDS at their free time due to scarcity.

The study found that some lecturers considered improvisation as a solution to scarcity of EMDS. They used alternate means by carrying their own devices from home to use in teaching and learning of music analysis, or aural skills or any other course unit that requires the use of such devices (Ssenyonjo-interview). The lecturer said that she often came along with her own radio cassette, cassette tapes, and flash discs to enable her to teach aural and practical skills. She confirmed that that worked well for her instead of waiting and missing lessons. However, there was great need for the department to play their role in providing EMDS so as to avoid using personal property to do work of the institution.

Improvisation by Ssenyonjo (lecturer) explains what Bakan, (2011) refers to as welcoming a critical attitude towards existing musical practices that help students develop through their own works. Due to this level of improvisation, students were brought on board. Most of them brought their iPads, personal computers, tablets, laptops, Ulead, finale and audacity, and used them to learn music. The use of these EMDS in the department, allowed both lecturers and students to take advantage of interactive digital curriculum resources, hence, teaching and learning of music was enhanced.

This resulted from musical amateurism in the students; they were encouraged to develop the music skills they learnt through the use of mobilized electronic music devices and software in addition to those found at the department.

Whether improvised or not, the use of EMDS is noted by Regelski, (2007) being the means by which change occurs in the life time of juvenile musicians. Regelski, (2007) points out that the use of electronic music devices and software can change a lifetime of musical amateurism and should therefore increasingly become the goal of general music education. Therefore, if the teaching profession adapts ethos to include music technology, new ways of

encouraging and facilitating music experiences that are relevant to those we teach, and those who we would like to engage in music creation will be enhanced.

The study further found out that it is the youthful students who are very much involved in use of electronic music devices and software than the lecturers. This finding is in line with the views of Palfrey and Gasser (2013) who describe those born after 1980 as “Digital natives” who are fluent in the use of networked digital tools. However, lecturers present views that explain that they seem to be copying with digital natives. They are proponents of the idea of using EMDS as they urge for their addition and maintenance for teaching and learning of music. The lecturers are seen moving at a rapid pace to use the EMDS in ways that are meaningful to both music curriculum and youth culture.

Availability and use of electronic music devices and software encourages active teaching and learning of music. Music is never silent and as such its effective teaching and learning requires the production of sound or music making by means of EMDS. This is because Laird’s Sensory Theory (LSD) states that learning occurs when the senses are stimulated. Using EMDS provides students visual prompts for enhancement of their learning. It is prudent for lecturers depend on this knowledge as they prepare themselves thoroughly well in order to rightly teach.

Butler, (1998), points out that, learners are not passive recipients of knowledge but are more active in the process in different ways. They learn and gain competences at different levels. Peter Principle’s Theory (PPT) elucidates four levels of competences namely: unconscious incompetence, conscious incompetence, conscious competence and unconscious competence. This means that students can build on previous experience in order to make sense out of what they are learning. This is the conscious competence. Students can be more active in the creation of meaningful music as they use EMDS, to learn without intentions, what they have

never come across. This is the unconscious competence. Generally, the availability and use of EMDS leads to a more student centred approach in learning music. The student guides his learning as he or she accesses EMDS. For example, if recording technological devices are availed, students' hands on opportunities are high. They have opportunity to understand music concepts and to demonstrate different recording techniques using devices during in music teaching.

The study also found out that though the university provided E- library for students to use in citing reading texts, very few respondents accessed and used it. The students who accessed E-library used it for referencing as they wrote music academic assignments, course works and research works. The accessibility to E- library for students provides a virtual and audio tool that facilitates music creation. This is in connection with what Katherine (2010) states, that the line between music listener one who readily becomes an arranger is no longer visible. This is because the tools of music creation have become so accessible in the net that the listener makes analysis like the creator of music. Music teaching and learning is enhanced at all levels despite pitfalls encountered.

Conclusively, the available electronic music devices and software in the Department of Performing Arts are inadequate, some of them are not efficient, others are old, and others are outdated. However, their use to a fair extent has enhanced the teaching and learning of music in the Department of Performing Arts.

5.1.2 Effect of use of EMDS in teaching/learning music at the department of Performing Arts at Kyambogo University

The objective sought to establish and explain the outcome of use of electronic music devices and software on the teaching and learning of music in the Department of Performing Arts at Kyambogo University. Findings as presented in chapter four show that the use of EMDS

has had a positive effect on the teaching and learning of music in the Department of Performing Arts. The EMDS used were synthesizers, electric guitars, Mp3, DVD/CD and USB players as well as computers and laptops installed with music software. The study established that lecturers used the devices in preparation and actual teaching and learning of music. Views of the lecturers during interviews and that of the students in the focus group discussions revealed that the EMDS improved on students' music skills greatly. It also eased the preparation of student who went out to the field for internship. Perhaps this has results from fundamental change in the teaching and learning of music using technology (EMDS). This is in line with Kulezic-Wilson (2009) who states that implications for profession digital technologies have fundamentally changed the ways that music may be taught and learned. In addition Kulezic-Wilson (2009) comments that digital technologies have made an indelible mark on global culture.

Technology has indeed made an indelible mark on music students in the Department of Performing Arts. This mark is seen on students' ability to write, read, compose, record and produce music much faster using electronic music devices and software. According to the findings, the Department exposed music students to hands-on skills activities using a variety of EMDS. This indeed allowed students to use different styles of learning thereby, giving a positive effect on music teaching and learning. This kind of situation is in line with the view of Wharton (2003), that learning styles and aids have positive effects in the classroom. Teachers can be learners, and learners being teachers, making everyone to learn under the right circumstances (Wharton, 2003).

Findings of the study also show students' enhanced abilities in the use of various software like finale pro, Fruity Loop Studio, Audacity, Logic Pro, Adobe Premier Pro, Ulead Studio. They used internet and Wi-Fi spots at the university to download music, using laptops, iPads

or tablets, their smartphones and the University computer libraries. This enabled communication through YouTube, Whatsapp, Internet, Wikipedia, Twitter, Email, Google dock. Thus audio and video recording and production capabilities were enormously being developed among students and lecturers. This is in line with the views of Fritsch and Strötgen (2012) who state that the explosion of online music resources has enormously shaped the sphere of music learning, both in the classroom and beyond. Fritsch and Strötgen (2012) explain that millions of instructional music videos can be found via online portals such as YouTube. In Fritsch and Strötgen (2012), instructional music videos can be used not only by individuals in informal learning practices but can also be incorporated into educational frameworks.

In a similar vein, Hofer (2017) acknowledges that on-line resources have greatly influenced acquisition of music content, note making, and research work. Hofer (2017) identifies the use of mendeley software and conferencing on different social platforms being very useful for lecturers and students. A revelation by the lecturers confirmed that the use of these devices and software had made music content delivery become easier and more relevant. It should be agreeable that the use of EMDS led to the development of skills of both lecturers and students. Hofer (2017) asserts that the use of audio and video recordings, both in creating and viewing them, have demonstrated their potential as tools to improve self-skills.

Furthermore, Kulezic-Wilson (2008) examined the use of audio recordings among instrumental learners and found that students reported greater use of them and progressed in goal setting and developing interpretive style. On the same note, Lehrich (2014) discourses that the ways that we access music, use music, play with music, perform music, listen to music, and compose music have changed radically and indeed empowered music student teachers with necessary skills in the use of EMDS. Therefore using EMDS is the only

way of tooling and retooling other thousands of students and lecturers of music in a short while.

From the interviews with lecturers and Head of Department, they revealed their feeling that electronic music devices and software are viable and beneficial to elementary music classrooms. These, they said, enhance students' ability to create and analyze music and help build students skills in an effective way. In this regard Mills and Wharton (2003) acknowledge the role of technology in the music classroom as it has benefited learners from two decades of close attention. This now calls for attention to the curriculum. When questions were put to respondents related to curriculum with observable improvements in the classroom as a result of the need to include use of electronic music devices and software, a positive response was obtained. The respondents agreed that improvements shall be seen in student participation, student behavior and classroom management and retention of learnt music concepts, knowledge and skills shall be achieved. Lecturers also expressed the view that the adoption of digital curricula would result in positive changes in their lesson planning, assessments, and time management. They added that their understanding and instruction of general music content would be more useful.

In this case Wierzbicki (2008) says we are in a quickly changing world of technology where the use of distance learning via video conferenced lessons is growing with research. Wierzbicki (2008) explains that skills such as sight-reading can be taught effectively over the medium. Thus the students and teachers are able to operate the equipment and make the most of the technical and physical limitations (Abramo, 2014).

Notwithstanding the status of how the EMDS have been used in the department, Barry and Bar-Elli (2017) point out that there is existing evidence of failure to learn due to use of out-of-date devices. Barry and Bar-Elli (2017) explain that the majority of instrumental music

teachers did not use or encourage their students to use software-based music learning tools because they were old.

In conclusion, effect of the use of EMDS in teaching/learning music at the department of Performing Arts at Kyambogo University has been positive. This is evidenced in students' ability to write, read, compose, record and produce music much faster using electronic music devices and software. This resulted from the students' exposure to hands-on skills activities in using a variety of EMDS. Students use different styles of learning thereby, giving a positive effect on music teaching and learning. However, there was need for adoption and adaption of music technology by key stakeholders at policy and curriculum development levels. It remained imperative that lecturers and students needed to be ready to embrace the use of EMDS across course units for better learning and teaching of music in 21st century.

5.1.3 Challenges that hamper utilization of electronic music devices and software in the teaching and learning of music in the Department of Performing Arts at Kyambogo University

The third objective of the study sought to establish and explain the challenges that hampered effective utilization of electronic music devices in the teaching and learning of music in the Department of Performing Arts at Kyambogo University. The study found out that the Department of Performing Arts faced a number of challenges in the use of electronic music devices and software in the teaching and learning of music.

Results of the study reveal that internet connectivity in the department was irregular. A majority of the respondents confirmed this in their responses and reported that the internet signals in the department were either not available or very weak. They also affirmed that most modern gadgets or devices in the department use internet especially for updating music software and the antivirus. The findings that the intermittent internet connectivity was a very

big challenge because the teaching and learning was not effectively conducted using EMDS at such periods. In their report, they said that the music software needed a stronger network than Wi-Fi. They also reported that most of the students took more time charting on social platforms than learning music using EMDS. This was an issue of lack of seriousness of students to concentrate in learning music using EMDS.

Sarti, Udo, Serra, Sandler, and Godsill (2010) observe that while students have ever-greater access to information, there is a risk of them being overwhelmed by choice and distraction and lacking the framework that teacher- led training and tailored support can provide. Indeed, according to interviews with the Head of Department and lecturers, they asserted that some students in the department take most of their time on iPads or laptops with internet downloading videos and audio even during class learning time. This really affected their learning. This kind of position of students is described by Wharton (2003), as displaced access to proper use of technology.

The study further found out that there was lack of enough electronic music devices. This was a revelation form the interviews with the Head of Department and lecturers, reporting that the department had only two computers shared by a total of 80 students. Further still there was only one projector, two synthesizers, one Mp3, DVD/CD and USB player. All these were insufficient and therefore jeopardized the effective teaching and learning of music in the department. In this regard Wade (2015) asserts that a big challenge facing music education often emerge when music technology is not adequate in the classroom. Wade (2015) further identifies challenges being barriers including lack of enough devices, technical competence, and institutional support.

The department had inadequate instructional rooms for the teaching and learning of music in the Department of Performing Arts at Kyambogo University. The study found out that lack

room often made both the lecturers and students move up and down in search of space, thus spending almost half of the allotted time for that day. This concurs with the views of (Chagas, 2014) that music learners often face the problem of deficient and insufficient physical equipment and space. The physical equipment in this case are the electronic music rooms with devices.

Lack of enough electronic music devices, as the study found out, makes what Wade (2015) refers to such as learning becoming more theoretical because it is aided by old learning strategies which do not employ the use of EMDS. This confirms what the study found out, through focus group discussion with students, some lecturers in the department were too theoretical. They often gave students unedited downloaded PDF handouts for learning even when modern music teaching aids were available. This kind of music teaching certainly made learning at the department very boring and a challenge to skill and talent development. The study also found out that although some lecturers were well versed with use and functionality of electronic music devices and software in their lessons, there was still a wide knowledge gap on the technological application of ICT gadgets and manipulation of software. This also remained a challenge and negatively impacts on music knowledge and skills acquisition.

According to findings of the study, the Department lacks electric power supply. The findings that however much alternate power supply of a generator was given by the university, it was still not strong enough to supply adequate power to reach all the rooms where teaching and learning of music was taking place. During interview sessions with the Head of Department and lecturers they stated that the unreliable power supply cannot enable them use the electronic music equipment and software for teaching and learning.

Generally, the teaching and learning of music in the department of performing arts was hampered by numerous challenges. There were inadequate electronic music devices, lack of

access to internet connectivity, lack of updated music software, inadequate computers, and lack of conducive storage facilities. Others include electronic music devices and software being very expensive for students to afford, little time for use of electronic music devices and software in teaching and learning, insufficient and unreliable power supply and inadequate instructional rooms for use of electronic music devices and software for teaching and learning of music.

5.2 Conclusion

In examining the use of EMDS in the teaching and learning of music in the DPAKYU, the study concluded in three key directions based on the study objectives.

The first objective was aimed to explain how the available EMDS were used in the teaching and learning of music in the DPAKYU. The study concluded that the available EMDS were used in various ways. They were used in such a way that they provided the students with the basics of computer operation skills and enabled training the students to manipulate the different music software. Music production, film editing and final production, aural skills, choral and solo singing, playing musical instruments, garage band, and guitar were taught using EMDS. The Department also used a projector with screen during the music teaching and learning sessions, especially for displaying information, video recordings and also for displays to illustrate music concepts. Because of the ways in which EMDS are use in the DPAKYU, the teaching and learning of music in the Department of Performing Arts was therefore enhanced.

The second objective of the study sought to explain the effect of the use of EMDS in the teaching and learning of music at the DPAKYU. The study established that the use of electronic music devices and software in the Department of Performing Arts had positive effects on the teaching and learning of music. The students' ability to write, read, compose,

record and produce music much faster using electronic music devices and software evidenced this. Although there were inadequacies of EMDS, students had exposure to hands-on skills activities in using some of the available EMDS. They were introduced to the use of different styles of learning, thereby, giving opportunity for students of varied abilities to learn music. Access to up-to-date music text books was enhanced by the use of EMDS. However, there was need for adoption and adaption of music technology by key stakeholders at policy and curriculum development levels. It remained imperative that lecturers and students further needed to embrace the use of EMDS across course units for better learning and teaching of music in 21st century.

Objective three was aimed to describe challenges that hampered utilization of EMDS in the teaching/learning of music in the DPAKYU. The study concluded that the teaching and learning of music in the department of performing arts was hampered by numerous challenges. There were inadequate electronic music devices, less access to internet connectivity, use of music software that were not updated, inadequate computers, and use of unconducive storage facilities. Other challenges included electronic music devices and software being very expensive for students to afford, little time for use of electronic music devices and software in teaching and learning, insufficient and unreliable power supply and inadequate instructional rooms for use of electronic music devices and software for teaching and learning of music.

The challenges faced at the DPAKYU have hampered the teaching and learning of music. Both students and lecturers are affected during the process of teaching and learning of music.

5.4 Recommendations

The study recommends that that the Department of Performing Arts in Kyambogo University should conduct refresher courses for perfecting lecturers' skills of using the different modern

EMDS for teaching and learning of music. This will equip and keep all of them abreast with knowledge and skills in a fast changing world in the use of modern music technology and software to make them competent enough to meet the demands of teaching in the 21st Century. The Department of Performing Arts should review all the programs with view to inclusion of units for the use of electronic music devices and software in them. This is to enable all music students acquire knowledge and skills of learning and use of modern music technologies, which the study found lacking in some programs.

The study also recommends for timely repair of electronic music devices, when damaged or out of use. This will allow all lessons to be taught using the electronic music devices and software as planned by the lecturers. The administration of the department should therefore ensure that this is done as soon as possible.

Furthermore, the study recommends for the acquisition of modern and more of the electronic music devices to replace the old or obsolete ones. For example, the manual radio cassette player used in the department will soon go out of use as cassette tapes have been replaced with the use of CDs, flash disks and digital USB players. This will improve on the quality of the available electronic music devices making them to function effectively.

The study also recommends that the Management of Kyambogo University should ensure that the entire campus has stable and efficient source of power supply and internet connectivity. Without these use of the electronic music devices and software in the Department of Performing Arts will remain negatively affected. It will also affect students' efforts to learn and practice the use of modern devices and software.

Lecturers in the Department of Performing Arts should also be keen in browsing or surfing the internet to get knowledgeable about modern music technologies and software and their use. This will enable them use a variety of software in the teaching and learning of music and

eventually impart appropriate skills and knowledge to the learners, who in turn practice it on their own.

5.4.1 Suggestion for Further Research

Further research should be conducted to:

Describe how music software should be used in e-learning in regard to the practical aspects of the subject specifically learning and practice of indigenous music singing and instrument playing. This is because researches have been carried out in regard to Western music leaving a gap as far as African traditional music is concerned.

Explain the credibility and relationship between the National Teachers' College music students' learning and work skills before and after being introduced to the use of the electronic music devices and software.

Design programs for use of the electronic music devices and software to enhance the musicality and skills of talented out-of-school individuals to turn them into job creators in line with the "skilling Uganda program.

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APPENDICES

APPENDIX I: QUESTIONNAIRE FOR STUDENTS

Dear Respondent,

I am undertaking a study on use of electronic music devices and software in the teaching and learning of music in the Department of Performing Arts at Kyambogo University. This questionnaire is aimed at getting information from you as a student of music. Please answer the following questions to enable me make a fair judgment. All information obtained from you will be treated confidentially and used for this study only. Your honesty will be highly appreciated.

A: General information

Write or tick whichever response is applicable

1. Gender : Male ( ) Female ( )

2. Programme of Study: DES ( ) BED ( ) BTE ( )

3. Year of study: Yr. I ( ) Yr. II ( ) Yr. III ( )

A: Availability and use on electronic music devices and software in teaching and learning of music

Please put a tick (√) against appropriate response of each of the statements below where you choose either *Strongly Agree = SA, or Agree = A, or Disagree = DA, or Strongly Disagree = SD.*

SN	**Existing electronic music devices and software and how they are used at the Department of Performing Arts**	**SA**		**A**		**DA**		**SDA**		**TOTAL**	
		NO	%	NO	%	NO	%	NO	%	NO	%
1	Projectors for Presentations of music teaching and learning activities										

2	Synthesizers or Electronic piano keyboard for giving rhythms, pitch, cadences, practice										
3	Electric guitars for teaching and learning of music playing skills										
4	Smartphones and IPads with music software for writing music playing music compositions and teaching and learning.										
5	Smartphones and IPads for E library in citing music reading texts, writing academic work & research										
6	Digital video cameras for covering music performances										
7	Students have a Laptops with music software for learning										
8	Music computer production software: Fruity Loop Studio, finale, logic pro x, notation composer, Adobe audition and premier pro CC. used in music production, notation and editing.										
9	Department has internet connectivity, for searching information on music										
10	Studio monitors with headsets or headphones, and microphones, used in music teaching, learning, recording and editing.										
11	Digital Audio Work station (DAW) software on computer										

	used to record, edit and mix music.										
12	Mp3 players, DVD/ CD players, USB players used during music performances.										
13	Ulead studio program software was used for teaching video production and editing										

B: Effects of use of electronic music devices on the teaching and learning of music

SN	**ITEMS** **Effects of use of electronic music devices on the teaching and learning of music**	**SA**		**A**		**SD**		**D**		**TOT.**	
		NO	**%**	NO	**%**	NO	**%**	NO	**%**	NO	**%**
1	Finale pro software has helped students in music notation, enhanced ability to create and analyze music										
2	They motivate students to learn since they have their hands on										
3	Finale pro software enables students easily writes, read, compose and harmonize music especially for coursework assignments and during examinations.										
4	Synthesizers, Mp3, DVD/CD and USB players enable lecturers make teaching and learning meaningful and joyful to students and understand the theoretical side of music										
5	Synthesizers, Mp3 and DVD/CD players help in easy teaching,										

	learning and understanding of rhythms, cadences, arpeggios and aural skills generally.										
6	Students are able to produce music using Fruity Loop studio, Logic pro X and audacity										
7	Digital camera, smart phones and Ulead software enhance students' recording and production of videos and audio music, as well as storage of literature necessary for learning and teaching.										
8	Ease students' work and preparations during internship or school/college practice.										

C: Challenges that hinder use of electronic music devices and software in teaching and learning

SN	**ITEMS** **Challenges that hinder use of electronic music devices and software in teaching and learning**	**SA**		**A**		**SD**		**D**		**TOT**	
		NO	**%**	**NO**	**%**	**NO**	**%**	**NO**	**%**	**NO**	**%**
1	Music department has adequate modern electronic music devices for music learning and performance										
2	Our lecturers have adequate Knowledge on the application of electronic music devices and software.										
3	The department provides us with internet connectivity for music										

	teaching and learning and it is always available.										
4	The department uses updated and modern music software										
5	The department has adequate computers with music software used for teaching and learning sessions										
6	The department has conducive Storage facilities for the equipment and instruments										
7	Electronic music devices are very expensive for students to afford										
8	Music technology is allocated adequate time on the departmental timetable										
9	Power is always insufficient and unreliable for teaching and learning										
10	Department has adequate Instructional rooms for music teaching and learning										
11	Lecturers and students effectively use the cassette players as an electronic music device in learning and teaching.										

THANK YOU

APPENDIX II: INTERVIEW GUIDE FOR HEAD OF DEPARTMENT, LECTURERS AND CRAFTSMAN

SECTION A: Electronic music devices and software and use in the department of Performing Arts.

1. Can you please tell me which among the following are available in the department and secondly briefly state how each has been used?
   i) Projectors
   ii) Synthesizers or electronic piano keyboard;
   iii) Electric guitars
   iv) iPads or tablets
   v) Digital cameras
   vi) Mp3, DVD/CD player, USB player
   vii) Cassette player
   viii) Laptops for lecturers and students
   ix) Studio monitors, head sets
   x) Finale pro software
   xi) Logic pro software
   xii) Adobe audition software
   xiii) Fruity loops studio software
   xiv) Ulead software
   xv) Digital audio workstation software
   xvi) Internet connectivity
   xvii) Premier pro CC.

2. Which of the above electronic music devices and software are you well versed with and can describe the way it functions?

SECTION B: Effects of the use of electronic music devices and software in teaching

i) In your opinion do you think these electronic music devices and software

have had a positive or negative effect in the teaching and learning of music?

ii) Explain why you say so while referring to the devices and software

SECTION C: Challenges that hinder the utilization music electronic devices in the Department of Performing Arts

1. Which challenges do encounter during the teaching and learning of music?
2. What are the challenges which hinder the use of the following music electronic devices and software in the teaching and learning of music?

i Logic x pro music software

ii Synthesizers

iii Electric guitars

iv Finale

v Mp3/ DVD players

vi IPad and laptops

vii Projectors

viii Adobe premiere pro

ix Ulead software

x Cassette tape players

xi Studio monitors and head sets

THANK YOU

APPENDIX III: FOCUS GROUP DISCUSSION GUIDE

SECTION A: Electronic music devices and software and use in the department of Performing Arts.

1. Can we please freely discuss which among the following list of devices and software are available in the department and secondly briefly state how each has been used.
    i) Projectors
    ii) Synthesizers or electronic piano keyboard;
    iii) Electric guitars
    iv) iPads or tablets
    v) Digital cameras
    vi) Mp3, DVD/CD player, USB player
    vii) Cassette player
    viii) Laptops for lecturers and students
    ix) Studio monitors, head sets
    x) Finale pro software
    xi) Logic pro software
    xii) Adobe audition software
    xiii) Fruity loops studio software
    xiv) Ulead software
    xv) Digital audio workstation software
    xvi) Internet connectivity
    xvii) Premier pro CC.
2. Supposing your fellow student asks you to describe the function of any one of the above devices or software, state how you would do this to help him / her understand and also learn how to use it.

SECTION B: Effects of the use of electronic music devices and software in teaching

i) In your opinion do you think these electronic music devices and software have had a positive or negative effect in the teaching and learning of music?

ii) Explain why you say so while referring to the devices and software

SECTION C: Challenges that hinder the utilization music electronic devices in the Department of Performing Arts

i) Which challenges do encounter during the teaching and learning of music?

ii) What are the challenges which hinder the use of the following music electronic devices and software in the teaching and learning of music?

- Logic pro x music software
- Synthesizers
- Electric guitars
- Finale
- Mp3/ DVD players
- IPad and laptops
- Projectors
- Adobe premiere pro
- Ulead software
- Cassette tape players
- Studio monitors and head sets

THANK YOU

APPENDIX IV: OBSERVATION REVIEW CHECKLIST

1. In conducting this study the researcher used a case attendance to assess use of electronic music devices in one of the lessons in progress.

S.N	ITEM	Positive remark	Negative remark
1.	The lecturer's knowledge of the modern music devices.		
2	The ability of the lecturer in selecting instructional goals.		
3	The ability of the lecturer in using appropriately the music electronic devices in the teaching and learning of music.		
4	Attention span of the learners when using the electronic music device in class.		
5	Whether learners were keen or not in using the device		
6	General effect of use of the device in a lesson		
7	Challenges observed in the use of the device		

2. **Checking on availability of the electronic music devices and software**

S.N	ITEM	Available	Number available	Useable or not	Not available
1.	Projectors and screens				
2.	Mp3, DVD & USB players				
3.	Electric guitars				
4.	Studio monitors and head sets				
5.	Cassette tape players				
6.	Finale pro software				
7.	Logic pro X				
8	Ulead software				
9	Adobe audition				
10	Audacity				

3. R**eview of the syllabi and other documents**

i) Number of programmes in the Department ……

ii) Number of programmes with units for use of

electronic music devices and software……..

iii) Number of programmes without (ii) above …….

iv) Nature of content coverage in the syllabi: Enough ( ) Little ( ) Average ( )

APPENDIX V: LIST PEOPLE INTERVIEWD

S.NO	NAME	DESIGNATION	DATE INTERVIEWED
1.	Solome Katasi	Head of Department	20/012019
2.	Ndawula Michael	Craftsman	20/01/2019
3.	Mbedha Edith Buyinza	Lecturer	12/02/2019
4.	Ssennoga Majwala Hannington	Lecturer	12/02/2019
5.	Stella Wadiru	Lecturer	12/02/2019
6.	Senyonjo Juliet	Lecturer	12/02/2019
7.	Kitaka George	Lecturer	12/02/2019
8.	Ijiribi David	Lecturer	13/02/2019
9.	Petra Independence	Lecturer	13/02/2019
10.	Dr. Ekadu-Ereu Peter	Lecturer	14/02/2019
11.	Dr. Ssempijja Nicholas	Lecturer	14/02/2019
12.	Judith Lubega	Lecturer	14/02/2019
13.	Tendo Mukuye Christopher	Lecturer	14/02/2019
14.	Andima Faustine	Lecturer	15/02/2019
15	Driwaru Juliet	Lecturer	15/02/2019
16.	Dr. Kigozi Benon	Lecturer	15/02/2019