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List of abbreviations and acronyms

ABRSM	Associated Board of Royal Schools of Music
AFZ	Air Force of Zimbabwe
AU	Africa University
BMM	Bachelor of Music and Musicology
CAI	Computer Assisted Instruction
CAL	Computer Assisted Learning
CAP	Computer Assisted Playback
CBI	Computer Based Learning
CLT	Constructivist Learning Theory
CTML	Cognitive theory of Multimedia Learning
DTE	Department of Teacher Education
DMM	Department of Music and Musicology
GCSE	General Certificate in Secondary Education
GZU	Great Zimbabwe University
GMT	Greenwich Mean Time
ICT	Information Communication Technology
ILAM	International Library of African Music
IS	Information Systems
IT	Information Technology
MAM	Midlands Academy of Music
MBMT	Music Business, Musicology and Technology
MCC	Midlands Christian College
MCR	Music Cross Roads
MLT	Multimedia Learning theory
MPC	Mutare Polytechnic College
MSU	Midlands State University
MTAI	Multimedia Technology Assisted Instruction
RIO-SET	Research and Intellectual Output in Science, Engineering and Technology
STM	Short Term Memory
STEM	Science Technology Engineering and Mathematics
TAIM	Technology Assisted Instruction in Music
TIFAZ	Tertiary Institutions Festival of the Arts in Zimbabwe
UCE	United College of Education

UN	United Nations
UNISA	University of South Africa
UPS	Uninterrupted power supply
USA	United States of America
UZ	University of Zimbabwe
WM	Working Memory
WPW	Whole Part Whole
ZAM	Zimbabwe Academy of Music
ZESA	Zimbabwe Electricity Supply Authority
ZCM	Zimbabwe College of Music
ZIMRA	Zimbabwe Revenue Authority
ZIMDEP	Zimbabwe Mbira Distance Education Project
ZIMSEC	Zimbabwe Schools Examination Council
ZNA	Zimbabwe National Army
ZPCS	Zimbabwe Prisons and Correctional Services
ZRP	Zimbabwe Republic Police

CHAPTER ONE

OUTLINE OF THE STUDY

1.1 INTRODUCTION

This chapter discusses the background of the study and articulates issues that prompted the need to undertake this research. This research draws heavily from personal experience of more than 26 years in performance practice and teaching music at primary, secondary and tertiary levels of education in Zimbabwe and South Africa. In this preliminary part of the study I identify and discuss the research objective, which involves the endeavour to implement methods to complement the existing instructional methodologies for the *nyunga nyunga* mbira instrument through the use of computer-assisted instruction (CAI). It is important to note that this research is motivated by the need to promote the teaching of music and therefore the method of instruction being investigated is not meant to replace the existing traditional methods; rather it is meant to complement them and enable the teaching of the *nyunga nyunga* mbira instrument to be extended beyond the borders of Zimbabwe.

The chapter goes on to articulate the research problem, discussing the possible instruction of the *nyunga nyunga* mbira through modern electronic equipment. In this section I elaborate on the research questions, which seek answers to the problem and focus of the study. In addition to discussing other prefatory issues connected with this research, I also present definitions of terms to enable readers to understand the various concepts that are pertinent to this study and show their implications in this study. This chapter also lays out the theoretical framework for this study and the reasons why the underlying theories are germane to this study. It goes further to posit the assumption that participants' knowledge and experience in operating computers provide the necessary fundamental skills needed in computer-assisted learning, which is the motivation for their involvement in this study. The chapter closes with an overview of the study through a summary of the focal points of the respective chapters.

1.2 BACKGROUND TO THE STUDY

Through transcribing indigenous African mbira music, I began a quest to find a method that utilises notation software to aid the teaching/instruction of *nyunga nyunga* tunes, which are commonly taught by rote. After playing and critically listening to selected *nyunga nyunga* mbira tunes I input some of



them into Sibelius 7¹ one of the current notation software packages. As a result of some experiments with selected tunes, I devised a music multimedia-assisted method to support the teaching and learning of the *nyunga nyunga* mbira. As part of the requirements for the Master of Music degree, specialising in Music Technology, at the University of Pretoria in 2010, I undertook research comparing traditional and modern technology-based methods in teaching the above-mentioned instrument (Muranda, 2011). The experiments compared modern technology-assisted instruction with traditional methods in teaching the *nyunga nyunga* mbira tunes. This thesis extends the Masters research with a view to explore the use of computer-assisted instruction (CAI) as a method in the teaching of the *nyunga nyunga* mbira. The research seeks to establish the fundamental principles, pedagogy, goals, and objectives for a mbira² curriculum drawn on the basis of CAI that can be used at tertiary level, that is, colleges and universities in Zimbabwe and abroad especially African Music specialisation.

The findings in the Masters research indicated that both methods were effective as students taught using both of these methods subsequently played the *nyunga nyunga* mbira equally well. This research does not seek to compare methods, but rather to make the instruction of the *nyunga nyunga* mbira available internationally through notation software. There are multimedia resources³ available for use to support the instruction of some Western instruments and such resources can also be utilised to aid instruction of mbira. With computers available at tertiary institutions in Zimbabwe it is justifiable to utilise computer-assisted instruction to support tuition of some indigenous musical instruments, specifically the *nyunga nyunga* mbira.

The proposed method is being used in my research in Zimbabwe for the first time to create a curriculum blue print after testing its viability. Hence, it is important to find out how the intended beneficiaries respond to its use. It is equally vital to know how the curriculum planners and the music society at large will receive the method; and respond to this aspect in helping me to plan on what may be needed after the completion of the research. The use of CAI in this research is informed by the theories of multimedia instruction as articulated by Mayer and Moreno (2002).

¹ A software package that enables one to transcribe tunes into staff notation, enabling playback at various tempos, insert colour codes for notated music and convert tunes to graphics, wav, mp3, text, pdf, midi, and to print sheet music.

² Every time the term mbira is used in this thesis it will be referring specifically to the *nyunga nyunga* type unless stated otherwise.

³ These comprise of computer programmes, which utilise combinations of text along with one or more of the following: audio, three-dimensional animated or still photographs, high-resolution graphics or music.

1.3 THEORETICAL FRAMEWORK

This research drew standpoints from the cognitive theory of multimedia learning as well as the constructivist and learner-centred theories in order to draw parameters for the study. In the sections below I examine and discuss in detail the application of these theories.

1.3.1 Cognitive theory of multimedia learning

The research is guided and informed by the cognitive theory of multimedia learning (CTML) as propounded by Bransford, Brown, and Cocking (1999), Lambert and McCombs (1998) and also cited by Mayer and Moreno (2002:107). The CTML banks on the dual coding, cognitive load and constructivist theories. It also hinges on the assumption that humans make use of dual channels for processing aural and visual information, hence the title “Dual” Coding Theory. This theory centres on the premise that each of the two channels is limited to the capacity of what the student can process at a time. Hence, instructional material that transcends the cognitive capacity of the student makes concept formation and learning futile (Mayer and Moreno 2002:108). In using the computer-assisted instruction (CAI) it is possible for instructors to become too ambitious in their endeavour to design instructional material in the set tasks and activities. As such, this theory informs my research with strategies to be cautious and avoid overloading. In some exceptional cases, over ambition can help make learning experiences challenging and fulfilling. However, in this research, overloading describes a condition where the instructional materials are beyond the capabilities of the students. As a tenet of CTML, the cognitive load theory in this research serves as a guide to choose relevant information purposively, which could be assimilated with other forms of knowledge such as the students’ ability to play other types of musical instruments, fundamental concepts in music theory, appreciation of different genres of music and general musicianship. In essence the cognitive theory of multimedia learning insists on maintaining a consistent, relevant but challenging subject matter to the mental capacities of the students through observing the underlying core principles.

The above theory capitalises on the working memory to generate instructional designs (de Jong 2010). Specifically, the working memory in this sense deals with processing of information in small manageable quantities. This memory also handles the visual (animations, diagrams, graphics etc.) and aural (e.g. narration, music, etc.) information. Furthermore, function of the working memory is connected to cognitive learning achievement. In light of the above conceptualisation the ability of the instructed depends on the amount of information that the mind can process at a given time. The cognitive load can be controlled in order to achieve the set instructional goals (de Jong 2010).

According to Cooper (1998) and Sweller and Chandler (1991), intrinsic cognitive load refers to the complexity of the information to be processed. In this case, the information presented will have a large amount of subject matter with many interactive components. This will make it more difficult to process compared to information with fewer interactive elements. Whereas low interactive subject matter enables isolated concept formation, high interactivity creates a situation where elements are understood in relation to the other elements (Sweller and Chandler 1991).

Extraneous cognitive load simply refers to the overload resulting from unnecessary information that does not contribute directly to schema construction (Sweller, 2005:150). Extraneous loads are subject matter that should be left out completely during the process of designing the learning material. In this study, material for instruction is carefully planned to avoid overloading the mbira students. Subject matter can lack schema due to extraneous cognitive load often resulting in students failing to understand the crux of content. Hence a call for a line-up of preparatory exercises for both playing the instrument and reading the music. In spite of preparations for the subject matter it is not always possible during the process of designing instructional material to completely eradicate overloads. However, with care, one can reduce the tendencies to overload learning experiences. In addition, it is crucial to note that students differ in terms of their cognitive capacities, especially in the backdrop of their entry qualifications and competence requirements⁴ into the Department of Music and Musicology at MSU, hence some could still experience overloading of material even if all precautionary measures are taken.

1.3.2 Constructivist learning theory (CLT)

This study also draws from the constructivist learning theory (CLT) which, according to Mayer (1996 and 2001) and Wittrock (1990), takes place when students actively choose relevant information and organise it into coherent representations and then integrate it with other knowledge. The above theory is critical in that it is applied to a non-Western musical instrument as an innovation hence it is vital to appreciate the efficiency of the theory. Schnotz et al (1994 and 1999) propose a multimedia learning theory (MLT) based on active cognitive processing of information via multiple channels. They argue that students tend to concentrate on relevant parts of animations, hold them in working memory and use them to build connections that help to organise words into cause and effect through connections between sound and animations/pictures. This research has a practical orientation as the students are instructed and tasked to identify what they heard (audio) on the *nyunga nyunga* mbira

⁴ At Midlands State University most post- 'A' Level students enrolled in the Department of Music and Musicology do not have music as a subject, hence entry is based largely on their interest in music.

lamellae and look (visual) at the musical instrument as it is played, especially as taught through the CAI for the first time. Concept formation and connections between auditory and visual representations are most likely, especially in cases where the students match the aural and visual representations simultaneously in memory. De Jong (2010) prefers to call the short-term memory (STM) the working memory (WM) that humans use to process small amounts of information at a time. Since the WM is limited in terms of capacity, this research seeks to use some selected performance tasks that worked in accordance with MLT.

1.3.3 Learner-centred approaches

Orff cited in Choksy et al (2001:337) holds that all students should find ways to express themselves through music, both as individuals and as a group/ensemble, because musical experience is an important objective of music making. Thus the study uses an individualised tutorial strategy for the participants on the *nyunga nyunga* mbira to reinforce concept formation. The research embraces the learner-centred theory because, in this view, the ultimate beneficiary of instruction is the student. Even though it is not always the case with traditional methods, the instructor at times tends to dominate and the student observes passively. Based on the above-mentioned notion the mbira tunes, activities and strategies employed in this research are explicitly designed to focus on the student. In view of the learner-centred theory, students' personal involvement helps to eventually find out what the students gain from the proposed CAI and measure how the method works, especially in the context of the *nyunga nyunga* mbira. Allowing the students involved in this research to explore, and freely make discoveries, create and make meaning of new knowledge with their own experiences was thus a core aspect of the research.

1.3.4 Gordon's music learning theory

The research also embraced Gordon's (1990) music learning theory, which emphasises sequencing subject matter in two areas, which are skills and content. Gordon (1990) insists that learning music skills entails discrimination and inference. For these reasons, students progress from one level to the next in a hierarchical sequence from simple to complex. The above view enables concept formation. Walters (1992:542-543) in Abeles (1995:264-265) states that Gordon's theory advocates that students focus on parts rather than the whole learning approach. This theory upholds the whole-part-whole (WPW) approach in which students should have an overview of the whole and strive to learn the parts that add up to the whole, in the end grasping the whole concept. Walters (1992) further argues that the WPW approach leads to better understanding of subject matter. The research concurs with the

above-referred view as it supports the instructor to employ strategies for learning the micro units and ultimately the big whole. In this study, each selected mbira tune had four or five variations (parts) that build up into a complete (whole tune). This research holds music learning as important as outlined in the Department for Education and Employment and Quality Comparative Analysis of 1999 cited by Mills (2005:15) who mentions that,

Music is [a] powerful ... form of communication that can change the way pupils feel, think and act. It brings together intellect and feeling enabling personal expression, reflection and emotional development. As an integral part of culture, past, present it helps pupils... relate to other. The teaching of music develops ability to listen and appreciate a wide variety of music.

This study also seeks to develop the whole person intellectually, socially and emotionally through interaction with peers and the learning environment.

1.4 STATEMENT OF THE PROBLEM

The use of modern technology, especially for teaching traditional instruments like the *nyunga nyunga* mbira, whether formal (in a classroom) or informal (not a classroom context), is a new innovation. Through personal experience I observed that the contemporary world offers students and teachers opportunities to tap into available modern resources and thus improve instruction. Electronic media in music instruction can complement the current methods by affording students a chance to learn from their teacher, peers and the multimedia environment. Fautley and Savage (2011:110) mention that:

... our work as teachers has not escaped technology's imprint because our students and the world they inhabit...outside the formal learning context is often technologically rich in a multiplicity of ways...[T]he intelligent use and application of technologies has provided us with an opportunity to challenge our way of thinking about subjects, curricula, teaching and learning.

The research seeks to complement the existing indigenous methods with new, alternatives in the 21st century, where the computer is now dominant. This study upholds Suarez-Orozco and Suarez-Orozco (2009:70) in their way of thought as they assert that:

The next generation...will need a new set of skills, competencies and sensibilities to be fully engaged citizens...of the 21st century. The global workplace requires...more than simple rote memorisation ... hierarchical instructions, and steady work habits idealised in the 20th century education.

Through properly planned and purposeful use of modern technology I intent on the part of the instructor and the instructed seek to teach the performance of the *nyunga nyunga* mbira through

computer-assisted instruction. The indigenous traditional instruction for mbira largely relies on rote methods and yet the contemporary society is drifting towards an increased uptake of modern technology. Today many people use modern technology related devices, personally and/or collectively at home, school and work for convenience and solving problems. Through innovative thinking, the study also seeks to create possible ways on methods of instruction and the *nyunga nyunga* mbira instrument is one of them. While some instructors have ventured into teaching and learning of mbira instruments, not much has been explored via the use of modern technology devices. For these reasons it is necessary to find the possibilities and constraints of how to make use of computer-assisted instruction in the teaching/instruction of the *nyunga nyunga* mbira.

1.5 RESEARCH QUESTIONS

In this research it is held that computer-assisted instruction (CAI) is a shift from the traditional indigenous methods of teaching/instructing the *nyunga nyunga* mbira. The proposed CAI capitalises on transcribed mbira tunes, hence it promotes preservation, dissemination of knowledge through print, software, and hardware media and subsequently the development of literacy through the senses of sight and hearing. The traditional methods provide a fast way to teach through the ear, even though in some instances they do not help the students to transcribe in some form of internationally recognised notation. The traditional methods, particularly the rote, may require ample time for exposure. Regardless of artists' emotions and interpretation, without documentation, mbira tunes are likely to change with the passage of time and this can be a threat to the preservation of *nyunga nyunga* mbira legacy. Since there is some resistance from conservative traditional indigenous practitioners to the use of the computer-assisted instruction, one cannot simply adopt CAI without thoroughly investigating how useful it is in terms of strengths and weaknesses. This research focuses on identifying and establishing the underlying pedagogy for the *nyunga nyunga* mbira, not for the Zimbabwean context only, but for the international world too. At the time this research began, it was uncommon to use documented computer-assisted instructional material and methods applicable to the teaching of the *nyunga nyunga* mbira. As such, the innovation in this research is meant to fill the gap in knowledge between the use of traditional and computer-assisted methods. The following main research question is posed for this study:

How should the fundamental concepts on the playing of the *nyunga nyunga* mbira be applied to teaching of this instrument via computer-assisted instruction?

The ensuing sub-questions are derived from the main question:

- What is the impact of CAI on the teaching and performance of the *nyunga nyunga* mbira to first time students?
- What are the challenges associated with the instruction of the *nyunga nyunga* mbira through CAI?
- How do cognitive theories of multimedia instruction work with teaching of the *nyunga nyunga* mbira?

1.6 OBJECTIVE OF THE STUDY

The proposed paradigm is based on the use of available modern technology resources to complement preservation and instruction of the *nyunga nyunga* mbira instrument. The computer-assisted method, through the innovation of using software packages and electronic devices, seeks to generate instructional strategies that provide resources and ultimately contribute to the preservation of the indigenous (mbira) music. The study also investigates the efficacy of CAI as a method through establishing the fundamental concepts underpinning its (CAI) use in promoting the teaching/learning of the *nyunga nyunga* mbira in music education across the cultural divide. The study aims at developing teaching and learning resources based on audio, visual, and text formats. The transcribed *nyunga nyunga* mbira tunes will help develop, a logical methodology to music literacy through staff notation, a medium not traditionally associated with the instrument. The underpinnings to this matter have been articulated in the statement of the problem.

Through the computer-assisted method, the research seeks to develop sight-reading, aural training, performance skills, critical listening and appreciation of the *nyunga nyunga* mbira instrument. Against the backdrop of growing trends toward an increased use of modern technology in education worldwide, it is important to Zimbabwe and the global education system to demonstrate how modern technology can be used to promote mbira instruction. The participants involved in this study are equipped with skills to play the instrument. One of the eventual outcomes of the research is to establish resource materials that can be further researched in designing instruction for mbira with the use of a CD Rom or other appropriate technologies.

1.7 LOCATION OF STUDY

The study was conducted at Midlands State University (MSU) in Gweru, the capital of Midlands province, 275km southwest of Harare, the capital city of Zimbabwe.

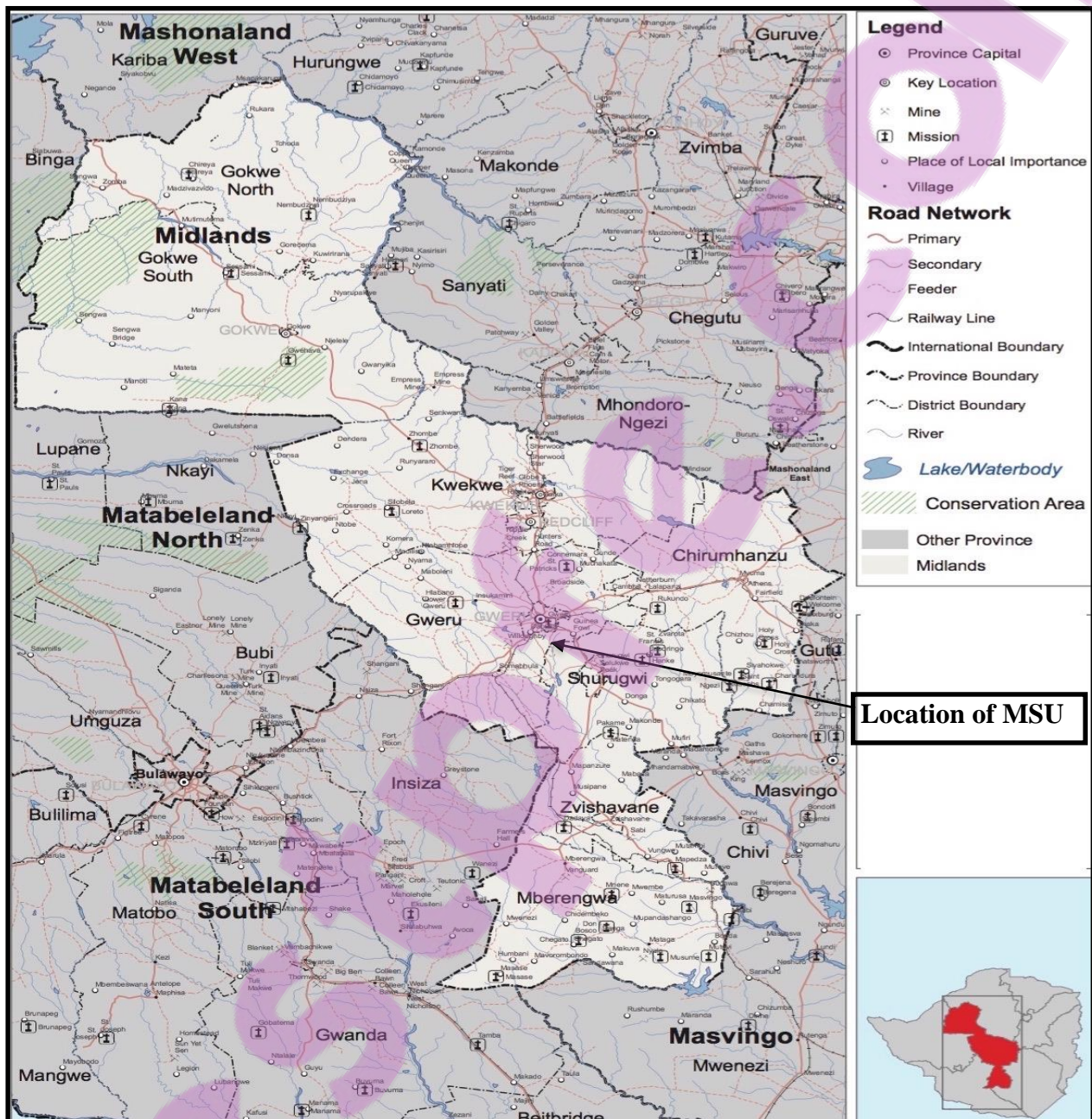


Figure 1: Map of Zimbabwe Midlands Province, location of MSU, (Courtesy of UN office for the Coordination of Humanitarian Affairs.)

It involves 16 music students from the Department of Music and Musicology (DMM). This is an ideal location for the research because I work at MSU in the above-mentioned department as a lecturer and have the permission and privilege to involve music students in this research.

Few students take music at 'A' Level⁵, hence the department enrolls students on the basis of a pass in any two (2) 'A' Level subjects. However, prior knowledge and experience in music is an added advantage. Our experience shows that the majority of the post- 'A' Level students coming into the department have marginal experience and knowledge of music and the mbira instrument. Therefore, bringing the research into the DMM is convenient for the application of the CAI method in teaching/instructing the *nyunga nyunga* mbira musical instrument.

1.8 VALUE OF THE RESEARCH

The study is critical in the teaching and learning of instrumental music performance in universities that offer tuition in African music and music education. It also provides a possible solution to the challenge of availability of practical instrumental curriculum for African music.

1.9 ETHICAL CONSIDERATIONS

McNiff and Whitehead (2005) mention that ethical principles are meant for mutual consent to all the people involved in a research project. Thus, I negotiated with MSU authorities, specifically the Department of Music and Musicology, to provide me with the space and participants for the research. The success of the method under examination in this research depends on adherence to ethics in relation to the participants (students), the Department of Music and Musicology at MSU (my employer) and UNISA, the institution at which I was studying. I read and understood the UNISA research ethics policy and pledged to adhere to the expectations. Letters of consent to conduct research at MSU were submitted and signed by the Chairperson of the Department of Music and Musicology as well as the participants. In the letters is the promise to hold personal compliance with the rules and regulations as required at MSU and maintenance of confidentiality, respect and safety for the participants. I also insist from the onset to uphold academic commitment in conducting the research from the beginning right through to the end.

⁵ This is a national Zimbabwe Schools Examinations Council governed 'A' Level qualification written at the end of the sixth year at high or secondary school level. This is a prerequisite for entry into university. Students will be required to take at least three subjects and pass at least any two of those with the symbol E or better.

1.10 ASSUMPTIONS

In this research it is assumed that the use of a computer in teaching the *nyunga nyunga* mbira is an exciting innovation for university students, hence working on the research one would encounter few cases of technophobia. I also hold that the participants in the study have some experience with computers, so not many odd surprises are to be expected. The use of the computer in this research is a means to acquiring the skills to play the instrument under study and nothing more.

1.11 DELIMITATIONS

Apart from having a variety of mbira instruments in Zimbabwe and Africa as a whole, the study involves only the *nyunga nyunga* mbira. Since different mbira instruments have special features and arrangement of the lamellae, to avoid an overload and keep focus on the research the *nyunga nyunga* is preferred over other kinds of mbira instruments. This instrument is primarily chosen on the basis that it is the most commonly found in primary and secondary schools, colleges and universities of Zimbabwe. Furthermore, it has enjoyed a considerable amount of interest among music education researchers in Zimbabwe and beyond the borders. The method of instruction in this research is computer-assisted instruction (CAI) via use of sight-reading of staff notation. The research deliberately excluded all other methods that are used to instruct the instrument because the study was focused primarily on CAI.

1.12 DEFINITION OF TERMS

The under-mentioned constitute some key words and terms as used in this thesis. These are exclusive and specific to this research and they depict the corresponding meanings in the study, unless otherwise stated.

Computer-assisted instruction (CAI) - Any instructional set done through the computer, thus interactive, adaptive, learner-controlled, inexhaustible and unlimited time, space and manageability (Lou, Guo, Zhu, Shih, and Dzan 2011)

Computer-assisted learning (CAL) - Acquisition of knowledge using a computer programme.

Computer-based instruction (CBI) - Instruction solely based on the computer, through the computer hardware and software packages.

Indigenous music – This is the traditional African music of Zimbabwe



Information communication technology (ICT) - All electronic equipment used in many various communication systems.

Information Systems (IS) - Equipment for information systems that may include computers

Information technology (IT) - Technologies used to disseminate different modes of information.

Learning - Acquisition of knowledge with and/or without instruction.

Mbira - This refers specifically to the *nyunga nyunga* mbira unless otherwise stated.

Multimedia - Multiple forms of computer-based media such as text, audio, pictures, animations, video, or more used at one time.

Multimedia technology-assisted instruction (MTAI) - Instruction that is solely based upon modern music technologies in hardware and software.

Music technology - All types of modern technologies associated with music.

Nyunga nyunga mbira - The 15-key mbira whose tonal centre is in key F.

Teaching/instructing - Instruction by a tutor, a computer and/or both to play the *nyunga nyunga* mbira. In this thesis the words teaching/teach and instruction/instructing/instruct bear the same meaning.

Technology assisted instruction in music (TAIM) - Electronic equipment used to teach musical concepts.

Technophobia - The fear of using modern technologies, especially computers, in teaching and learning.

Transcription - Notating of mbira tunes through using Sibelius 7 software package.

1.13 OVERVIEW OF THE THESIS

It is essential in this chapter that a synopsis of the thesis be presented to show the flow of ideas. The whole research comprises of six chapters with the first being the introduction to the study. Chapter one articulates the preliminary and background issues that motivate this research. The research is driven by the need to conduct computer-assisted instruction and promote preservation of the *nyunga nyunga* mbira music and add on to the existing indigenous traditional methods used. The research problem centres on teaching and documentation of the mbira instrument via the use of computer-assisted instruction using *nyunga nyunga* mbira transcriptions. In this chapter I present the focal points of the study through articulating the research questions on how CAI can be used to teach the instrument under study.

The second chapter consists of applications of instructional designs. It looks at theories on instructional designs from the modern and traditional African points of view, including the

fundamental principles. I analyse and discuss CAI in the context of this research in as far as it relates to the didactics of musical instruments in general and, in particular, plucked instruments like the mbira. The chapter also looks at the Internet as it relates to the instruction of the musical instrument under this research. In chapter two I compare CAI to traditional methods with the aim of looking at what both can contribute to the current practices in musical instrument pedagogy. I end the chapter with a discussion on the challenges associated with using modern technologies in carrying out instruction of African musical instruments.

In chapter three the study presents the research design and methodology. Basically the study is action research oriented seeking to reflect on the goings on in an instructional setting as a fully-fledged participating observer. As a matter of principle I allow myself to be involved in the research through giving guidance and instruction to enable the students to engage in some hands-on, minds-on experiences. The study allows for interviews to solicit other ways of enhancing the mode of instruction. The research also enables me to undertake participatory observation of the unfolding events throughout the study. A population sample of 16 participants was chosen through the convenience sampling method, since the chosen were bona fide students in the department where the I work. In this research a diary of the events is maintained in order to allow for deliberated and meaningful collection of data and analysis at the end of each day as well as at the end of the research. In this section of the study I also propose ways to maintain validity and reliability of data. The proposed ways include triangulation, interviewing and retesting of outcomes; self-reflecting, critical analysis of pertinent matters to the study and implementation of proposals and ideas emanating from the research experiences.

The fourth chapter looks at the contexts of mbira with intent to establish how they relate and interconnect with modern technologies, in particular computer-based software packages. The chapter further investigates the place of the *nyunga nyunga* mbira within the education system of Zimbabwe. The section also looks at the proponents of the indigenous method and philosophy of mbira performance, thus establishing connections with the proposed innovation of using CAI. The chapter ends with a discussion focusing on the impact of modern technology on traditional instruments, particularly the *nyunga nyunga* mbira.

In chapter five there are discussions and analyses of the data collected in the study largely in the way they relate to the teaching of the *nyunga nyunga* mbira. Discussions in this segment include issues to do with modalities of implementation and the justification of teaching the mbira instrument through electronic multimedia. I also discuss participants' impressions of the implementation of the method,

time allocation for practical performances and the evaluation of the usability of the computer-assisted method. The presentation and analysis of data takes an illustrative, descriptive paradigm to draw implications and meanings from the findings.

The answers to the research questions are addressed in chapter six under the findings, conclusions and recommendations. The main question sought reasons why teaching the *nyunga nyunga* mbira can be done through the computer-assisted method. The chapter also looks at how effective the computer-assisted method is in teaching the mbira instrument, the effect of the method on first-time mbira performers. The endeavour to find answers to questions also includes the merits and demerits of the method, especially in view of the cognitive theory of multimedia instruction and the cognitive load theory. The chapter also presents a summary of findings, conclusions and recommendations for further study

1.14 CONCLUSION

Chapter one constitutes the introduction and scope of the study. It also articulates the background to the research and the use of the CAI method. The ensuing discussions are on the use of CAI in teaching/instructing the *nyunga nyunga* mbira. Research questions are set out and these are followed by the theoretical framework for the study, which hinges on the cognitive multimedia instruction and load, Gordon's learning and the constructivist theories, especially as they relate to the proposed method of CAI. This section of the study also lists key words and their definitions as envisaged in the study so as to avoid ambiguities. The chapter discusses ethical issues and the pledge of adherence to confidentiality and respect of the participants in the research as required by both UNISA and the MSU code of research ethics. At the end of the introduction to the research, I present a synopsis of the study with the aim of informing readers of the contents thereof. The synopsis presents a chapter by chapter summary, highlighting the focal points to enable concretisation of the theoretical and conceptual framework of ideas of the thesis.

CHAPTER TWO

APPLICATIONS OF MODERN TECHNOLOGY IN MUSIC INSTRUCTION

2.1 INTRODUCTION

This section seeks to present and discuss issues concerning the place, functionality and utilisation of modern technology in the instruction of music. The discussion presents an overview of the development of computer-assisted instruction (CAI) as it relates to musical instrument instruction with the *nyunga nyunga* mbira instrument as a particular focal point for study. Some strategies from practising mbira instructors, researchers and writers associated with CAI are brought under the spotlight with intent to analyse and articulate relevant matters and viewpoints. In this chapter ideas gleaned from selected authors, proponents and advocates of modern technology are critiqued in order to inform the discourse. To facilitate organisation, discussion and flow of ideas the chapter includes analyses of transcriptions, models of notation and analysis in some selected mbira tunes where necessary, so as to examine the use of modern technology in the instruction of mbira music. The study examines how proponents of modern music technology embrace African musical instruments, especially relating to modalities of instruction.

Finally, the chapter articulates some practical implications regarding the use of modern technology and realities intertwined with CAI as a model for instructional design for the mbira music instrument at tertiary level. The term ‘computer(s)’ makes reference to different types of computers in use from a generic viewpoint. On a more specific note, the Apple Macintosh and personal computers (PC Microsoft), desktops, laptops, palmtops, tablets, MacBooks, Notebooks, iPads and their various versions, all constitute computers. CAI in this study is considered also from the point of view of using software packages and their compliant operating systems regardless of year of manufacture, old/new version of software. The basic requirements are the fundamental features required of a computer, thus: the ability to input, compute, and display output through visual and audio file formats and also provide assistance to those instructed in musical skills through direct and/or indirect manipulation of the computer. The use of computers in this study enables the research to take place. There is not any one particular software package that stands above the rest; even though Sibelius 7 is used for this research it is just a question of its availability. Any notation software package can be used with the same results expected at the end. If time permitted one would have had to try all stages of the research with the use of perhaps two or three software packages. However, the time and resources for the research do not allow for such an approach.

2.2 THE INCEPTION OF THE COMPUTER

The use of computers has had a strong bearing on the manner in which people conduct business be it in commerce, industry or education, in particular teaching and learning. The utilisation of CAI is primarily designed to enhance a learner-centred approach. This approach insists on meeting the needs of the one under tuition, and to that effect Lorton, Killiam and Kuhn (1975:877) argue that “[m]usic instruction demands a highly individualised approach; computer-assisted instruction has developed out of efforts to meet this demand.” The above view is quite critical. When meeting individual needs of the students, particular care should be placed on how the subject matter is presented. In consideration of the implementation of CAI regardless of aims and objectives thereof, the points raised by the above authors inform this research in that meeting the needs of students is central to this study. I also agree with their view that the use of sound in CAI is a fundamental component, however, visual graphics also play an important function to aid concept formation. It is also significant to mention that participating students need to have a personal experience to fulfil the purpose of instruction and learning. Student records is another key feature of this study; to maintain comprehensive progress records of the research outcomes enables one to come up with an appropriate analysis of information gathered and that is the basis of any given research endeavour. Webster and Hickey (2006:380) make the following observations on the prologue and the implementation of CAI, alleging that:

... [i]t is fair to say that, until most recently, the history of music technology has not been driven by any interest in musical development and learning with its attendant literature. Instead, music technology's growth has been guided by: (1) practical needs in music production (music notation, sound recording and reproduction); (2) certain technical achievements in hardware (faster, smaller, and cheaper processors, laser disc technology); and (3) the Internet as a medium of communication. That said, computer-assisted instruction has always been a part of the history of music technology and certain achievements in the development of software particularly hold promise for linkages to the development literature.

Conceivably the above view is informed by the fact that the computer is primarily developed to meet demands that perhaps have nothing to do with music instruction. However, this study does not detail the historical development of CAI because that does not play a critical part in the thesis. One important consideration for CAI is that it brings new platforms for instruction as opposed to oral traditions and/or pen and paper. Both theory and practice of music have gleaned ideas from the use of a computer. Even if computer usage may have come at a later date into music education for the users, it may be an opportunity to engage in research to discover, analyse and implement ideas generated in the field through CAI. What is substantially factual is that music is one of the areas of study that has become intimately connected with computer-assisted instruction, largely due to the

existence of the Internet, understood as a global network of interconnected computers that can be accessed or visited at the click of a mouse button and the use of a world wide web address e.g. (www.aes.org).

Although parents choose schools for their children's educational development, particularly in music education it should be noted that the computer has revolutionised the landscape of music instruction the world over. The above view surely puts the parents and teachers into a situation where they have an obligation to advance the opportunity to broaden the students musically. It is a matter of concern for the parents and teachers to eagerly support the use of computers in music education, although some of them do not have personal expertise to use computers. In a different view this is not a challenge because one does not need to have personal experience to advance a good cause, especially on the part of the parent.

Considering that African society and the world over, has people who have never been to school, it is not uncommon for the same parents to do their best to send their children to school, although some are adamantly ignorant. As for teachers it is just a question of personal determination that one can be aware of what needs to be done through computer usage. As a researcher, my first encounter with computers was in 1994 at the age of 28 when I enrolled at university as an undergraduate student. The computers did not offer any musical computer-assisted instructional platform. The computer-assisted platform crossed my path in 2007 at the age of 41 as I enrolled for the Masters degree in Music at the University of Pretoria (South Africa). However, Zimbabwe has since experienced phenomenal growth in computer education as many schools have introduced the subject at primary and secondary schools. However, most of the schools do not have the software packages to facilitate CAI in many learning activities, including music education. Even though they do not deal with music education it is encouraging to see that our students have had some hands-on experience with computers – a theme explored in more detail in the ensuing chapters of this thesis.

2.3 COMPUTER-ASSISTED INSTRUCTION FOR MUSICAL INSTRUMENTS

It is important to understand computer-assisted instruction in general and specifically the way it relates to music tuition. According to the Encyclopaedia Britannica (2014), computer-assisted instruction enables an instructor to present subject matter to students using a computer as a platform. The Free Dictionary (2014) indicates that computer-assisted instruction refers to the process that capitalises on the computer as a teaching resource in order to present subject matter, further affording students opportunities to interact with the computer in real time. In this study the computer plays a

critical and central role in providing the core of the instructional approach to the teaching of the instrument under study. Although, to an extent, CAI relates well to computer-assisted learning (CAL), the study does not intend to explore the latter. Instead the study focuses on CAI and other related ancillary electronic devices required to conduct CAI. The study embraces the use of computers to execute instruction or tuition of the *nyunga nyunga* mbira. Other devices that could be used with the computer in CAI serve a supporting role, hence the computer is the central focal point for CAI. Some of the equipment that falls under the supportive domain include monitor, speakers, microphones, amplifier, overhead projector, headphones, smart board, and other relevant portable and immovable visual and audio devices.

It is important at this stage to note that all the supportive equipment required in this study may not be exhaustible or be equated to CAI, especially in view of the fact that some of it may be done away with, particularly where conditions do not permit its use. For example, in some instances, students may be required to work as individuals and leave out the group collaborative approach; in this case the loud monitor speakers may be done away with in order to promote personal involvement with the use of headphones. The study assumes that the four main components of the computer are keyboard, monitor, central processing unit and mouse and these make up the core of CAI. The study does not focus on the operational description of the computer hence the functionality of the above mentioned core components of the computer is not delved into or discussed in much detail. The actual usage and the outcomes of CAI are the most important aspects of this study.

In discussing CAI and its use in music tuition it is necessary for this study to provide an overview of the history and development of CAI in music instruction, even though instruction of music has, until recently, largely been associated with human beings as the major facilitators of the learning process. It is an accepted and reasonable idea that the African traditional school relies on teacher-student interaction to effect concept formation on subject matter. Through concerted research from the late 1960s, as well as in more recent times, the world has seen growth in the use of computers in many areas to include music in the arts, humanities, commerce and science. This chapter explores the impact of the inception of the modern technology in as far as the application of the computer has revolutionised the models of instruction in music (Lister, Dovey, Giddings, Grant, and Kelly 2009).

Whereas others are struggling to understand the operational principles of computers, some have abdicated from using this technology due to a variety of reasons as discussed later in subsequent chapters. Some people are conservative. They stick to the traditional models of instruction, choosing to maintain the status quo, while others move along with the modern trend of using computer

instruction for music. Even though the advent of the computer revolution has been received with a myriad of mixed views, the study does not focus on controversies or try to resolve such matters of debate. Rather the thrust of the discourse is to take advantage of the computer to instruct an indigenous traditional instrument that is not conventionally associated with modern technology.

The term 'modern technology' is a result of the inventions made by people across the world in order to solve specific challenges (Merriam-Webster Dictionary, 2016). Historically, CAI came into use in the 1960s in Europe and the United States of America with the advent of computers, even though at the time costs were generally high in terms of purchasing and maintenance (Nicholle, 2016). Eddins (1981:7) mentions that the history of CAI shows that during the years 1967-1969 (1969 and 1971) research was conducted in the US to develop computers for instrumental musicians as part of modern technology. The early years of the inception of computers brought a lot of uncertainty to the intended users. The majority of the uncertainty arose from the fact that the computer was far from the reach of the majority of people. Nicholle (2016) states that Hewlett Packard 9100A and 9800 series first desktop computers cost \$5 000-00 (today \$33 000-00); these were not affordable to ordinary individuals. Universities were the first to embrace computers and CAI, mostly for research and development purposes. This study does not seek to address the scenario alluded to or make the reader appreciate the availability or unavailability of the computer to the people. However, institutions of higher education, mostly universities in developed nations, were quick to rise to the need of using computers in conducting research and instruction in music. It is from that stand point that this thesis explores the use of computers with students at a university in as far as the instruction of the *nyunga nyunga* mbira is concerned. This research is partly premised on the assumption that most university music departments have the potential to stock, run and maintain computer-assisted platforms including some that are posted on the Internet. The President of Zimbabwe and the First Lady have donated computers at some colleges and universities in Zimbabwe. I witnessed in 2004 a computer laboratory that was opened at MSU and furnished with computers connected to the Internet, courtesy of a donation by the First Lady Dr. Grace Mugabe. Again the President of Zimbabwe announced another donation of computers by the First Lady at MSU as documented in the 2011 10th graduation supplement. Like other universities since 2011, MSU has increased the procurement of computers for use in research, teaching and administrative work (Dandira, 2016). Notably, the University of Zimbabwe has, through the Department of Teacher Education (DTE), embraced the use of Finale Notepad in music education and this has been adopted by many of its Associate Teachers Colleges in Zimbabwe; about 10 of them in total (Matiure, 2014).

2.4 PEDAGOGY OF INDIGENOUS MUSIC AND THE *NYUNGA NYUNGA* MBIRA

Instruction of the *nyunga nyunga* mbira has attracted quite a host of researchers from Africa and as far afield as Europe and the United States of America. Various methodologies to facilitate the instruction of the *nyunga nyunga* mbira in institutions of higher education, whether human or computer-assisted, have not been consistently documented by the people who claim to be the owners or culture bearers of the instrument. However, modern technology has revolutionised the general view on methods of instruction, the instrument and its sound production. In this thesis ‘conservatives’ are the people that hold onto the traditional modes of instruction, owing to perhaps their choice not to comply with the trends of the computer age. The same people try by all means necessary to maintain undiluted African indigenous knowledge systems around the instrument. Reference to indigenous mbira music in this discourse is made to the performances of the *nyunga nyunga* mbira instrument strictly without the aid of modern technology. In the matter alluded to in the above discussion, the endeavour is to preserve the practices associated with the mbira in terms of performance, through indigenous methods only.

The main mode of instruction in the traditional indigenous approach relies on oral/aural skills where the teaching is informal even though it produces good performers with the passage of time. The aspiring mbira player has to deliberately choose to come under the experienced performer/mentor and observe him/her whenever an opportunity is available to learn. Such an opportunity could be a few moments when the mentor takes a break, or when there are no serious chores to attend to, thus the student can put his/her hands onto the mentor’s mbira. Some of the skilled performers would traditionally not have much time to instruct the apprentice because they are busy with their performances most of the time. Hence the mentees have to make personal efforts to observe their mentor at all times and then implement the ideas later. The traditional indigenous model is commonly conducted with mentees relying more on the mentor’s instrument for instruction. Until the aspiring mbira player obtains his/her own instrument, conceptualisation of the playing techniques develops slowly. Once an apprentice gets an instrument of their own, the opportunity to imitate their mentor becomes more meaningful.

The inclusion of traditional indigenous musical instruments into the music curriculum calls for music educators to engage in initiatives that seek to improve the teaching of mbira instruments through devising a variety of methods. One method that comes to mind is the number notation, the brainchild of the late Maraire, which was later on improved by Kuture and Matiure as they engaged in research work on the *nyunga nyunga* mbira. The number notation represents a total number (15) of the

lamellae on the instrument and grid which comprises three columns, **L** for the left thumb, **R** for the right thumb and **F** for the fore finger of the right hand, as shown in Figure 2 below. The number notation for the *nyunga nyunga* mbira is also indicated in Figure 2. The performer of the instrument relies on the numbers on the grid to play the tune on the instrument. There are no indicators to aid the player with execution of rhythm and tempo. Through research, there have been efforts to deal with the shortcomings of the number notation, such as not showing the duration and pitch of each plucked lamella, whether it is a quaver or a semi quaver and the tempo of the music.

L	F	R
5		9
1		15
1		13
5		9
1		15
3		11

Figure 2: Maraire number notation on ‘kukaiwa’ basic tune, (Courtesy of Abraham D. Maraire).

If one were to play the instrument through reading the notation grid without any assistance, it is likely that one would not understand the techniques required. In trying to solve this challenge, another researcher proposed the substitution of numbers with the letters of the musical scale of the mbira instrument. Otherwise Maraire was able to teach using the number notation both in Zimbabwe at the University of Zimbabwe and America where he obtained his Doctorate in Music.

As shown in Figure 3 Matiore (2008) presents the use of musical alphabet **FGACDE** to replace the numbers that only indicate positions of fingers and the lamellae without indications for pitch. The letter notation provides guidance to the pitch of the music that is played on the *nyunga nyunga* mbira. Even though the notation works well it does not indicate the rhythmic aspect, which has to be executed.

L	F	R
F		F,
A		E
A		D
A		F,
A		E
F		D

Figure 3: The Matiure letter notation on ‘Kukaiwa’ basic tune, (Courtesy of Perminus Matiure).

In Figure 4 below the box presents a combination of number and letter notations used in conjunction with the pulsations.

L	F	R	Pulse
F		F,	1
			2
			3
A		E	4
			5
			6
A		D	7
			8
			9
F		F,	10
			11
			12
A		E	13
			14
			15
F		D	16
			17
			18

Figure 4: Matiure letter notation for ‘Kukaiwa’ with pulsations (Courtesy of Perminus Matiure).

Through further research and innovation Matiure (2014) added onto the letter notation: thus merged the music letters with pulse notation. However, I discuss pulse notation in as far as it relates to the *nyunga nyunga* mbira and the letter notation only. In Figure 4 he shows the mbira performer the lamellae through the letters to be played. Furthermore, Matiure informs this study in that the letter notation is deficient in precision hence the introduction of pulse notation. The execution of the keys is conceived as guided by pulsations that run along each of the letters.

For the tunes that have duple or triple time signatures there will be three pulses and for quadruple four pulses per cycle. The pulses are ordered to the value of the quavers or semi quavers and these keep the tempo and the in between beats of the tune, maintaining a constant throb that is usually in compound time due to the nature of the music. Some of the tunes that have been used in this thesis have 12 crotchet beats per bar, thus 24 pulses per bar, while those with 9 crotchets per bar correspond to 18 pulses. The letters (F,) with a low peg indicate that the key is an octave lower than the ordinary (F). The tune thus represented in the grid above is exactly the same as the one in Figure 3, the only difference is the inclusion of pulses as discussed earlier in this section.

In an endeavour to deal with challenges of the missing component of rhythm to the performers, another practising music educator Kuture (2003) innovated the use of the Maraire number notation with an additional facet of rhythm in crotchets, dotted crotchets, quavers, dotted quavers and semi quavers. The rhythm notes are placed together with the number to give indications as to how these are to be articulated by the mbira player. The innovation was mooted after some of the above referred music educators spent some time teaching the *nyunga nyunga* mbira in teachers' colleges and university and encountered some problems associated with the pedagogy of the instrument.

L	F	R	Rhythm
5		9	•
1		15	•
1		13	•
5		9	•
1		15	•
3		11	•

Figure 5: Kuture rhythm and number notation

Figure 5 represents rhythm and number notation for chordal playing of Kukaiwa on the *nyunga nyunga* mbira as advocated by Kuture (2002). As already mentioned, the Maraire notation lacks rhythm, hence the addition of the guiding rhythm for all the numbers. To an extent the notation works, however, the missing element of pitch creates yet another challenge to the notation, hence one has to rely on observing the playing of the instrument. The above innovations by Maraire, Matiure and Kuture have all come under the spotlight because they were encountered in formal systems of instruction. In spite of their use in formal music instruction, there remains the challenge of the notations lacking definite indications of pitch and rhythm as performers sometimes find it difficult to follow a given number or letter.

Nembire (1993) is a proponent of staff notation on mbira tuition with the Zimbabwe mbira distance education project (ZIMDEP). Nembire, also known as Kanga Fry, wrote a book and included an audiocassette with tutorials on how to play the *dzavadzimu* (*nhare*) mbira. It is important to note here that, among several of the mbira instruments available in Zimbabwe, the most common is *dzavadzimu* (Berliner, 1993). It has slowly found a place in the institutions of music, notably MSU and Zimbabwe College of Music (ZCM). There are other types of mbira that do not constitute the core of this study and these are the *Njari*, *Matepe*, *Tonga* and *Ndau*. Even though some research and studies have been conducted around the above instruments, they have not yet found a firm place in formal music instruction (Muranda, 2010). Nembire's (2000) book received mixed reactions as some felt his approach misrepresented the traditional indigenous mbira and its music. Of course, the main reason for the lack of interest is that all the teachers' colleges to date do not offer the instrument as part of their curriculum. On that note, Chipendo (2013), who once taught music at Seke Teachers' College, mentions that Nembire tried to persuade the college to buy his materials without success.

However, upon analysing the book one gets to see the hard work that the author put into transcribing the 'Nhemamusasa' tune into staff notation with at least four variations. Although the transcriptions of the above-referred music are based on the *nhare* mbira instrument, Fry's efforts prove that there could be room for further research on the use of staff notation with other mbira instruments. Nembire's book is quite informative as it indicates how traditional mbira music could be adapted to staff notation. The resistance that Nembire encountered was due to the fact that the University of Zimbabwe (UZ) needed to ratify the inclusion of the instrument before adopting it as part of the teachers' college curriculum. Nembire could have done well if he had approached the Department of Teacher Education at UZ and sought advice. Perhaps being a research oriented institution, UZ could have subjected Nembire's work to some academic as well as objective analysis. The route that Nembire took to sell his idea was always going to be resisted since mbira performances did not

embrace the use of sheet music. In addition, it was also going to be difficult for the teachers' colleges to adopt an instrument that was outside their music curriculum. The above discussion also exhibits how difficult it is for some innovations on traditional indigenous mbira instruments to be accepted and used among the conservative indigenous performers.

While it appears to be reasonable for the culture bearers of the mbira instruments to treat their instrument in culturally appropriate ways, the same view may not be applicable to performers from outside the African context, especially the music practitioners and academics involved in formal education and research in Zimbabwe. The formal education sector subjects the instruments to research and situations that are not acceptable in some of the cultural contexts. An example is when African popular musicians play classical guitar in the absence of having sheet music, and play by ear their own African indigenous rhythms from memory. Although the mbira cannot be equated to the guitar or piano in terms of its spread across the world, it may not come as a surprise that one day the mbira instrument could be found in many different nations around the world, and different people could end up using the instruments in their own unique ways, perhaps with special notation of their own. Some might adapt it for other genres of music, just like what people have done with the piano, guitar, violin, and other Western instruments.

2.5 INSTRUMENTAL PRACTICE AND MUSIC TECHNOLOGY RESOURCES

Current musical practices and instructional approaches have not escaped the impact of modern technology; Facebook, Skype, Twitter, WhatsApp, YouTube, Yahoo, Google, and many other social media facilities have been exploited to move ahead with designing instructional materials and methods aligned to music. The use of visual and audio presentations in real life, on the Internet, as well as on radio and television broadcasts, has played a fundamental role and will continue to play a pivotal part in dealing with matters relating to tuition of musical instruments. More recently, students from Zimbabwean and other universities in the southern African region through YouTube, Google Scholar and other sites on the Internet have acquired valuable tips on how to deal with some playing techniques through file sharing of video excerpts on saxophone, piano, marimba, mbira and African drum performances, to name a few. Many of such video excerpts are freely available online. Some of the resources on the Internet offer useful cues to instrument performers leading into focused practice in the absence of instructors. The late Takunda Mafika, a graduate from MSU's Department of Music and Musicology, is an example of someone who posted a series of tutorials on YouTube. At MSU music lecturers notice that some of those who aspire to play the *nyunga nyunga* instrument make use of the video tutorials. In spite of the videos not being privy to the majority of the population in

Zimbabwe, the visiting and conventional students studying for their degree in Music and Musicology at MSU attest to have had an opportunity to view several of these resources, including Mafika's (2011) mbira instructional videos on YouTube. They pointed out that the videos were quite informative and well-structured, which enabled understanding and concept formation.

Recently in a music course component that deals with modern technology and music instruction, I discovered abundant free resources on the Internet. Some of the resources that draw interest for this study include Musescore and Noteflight which proved to be effective in transcription and analysis of mbira and other indigenous tunes. The merit of the above resources is that they are available on the Internet for free; hence interested people only need to register through an active email and start using the resources. The above resources also facilitate networking and sharing music scores through cyberspace. Also registered members have the opportunity to publish their music through the given websites and earn some royalties too. A survey of the tunes published on the above-referred websites shows that there are no Zimbabwean mbira tunes. The glaring absence, in a personal view, does not mean that there are no such transcriptions of mbira tunes in staff notation, but rather that there are no published materials on mbira as yet. This situation also proves that many people embrace the view that traditional indigenous music should be preserved through indigenous means hence www.noteflight.com and www.musescore.com may not be appropriate for many people. Without making value judgements, it proves useful to use resources that work well for our music educational research and development. This study does not at all seek to disprove or approve the use of indigenous or modern technology instructional approaches, since users are entitled to their preferred choices. The above resources, including YouTube, have an obvious advantage of providing prompt feedback for the users and reinforcement on what they hear on playback. The playback also enables the transcriber and instructor to analyse the melodic, dynamic, and rhythmic attributes of the tunes and be able to make necessary adjustments if needed.

People around the world interact on some of the following sites: Facebook, Twitter, Skype, Viber, and YouTube, just to name a few. Some of these sites facilitate live interaction between people not known to each other through undertaking collaborations on a variety of matters. The Internet also presents opportunities for live tutorials, through these sites, with mbira instructors regardless of distance. Such a thing was not possible more than 20 years ago. Prepared video tutorials are also accessible on the Internet on various websites. Some of the Internet resources are available for free including notation software packages, interactive programmes and articles on mbira, which have proved effective in their usability. Sites like www.musescore.com, www.noteflight.com, www.lilypond.com, and www.musictechteacher.com provide free interactive programmes, even

though some of them have limitations in the services offered. Notwithstanding the merits of the Internet, its use depends on several factors such as availability of electricity, computers, connectivity and money to procure and service the equipment.

The availability of electricity enables the smooth running of computers, even though connectivity in Zimbabwe depends on the efficiency of some of the service providers, e.g. Africom, Econet, NetOne, Telecel, and TelOne. With the economic climate prevailing in Zimbabwe the Internet tariffs are expensive for low income earners. The general trend in Zimbabwe leaves workers with no disposable income, such that they only concentrate on paying for essentials such as food, accommodation and education. Internet connectivity is also a problem in some of the remote areas of Zimbabwe owing to lack of electricity in many rural areas. Even though all the cities have electricity, there is heavy load shedding resulting in blackouts for periods in excess of eight hours per day. Many institutions now use standby generators, and uninterrupted power supply (UPS) devices as stopgap measures, and this creates a seamless flow of power when blackouts occur. This research took place with minimal disruptions from load shedding; there were no lapses as the institution (MSU) ran efficient standby generators.

A critical observation to note is that, even though the Internet provides some well-structured videos and computer-assisted instructional materials, certain challenges arise from the use of such resources as it may take a long time for people to notice certain errors and misrepresentations to their work. Such problems are compounded when creators of such information sites on the Internet cannot be traced in order to seek clarification on matters of interest. Even though the issue of validity and reliability of information conveyed through the Internet is important, this thesis does not focus on interrogating the Internet for its credibility. However, information pertinent to this study takes care of instrumental instruction in connection with the *nyunga nyunga* music instruments through computer-assisted instruction. With numerous visitors on the Internet resource coupled with slow connectivity, many people do not make deliberate efforts to interrogate the genuineness, authenticity, and accuracy of subject matter. However, readers need to note that in Zimbabwe Internet connectivity has improved compared to 2009 and the years preceding. Many telephone companies have come to offer Internet services, including the major telephone network companies Econet, NetOne, and Telecel. Their Internet tariffs are still very high; for example, a monthly bundle of 15 gigabytes costs US\$29 from Econet, and US\$25 for 10 gigabytes from TelOne. Internet bundles are usually used up before the end of the month. Even though there has been an improvement in connectivity, high traffic slows down surfing on the Internet and that creates problems for users. Many Internet cafés have gone out of business because they used to charge high hourly rates, but the influx of smartphones and

tablets has pushed them out of business. Cell phone networks now provide Internet services for as little as US\$3, a flat monthly WhatsApp charge. The only challenge that remains is that the above service is available to people who own smartphones and at times there is poor connectivity.

2.6 MODERN TECHNOLOGY AND INDIGENOUS MUSIC INSTRUMENTS

Technology has been associated with humankind from creation. However, it (technology) has always changed with time in view of the developments that take effect as humans seek to stay on top of every situation and survive through the harsh conditions encountered in life. Hendriks, Grant and Dyson (2016) argue that indigenous people, particularly those that have held on to traditional practices are moving toward embracing modern technologies to keep up with demands that are dictated by technological advances. African musical instruments have been subjected to modern technology in different ways. However, this discussion does not attempt to engage in a discourse of value judgment as to how modern technology has been influenced by indigenous instruments and or vice versa. Rather the focus is on how selected mbira instruments and the music thereof have drawn from modern technology. The performers of indigenous music belong to two groups of thought, the liberal and conservative. The liberal mbira performers are those that embrace the use of both modern technology and traditional indigenous acoustic mbira, depending on the occasion and context of its use. Conservatives subscribe to the exclusive use of traditional indigenous mbira, regardless of context and time. They resent modern technology and often times guard against tendencies that seem to undermine traditional practices, as discussed by Taylor (2014).

From the conservative viewpoint the instrument is supposed to remain traditional in order to honour ancestors or *vadzimu* who are believed to be the owners of the instrument. From this point it is held that the ancestors readily get to recognise their music once it is presented in the traditional indigenous contexts. The above-referred separation between traditional indigenous and modern mbira instruments is also not an issue of contention in this research, I accept both and hence either of the two is given reference. For example, during this research the national power utility Zimbabwe Electricity Supply Authority (ZESA) administered a great deal of load shedding in order to rationalise the consumption of electricity, hence at times the study used an acoustic mbira.

2.6.1 Mbira instruments and electronic amplification

Advances in technology have given birth to use of new technologies in the performance of mbira instruments. Although Stella Chiweshe, a female mbira guru, and certain other performers may have

used mbira with pickups, Tendai Gahamadze is one of the chief proponents of using guitar pickups on the mbira instruments. Gahamadze (2010) mentions that modern technology has actually promoted mbira music as it has become possible to record in the studio and engage in live performances of the instrument with ease. The innovation to use guitar pickups has also enabled the mbira instruments, which are naturally soft, to become audible through the use of amplifiers and loudspeakers.

The following popular mbira ensembles Mbira dzeNharira, Mawungira ENharira and Zvirimudeze perform at public venues in and around Zimbabwe using modern technology. With the use of guitar amplifiers to connect their instruments, these ensembles have entertained large crowds at live locations organised in Zimbabwe to commemorate national and international events. The use of guitar pickups allows mbira performers to move and dance freely on stage while playing the instrument with ease. Guitar pickups tend to overemphasise the overtones of the mbira instrument's keys because naturally these overtones are soft and are masked by the mbira sounds, hence they are not ordinarily picked up by the naked ear. The acoustic mbira always presents a scenario where the fundamental frequencies of the lamellae mask these overtones. An unnatural sound tends to overarch the sound production of the instrument in this kind of performance. However, proper use of equalisers by sound engineers helps to reduce the influence of the overtones and restore the sonic character of the instrument picked up by microphones. Often the engineer plays a great role in doing justice to the mbira sound otherwise, without proper skill, the resultant sound could be distorted and misrepresent the indigenous instrument's timbre. The engineer has to be sure of how the natural mbira ought to sound to be able to balance the mixing of the sound. In essence, shaping of the sound would require experienced application of the modern technologies to get the right sound from the mbira.

It can be argued that guitar pickups are not originally designed to work with mbira instruments and consequently this innovation necessitated the removal of rattles and buzzers attached to the acoustic mbira. The reason for the removal of the buzzers and rattles is to avoid their sound from filtering into the mbira sound through the guitar pickups as they pose a threat of changing and or masking the warm, indigenous sonic appeal of the mbira. Each mbira instrument is amplified through a dedicated channel to allow total control of the sound produced by the instrument. The use of electronics in this instance makes it possible for the buzzing sound to be picked up as a separate source that will be mixed with the mbira at playback. Exponents of electronics uphold that the use of guitar pickups and the amplification system enhance the sound of the mbira. However, their view depends on informed knowledge of the sonic character of the acoustic mbira. I prefer separating the buzzing sound from the instrument during recording or live performance, and then add it into the mix later. The buzzing sound, which is commonly made by playing a *hosho*, is picked up separately through an instrument

microphone in a separate channel. The instruments and the *hosho* are mixed together with special attention to maintain balance. A simple balance keeps the mbira reasonably above the mix, while a well-controlled shaker provides the pulse to the performance.

The use of guitar pickups has placed the mbira instrument onto the popular music industry arena, competing for space with guitars, keyboards, and the Western drum set. The advent of digital technology enables the application of digital signal processing tools so that sound can be adjusted at the click of a mouse. Although some people prefer the use of guitar pickups on mbira instruments, others exclusively enjoy the acoustic mbira and prefer instrument microphones to guitar pickups. The next segment discusses the acoustic mbira with respect to the use of instrument microphones.

2.6.2 Microphones and the acoustic mbira

The use of microphones to capture mbira instruments was undertaken by Hugh and Andrew Tracey as they moved around Africa recording various indigenous music instruments. In their field recordings, now archived in the International Library of African Music (ILAM), they captured holistic renditions in their natural context with, at times, very minimal editing to remove unwanted noise in the musical performances (Tracey, 1971). The use of microphones on the acoustic mbira tends to confine the performer of the instrument to a specific physical space because movements will disturb the position of microphones and, consequently, the sound balance. If the mbira performers get excited and want to dance or move around the performance space, their actions can also change and disturb the positions of the microphones. Unwanted changes in positioning of microphones often result in picking up unwanted sounds. However, the restricting of the mbira player (*gwenyambira*) to one space also takes away the natural urge to break into dance and movement as a spontaneous response to the process of playing the mbira instrument.

The use of instrument microphones to pick up signals from an acoustic mbira has some challenges. These include room ambience, microphone pickup pattern, and the microphone's frequency response curve, plus the placement techniques for the microphone. If the microphone is placed too far from the instrument more room ambience intrudes into the sound. The resultant effect is that the instrument's direct sound becomes weak, thereby reducing intelligibility and clarity of sound. If the microphone is too close, the sound becomes too dry and at times causes distortion. However, the dryness requires some artificial reverberation applied from the mixing console to liven up the sound. All these endeavours need a skilled sound engineer in order to come up with the natural sound of the instrument.

Through personal experience, it was discovered that the microphone pickup pattern preferable on an acoustic mbira instrument and many other instruments is the cardioid (unidirectional) pattern as it picks up signal effectively from one direction. This type is associated with most instrument microphones. The advantage of the unidirectional polar pattern is that it rejects all signals off axis from the rear of the microphone, as illustrated in figure 6 (Eargle, 2004).

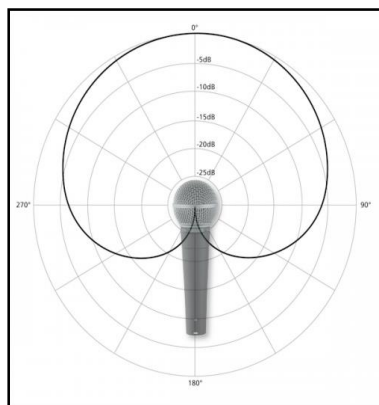


Figure 6: The pickup for the unidirectional polar pattern (Eargle, 2004).

With the exception of a studio setup, placing a microphone too close to the mbira instrument makes the sound too dry and the microphone with unidirectional polar pattern rejects the room reverb and the natural ambience. The mbira sound picked up by a close microphone tends to be dry but very clear and then mixing software is used to add artificial reverberation to liven up the sound (Huber and Runstein, 2010). In instances where the engineer may require the use of natural ambience, a combination of both close and distant microphone techniques is used and then the two are mixed. It is important to appreciate that neither of the two microphone techniques discussed earlier is superior to the other; the choice belongs to the user and is dependent on context and type of sound desired. The type of cables used also plays a critical role in the sound production as some cables are susceptible to radio frequencies (RF) which add to the degradation of the original sound. As a way to avert such challenges, balanced cables are used to cancel out possible RF interference and hum induction (Bartlett and Bartlett, 1999).

The acoustic *nyunga nyunga* mbira have shells or bottle tops attached to the sound board. These present an uncontrollable buzzing sound which, when the microphone is used, tends to overshadow the mbira sound. As an audio engineer, I found that removing the shells from the soundboard enabled the picking up of cleaner sound from the instrument. Another aspect that is necessary to consider is the frequency response (FR) curve of a microphone. According to Eargle (2004), the FR of a microphone tells the user how the microphone responds to the sonic characteristics of any given

source of sound. Some microphones tend to make the sound full of bass, deficient of sibilance or lack low frequencies. It is the engineer's responsibility to choose microphones that make the instruments produce the desired sound. In cases where the natural sound source is to be maintained as desired, the engineer uses microphones with a flat FR or microphones that keep the sound register close to the natural sound of the instrument. The FR then allows the sound to be captured without emphasising or deemphasising the low, middle and high frequencies in the sound spectrum of the instrument. Microphones with specific FR can be used in both live and studio performances. However, depending on the venue and the live performances, one may require the use of dedicated software tools to shape the sonic character of instrument. Izhaki (2010) suggests the use of parametric or graphic equaliser (EQ) to get desirable sound on a signal. The EQ allows for boosting or cutting out of frequencies to the desired levels.



Figure 7: Kalimba (Courtesy of African musical instruments (AMI))

African Musical Instruments (AMI), in Grahamstown in South Africa, manufactures the acoustic kalimba instruments with and without buzzers. Even though the kalimba version that has 17 lamellae relates to the 15 nyunga *nyunga* mbira, the placement of the buzzers is on each alternating lamella to give a total of 9 buzzers. Although this is in contrast to the indigenous mbira whose buzzers are placed on the soundboard and around the resonator, they still provide the pertinent mbira sound. The kalimba, has been left out because it has assumed a different orientation in terms of the tuning, the way it is played and the production of sound.

2.7 THE GLOBAL VIEW AND UPTAKE OF TECHNOLOGY IN MUSIC INSTRUCTION

Lowery (2016) upholds that the advent of computers in education is an advantage to music educators, students and musicians. Through research several innovations have been undertaken at institutions of

higher education the world over but developing nations still lag behind in the global drift toward the growing use of computers due to several reasons. Zimbabwe has crafted a policy to promote the study of science and technology subjects at high school. The policy is termed Science, Technology, Engineering and Mathematics (STEM), a drive to promote the study of science, physics, chemistry biology and mathematics at high school level. In 2016 STEM has seen a waiver on fees for all 'A' Level students doing the above-mentioned. This move paves the way for the growth and development of modern technology (Deming, 2016).

The above policy affords the students a great opportunity to prepare for tertiary studies in science and technology. Whereas in developed nations households can afford to buy computers for their members, the same is not true in Africa, particularly Zimbabwe (Wright, 2014). Unavailability of electricity in some parts of Zimbabwe is a drawback to the use of modern technology as there is no Internet connectivity. In addition to the above, Zimbabwe removed all fee subsidies for education from primary to university level and that makes it difficult for students who cannot afford to pay the required fees. STEM is a partial support to the promotion of education and a more inclusive and holistic approach would help those not fully given to science and mathematics. For example, in music and the arts there is a very big gap (Razemba 2014).

In spite of the above issues, the government of Zimbabwe has put some policies in place to encourage and support the importation of personal computers duty free – at least one computer per person (ZIMRA, 2014). The waiver of duty largely benefits schools and colleges which of late have embarked on the purchase of teaching equipment. Although this is in place, the process is very stringent, and some institutions fail to benefit. Midlands State University is one of the beneficiaries of this policy for, example, the Department of Music and Musicology has procured teaching equipment in the form of hardware and software for notation, recording, sequencing, mixing and mastering of music through this facility.

Even though the above stated policy is well meant, the majority of the working class cannot afford. The cost of purchasing computers in RSA has escalated with the falling exchange rate of the rand against the US dollar, one of the legal tenders in the multi-currency economy of Zimbabwe (ZimStats, 2012), coupled with the reduction of the duty-free threshold from US\$300 to US\$200. At the time of writing this thesis, the use of computers by individuals in Zimbabwe was not commensurate with what obtained in developed nations. The price of a laptop is still far from the reach of many. Since many people in the middle to lower income classes earn US\$550.00 or less per month, they would prioritise spending on food, clothing, shelter, and education (LEDRIZ, 2016).

According to LEDRIZ (2016) report, in 2014 the majority of Zimbabweans earned wages averaging below US\$300.00 and that is below the poverty datum line pegged at US\$510.00. The average price of a new laptop is US\$400.00 and US\$300.00 for desktops. In light of such a limited income, one has to save over long periods of time (months or years) to be able to buy a computer. Another challenge for Zimbabwe is that its economy depends largely on the agricultural sector whose revenue feeds into industry to finance manufacturing and production. Sibanda (2016) mentions in *The Herald*, a national newspaper, that the Minister of Finance Patrick Chinamasa advised that the government of Zimbabwe has had a high wage bill accounting for 82% of government expenditure. The Minister said there was need to bring it down to 52% by 2019. This indicates that other government responsibilities such as infrastructure development, agriculture, health and education only accounted for the remaining 18% expenditure. This is a cause for serious concern for any development-oriented government. Given this scenario the economic prospects for Zimbabwe are gloomy and many companies have closed down, leaving workers jobless while many of those still in employment going for many months without pay.

According to Mawonde (2016), the government of Zimbabwe issued a notice to increase duty on imported goods. This was meant to broaden the revenue base but it went on to override the duty-free importation of computers although state-run institutions can still negotiate for a waiver to import teaching equipment duty-free. Furthermore, in 2016, according to the Zimbabwe Government Gazette (2016) an amendment to statutory instrument number 64 (SI 64) was passed to control the rampant importation of goods for resale by citizens who had resorted to buying and selling of goods to earn a living after losing their jobs or to supplement their meagre incomes (Mawonde, 2016). The SI 64 contains a list of restricted items that require import licences, including selected electronics, foodstuffs, clothing, blankets and luxuries, if purchased in large quantities from outside Zimbabwe. Failure to comply with SI 64 results in these travellers forfeiting their goods to the state.

2.8 MUSICAL APPLICATIONS OF COMPUTERS

Brinkley-Etzkorn and Ishitani (2016) argue that in teaching computers are useful in building relationships between students and their instructors. Even though the function of CAI transcends formal and informal instructional contexts, this section deals with general musical applications of computers in music instruction. Some of the applications include blogs, websites and YouTube. The computer has necessitated the removal of bulk equipment that was required to create audio-visual advertisements in the past. The time taken to create, edit and mix both sound effects and music is

reduced to a matter of hours in some cases, or a few days, as opposed to the many weeks of laborious work that were required during the era of analogue recording. The advertisements culminate in broadcasting on radio and television in a country with a population of approximately 13 million. Considering that many households in town own at least a radio and a television set, according to the Census 2012 Preliminary Report, the information is likely to reach a majority of urban dwellers. It is possible to compose, edit and post musicals on Internet. The Internet will then provide fast dissemination of information. The information may not necessarily be advertisement oriented but it could be lecture notes or tutorials in music. This is the reason some information on mbira music is accessible on the Internet. The only challenge for countries such as Zimbabwe is that computers are still unaffordable to the majority.

Vukasović and Strašek (2014) posit that computer based programmes, as in websites and other internet platforms, have facilitated networking through email collaboration on matters of research and education. During this research I benefitted immensely from facilities such as email and Skype. I would get in touch with the supervisor and get feedback through the same route although at times I had to visit the supervisor and have personal discussions on matters of concern. With the use of Skype, Twitter, Facebook, and WhatsApp just to mention a few, students have sought advice on matters of research and education.

Recently in a Musical Sound and Critical Listening course for first year students, (of which the I am the package organiser and administrator) a WhatsApp group chat was hosted and supplementary information on selected subtopics for the course was sent to all classmates. The group chat made it possible for students to ask questions freely and as a facilitator and course leader I was able to give the students answers to the questions with ease. Most students indicated that they were comfortable with such an approach because it removed the four walls of the classroom, thus permitting a relaxed and free atmosphere for many of them. The above view and ideas affirm the possibility of distance education, which is in line with UNISA's goal for providing distance education, hence it is worthy of development.

More research is still ongoing with WhatsApp to evaluate its functionality in the area of music instruction. I think that WhatsApp works well with students who can comprehend what they read. In recent times the SMS (short message service) has become the opposite, with long messages emanating from people with a strong addiction to chat through WhatsApp and other related social sites. I also think that the social sites come in handy in communicating with students, especially where they cannot be grouped in one location, with platforms like WhatsApp and others creating virtual

classrooms which every interested member can visit at their convenience and in the comfort of their homes.

Bullinger and Shackel (2014) underscore that humans have continued to seek ways to interact with computers to solve the problems that confront them. The application of computers in teaching has grown over the years. The computer has replaced the printing press as most typesetting is now done electronically for a variety of work. Preparation of lesson plans can be done on a computer, particularly writing of content, student activities, homework, exercises and tests. Some dedicated software packages aid the setting up of music theory e.g. Finale, Sibelius, Lily Pond and Musescore, to name a few. The students can also explore some tasks with guidance from the instructor to engage in instrumental practice techniques, pitch recognition and ear training, music appreciation and many other musical activities through the above mentioned software packages (Spector, Ifenthaler, Sampson, and Isaias 2016). Besides giving the students an opportunity to explore, the instructor can also discover certain avenues through which students can do their work, give feedback and prompt reinforcement. Some, if not most, of the music notation software packages have an application to publish one's own musical compositions on the web and, as such, one can earn royalties in spite of the prevailing piracy plague.

Piracy has become cancerous and rampant so that earning significant revenue through online publishing could still be a dream yet to be fulfilled by those in Africa, particularly in Zimbabwe (Graveline, 2014). However, the idea of publishing some tunes or songs on the Internet gives an ordinary student a sense of ownership, thereby increasing the chance for people to notice and recognise their compositions and other musical works, simply because millions of people visit the web every day. Through the Internet students of similar interests can begin to network and engage in collaborative endeavours. Through networking one has opportunities of travelling to present, for instance, research findings on indigenous African instruments and the use of computer-assisted platforms like CAI on teaching the *nyunga nyunga mbira*.

The most striking area of concern is research. The computer can be used for presentation of data through text, graphics, sound and statistics so that analysis of results can be made useful and focused. To date there are software packages where any researcher can enter the data and then automated computation is done and provide a statistical display of issues. Then the one can then conduct analyses of the same. It has become easy to publish results on research because of computer assistance, as sending to a publisher is done through soft copies and there are no more hassles of carrying loads of hardcopy manuscripts. The publication of soft copies is gaining momentum in Zimbabwean

universities. Even though publishing hard copies is still quite common, many journals have embraced publishing online. At Midlands State University the journals have gone online and students can remit to the university library's open repository through the intranet and Internet.

One of the contested aspects of computer-assisted instruction is creating transcriptions of the music that is played on indigenous musical instruments. Azadehfar (2016) states that Western transcription of non-Western music does not do justice to the music itself. He argues, that the transcriptions remove the instrument from the context of the performance, disregarding any changes that take place from time to time. This thought further construes that Western models that represent sound cannot be fully functional in representing the complex rhythms of the mbira and other indigenous instruments. In the absence of a tried and tested method to transcribe music for the *nyunga nyunga* mbira, one wonders why staff and pulse notations cannot be used. Those that embrace staff might want to criticise those that use the pulse notation. Their reasons, of course, are not connected to the focus of this discourse, hence they are not discussed in this thesis.

I hold strongly and believe that transcriptions of whatever form are susceptible to human error and as such scholars and researchers should understand that to err is human and it is part of life. Engaging in research can continue to help the music fraternity to move away from judging what others use as a model of transcription against what others do not use. The aim of research is not to find a winner through endless debates but to present what is intelligible and manageable and embrace it.

Since education is concerned with empowering students to solve problems, the application of computers is handy in tackling instruction in a way that motivates the students. Computers offer an interactive window accompanied with fulfilled actions and satisfying experiences on the part of the instructor and the students. Bulk calculations, computations and transactions can be done through computer-assistance while the user is relaxed and able to do many other things, thus promoting multitasking. The applications of computers are inexhaustible as there are many different areas of research and study. The most important aspect about computers is that they are subject to human control and programming and, as such, human involvement remains pivotal.

Regardless of the fact that in Zimbabwe we have a growing population, the inception of computer-assisted jobs reduces the demand for human resource even if human capital is still a critical component of the equation. More tasks and goods can be produced within a short time with a few people attending to the computers. In this research the use of Sibelius 7 reduced the time that was

needed to transcribe using pen and paper with no playback save internal hearing. Sibelius offers spontaneous playback, hence instant feedback.

2.9 IMPLICATIONS OF MODERN TECHNOLOGY FOR ZIMBABWE

The arrival of computer technology in Zimbabwe gave rise to many (musical) developments that include recording, production, marketing, distribution and sales of audio-visual media. The Broadcasting Services Act of 2001 caused a gap on the television and radio music broadcasting programmes as the presenters struggled to meet the demand for 75% Zimbabwean content. All this happened against the backdrop of broadcasts previously dominated by music from America and Europe. The Act presented an opportunity for local record labels to increase their base: Gramma Records, Records and Tape Promotions, Zimbabwe Music Corporation, Shed Studios, Metro Studios and Ngawongwe just to list a few of them. Prior to the legislation, these major record companies had enjoyed the recording, distribution and sale of their products to the nation and abroad. They also had analogue equipment to undertake recording with quite a large contingent of specialised workers. There emerged some recording entities that did their recording using the computer and reduced the time taken to produce a music album using computer based tools in home studios (Muranda, 2005). The computer revolutionised the music industry in that the distribution of musical media became less restricted to the audiocassette and the quality of music improved as digital technology was less prone to errors. Backyard recording companies (home-based studios) became wide spread across the nation; the norm of recording live instruments was set aside and people began to engage in loop-based productions where the artists could just sit with their producer/engineer overnight and come up with a single. This was the time when the urban grooves genres, Dancehall, Hip Hop, RnB and House thrived and became popular. Software recording packages made it possible for the recording and publishing of music in a very short time. The majority of music published at the time was of high quality although there were some low quality productions hastily churned out to fill the 75% local content requirement. On the whole, the legislation promoted the growth of local music production (Muranda, 2005). The influx of popular music from American ghettos began to take centre stage with hip-hop, rap, and dancehall genres becoming an epitome of many artists. The era saw the rise of Audious Mutawarira Extra Large, Ngoni Kambarami, Maumau, Maskiri, Plaxedes Wenyika and Roy and Royce, just to name a few. These musicians did not use any musical instruments; all their music was based on loop production employing dedicated software such as Fruity Loops, Reason, PropellerHead, Cubase and many others.

If the reader should wonder why such information should be mentioned in this thesis, the reason is that the evolution of computers will doubtless affect the *nyunga nyunga* mbira in the same way that it affects the musicians and genres mentioned above. All loop-based productions use samples of live instruments combined to create a song. It is just a question of time and with ongoing research it is possible to come up with mbira loops that will be used perhaps by generations to come. Some of these loops would not be explicitly related to an instrument that we have today. The samples may end up being refined sounds of the instrument and these will be recreated by future generations. There is no guarantee that someone will police the users of such technology because there is no legislation that prohibits performers from using the instruments in the way that suits their context and needs. At the time of this research most churches and social gatherings had not embraced the mbira instrument, yet their musicians played mbira rhythms (and melodies) on the guitar and keyboards without a problem. Muranda (2010) argues that with the passage of time some people will end up not knowing the mbira instrument because they would have never seen it before; all they know is the guitar that is played like mbira.

Concerning the above matter, it may not come as surprise to meet people who are familiar with the guitar and not the mbira. I personally heard people confusing a mbira for a guitar because they could not differentiate the two. This issue is discussed in Chapter 4. The use of computers in Zimbabwe should see greater effort placed on the teaching of music so that parents and teachers can afford the students a balanced view of music education. Currently, the enrolment of music students at colleges and universities is very low due to the negative view placed on music. Parents tend to dictate what their children should do at school even after the age of 18. This is tantamount to disempowering them and to an extent they would cause them to never confidently make informed decisions about their lives.

In my 27 years of teaching, I have met people who regret that they did not study music and they blame it on being misinformed by their parents and peers. Zimbabwe perhaps would need to introduce policies that uplift the purchase and use of computers in music education. Perhaps special conditions can be created as incentives for those intending to set up schools and those that offer tuition in music education could be supported from grassroots. Considering that music plays a big role in the socio-economic and political landscape, it is important that a deliberate move towards an increased appreciation of technology for music education is undertaken.

Colleges and universities in Zimbabwe need to embrace the use of computers in order to produce competent students. In this case, music education needs to benefit from qualified teachers in terms of

computer literacy as well as the capacity to use them. Bukaliya and Mubika (2011) recommend full integration of ICT in the learning experience of students to empower them with the requisite skill to use computers. They further state that teachers need to be equipped in order to be able to assist the students in becoming competent in ICT. Both teachers and students have a significant role to play in dealing with computers. However, the government should provide such resources, especially in rural schools which are situated in poor communities. Some rural schools do not have electricity and they cannot use computers or any form of ICT. According to Isaacs (2007) Zimbabwe has an ICT policy but there is no clear and specific policy on ICT in education or music education; yet computer education plays a big role in building a base for ICT and computer competencies among the students at primary, secondary and tertiary levels.

2.10 POSSIBLE MERITS AND DRAWBACKS OF COMPUTER TECHNOLOGY

The advent of the computer microchip brought numerous advantages and some demerits. The use of computers in CAI inculcates a sense of appreciation among the users (students) resulting in confidence through interaction with the machines (Thomerson, 2006 and Basturk, 2005). More importantly as students became engrossed in their tasks, this directly and/or indirectly reduces the traces of technophobia. As a music educator-cum-music-performer I have noticed students of all ages grow in using computers. In spite of this growth in knowledge, willingness to get involved enables acquisition of computer skills. Educators also assume that students come to school because they are motivated to do so, especially at college and universities.

There is a degree of cognitive development that comes as a result of students engaging with modern technology in computer-assisted learning of music because instructions follow a logical order of steps, which should not be bypassed. As the tasks unfold the order of events creates a schema in the mind of the students and this develops their memory, which is useful in operating the computer (Brewer, 2016). Okita (2014) proved that computers prepare students to be able to tackle future computer-based challenges with success. The students gain confidence and skills needed in dealing with the computer and that comes as a benefit to users.

The variety that comes with voice, sound, music, still and animated graphics, and motion pictures minimises the boredom that normally accompanies listening to a human instructor all the time. An instructor is fraught with mannerisms and monotonous talking. The computer is comparatively dynamic and narrations, text pop ups, and animations keep the students motivated (Osiceanu, 2015). Thus students have fun while they acquire the pertinent skills in music. From the variety, they can

also choose to follow what interest them as they get involved. They can also associate certain concepts with sounds, music or commands made by the computer.

Computer-assisted instruction is not the only method of teaching music. There are others and, even though the study does not focus on them, they can complement CAI and vice versa. Such a view makes the inclusion of CAI in musical instruction a relevant and pertinent idea. The teacher's guidance to discovery learning also comes in handy to support the efficacy of computers in music instruction. One of the biggest advantages of computer-assisted instruction is that it can be administered repeatedly in the same format. If the learning is successful, then the student or instructor can predict the fulfilment of the set objectives. This makes the use of computer-assisted instruction a user-friendly approach.

The instructor can go through the materials set for the CAI and see what works or take appropriate action to counter any setbacks. Such merits do not happen automatically. There should be commitment on the part of the instructor and the students, because at times computers can fail to work even after everything has been done and followed properly. It should be noted that CAI also endows students with vital computer skills that could come in handy later in life. However, a major disadvantage of CAI is that students could get addicted to using computers exclusively thereby cultivating a dependency on computers. Also, if not properly monitored, students can digress from academic work and stray to other issues that have nothing to do with the set goals. An example is when students become obsessed with surfing non-academic sites, particularly pornography, on the Internet.

Equipment and space for CAI may be expensive for institutions to build, and this can be a significant factor limiting its adoption. An institution would also have to employ experts who can maintain the machines from time to time and this requires a decent budget. Even though Zimbabwe's economy uses a multiple currency system, rural schools lag behind in procurement of resources, regardless of grants from the state budget and the concerted support from the parents and teachers' councils.

One of the limitations of a computer is that it lacks the emotional intelligence of a human being. As such, it cannot pick up nuances of emotion in a student or respond to these. The computer therefore falls short of being an ideal replacement of the role of human being because the student can be frustrated if a problem does not get a solution.



Also using computers in music instruction requires prior knowledge of operating them because they only understand one language. Teachers need to be trained in the language of operating computers in order to be able to use them. In a recent survey in Mkoba schools near MSU (Muranda, 2015) some music educators had problems handling a mouse, let alone a computer. Others did not even fully understand how to use their smart phones. All this was due to lack of knowledge and technophobia. A series of workshops in 2013-15 held at MSU for secondary school students and teachers revealed that some teachers were far behind their students' computer aptitude. Such a situation creates anxiety and technophobia among instructors who are supposed to impart knowledge and skills through CAI.

Another disadvantage of CAI is that it tends to reduce social activity as students concentrate on their specific tasks and ultimately close themselves out of the world. This effects interaction among peers. This, however, depends on the type of task. For example, if the students are working on the same task but using different computers they can interact with one another. In this research students of the *nyunga nyunga* mbira were presented with the same work, hence they would engage with one another as frequently as possible.

It must also be noted that with CAI, in as far as it relates to this study, people with disabilities stand to lose. For example, a blind person with paralysed fingers would not be able to read the notation, use their fingers and, at the same time, pluck the instrument. Perhaps separate research is needed for disabled aspiring mbira performers. The deaf and dumb would also face challenges as the performance of the instrument requires people with good eyesight. As long as people with disabilities are not catered for CAI remains a problem. However, the research did not cover this issue because none of the participants had disabilities.

Last but not least, students involved in CAI can develop a dependency syndrome on computers such that when the computer is not available learning might not take place. According to Rai (2012) students exposed to modern technology find it queer and odd to learn without the use of computers. This creates a student who is not flexible in terms of traditional models of instruction. The student tends to lose focus and direction if drastic changes take place in the teaching and learning environment such as when there is a need to switch to other methods. Although this may not happen all the time but when it does the students lose patience if the problem is not fixed on time.

2.11 CONCLUSION

The chapter presented issues on modern technology in connection with the instruction of music. It articulated how CAI came into being, making reference to instruction of musical instruments especially the *nyunga nyunga* mbira. I presented ideas from selected practising instructors and researchers connected to CAI. The chapter presented and analysed the number and letter notations as proposed by Kuture, Maraire, and Matiure. It also examined the use of pulse notation in relation to the letter notation according to Matiure in connection with *nyunga nyunga* mbira. The chapter then went on to examine Nembire, a proponent of the use of staff notation in relation to indigenous African musical instruction. Finally, it discussed the relationship between modern technology and other factors influencing computer-assisted instruction of the *nyunga nyunga* mbira and other indigenous musical instruments. The next chapter presents the research design and methodology used in this study.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

In this section the primary focus is on the research design and methodology in which the research assumes a number of paradigms. These are: teaching of the instrument culminating in an embodiment of practical experience through instruction, interviews and observations of the proceedings in the research. The general research approach borrows from both qualitative and quantitative designs. There are instances where reference to statistical data is made, while presenting the generality of information as transcriptions of the goings on in the research, thus combining both qualitative and quantitative research designs. This chapter seeks to describe clearly the above-mentioned methodologies and the research tools used to gather information. It also undertakes a discussion to justify the preferred research methods and tools, dealing with each one of them under specific subheadings bearing the key topical issues as envisaged in the study. The chapter also articulates the sampling techniques, population sample size and justification thereof. I discuss data collection on each research instrument, critically examining how the various instruments inform the research and help in validating and triangulating the information gathered. The discussion also presents data collection procedures and proposals for analysis.

3.2 RESEARCH DESIGN

This thesis uses an action research design as its main framework. The key feature of this research design is that it also allows for an experimental approach where the instructor keeps planning, implementing and evaluating his or her own actions with intent to improve the teaching of the subject matter. Action research in the classroom necessitates exploration in trying to explain a certain approach or methodology and how it aids or constrains the user (Kicinger and Wiegand 2015). The above authors argue that experiments enable the researcher to demonstrate and or prove certain pertinent concepts and authenticate some theories, hence participant observer's eyes and ears play a critical role in the study. According to an ⁶online anonymous author (2005),

[e]xperimental design is the process of planning a study to meet specified objectives. Planning an experiment properly is very important in order to ensure that the right type of

⁶ <https://support.sas.com/resources/papers/sixsigma1.pdf>

data and a sufficient sample size and power are available to answer the research questions of interest as clearly and efficiently as possible.

The above premise is compatible with this research as it tests and experiments with a method that may have not been used for the teaching of the *nyunga nyunga* mbira before. Otherwise, without some form of testing for feasibility of the applicability of the teaching method, it may not be easy to come up with full proof or tried and tested strategies thereof.

In this research I captured and collated the information as events unfolded. This design remains preferable because it gives me the room to try and test theories, methodologies, approaches and equipment with appropriate planning and organisation of subject matter. The selected design allows for continuous evaluation of ideas, actions and outcomes and making prompt responsive recommendations for further implementation within the research context. Experimentations necessitate informed analyses of information since activities within the research are observable and can be quantified through measurable tools. Experimental approaches also allow for actions, enabling the researchers to test hypotheses or theories through validated conclusions based on relationships between independent and dependent variables (Best and Kahn, 2006). One important underlying factor with experiments in action research is that the phenomenological aspect or theories are put to the test through practice, hence they authenticate the final results. The preferred research design places researchers in charge of the processes from the beginning to the end. Because teaching in a laboratory tends to create artificial settings for the research, this study prefers the use of the real context of the participants, such that there are no drastic changes to the classroom environment. The only difference is the teaching approach being administered perhaps by an instructor who is different from the usual specialised course leader, as allocated on the teaching timetable.

3.3 METHODOLOGY

The main methodology used for this research is practical teaching through action research where I look at myself critically as the facilitator of the instructional approach to the *nyunga nyunga* mbira. Even though other research instruments are used to gather information, I take up the persona of a participating instructor and observer in auto-ethnographic research. Underlying this methodology is planned tuition through computer-assisted instruction and for that a lesson plan model is presented and discussed in this section. In order to understand the merits and demerits of the chosen methods the discussions below examine the various research instruments used in this study. I also make observations, especially as and when events unfolded although at times I would also do so after an

event happened and is finished. I interview and administer a questionnaire to all the students to solicit their views concerning the whole approach to the teaching of the *nyunga nyunga* mbira.

3.4 ACTION RESEARCH

Sagor (2000:3) makes the following statement on action research, holding that it is a “[p]rocess of inquiry conducted by and for those taking the action. The primary reason for engaging in action research is to assist the ‘actor’ in improving and/or refining his or her actions.” Hall and Keynes (2005) posit that action research can be any research into practice undertaken by those involved in that practice, with the aim of improving it. It is therefore a process of enquiry by the practitioner into the effectiveness of his/her own teaching and the students’ learning. Reason and Bradbury (2001:1) state that the action research methodology, “[b]rings together action and reflection, theory and practice, in participation with others in pursuit of practical solutions to issues of pressing concern to people.” The study embraces the above method as part of this thesis with the intent to improve instruction and concept formation in the teaching and learning of the mbira instrument.

Action research is a set of planned actions crafted by an instructor/teacher as a response to problems and tasks that require a solution. It is also a process whereby the instructor makes a diagnosis of the problem through gathering relevant information, feedback, evaluation and then undertaking a reorganisation of the plan of actions. The series of planned actions in the methodology under study assume a cyclic order in cumulative phases until the problems are solved. Each time I evaluate the methods and planned actions I make recommendations based on what is considered effective to enhance chances of solving the problems at stake (Mouton, 2010).

A team of researchers or one person can employ action research with help from a few research assistants. In this study I am involved with the participating students who also help whenever they are required to do so. Action research is somewhat concerned with ameliorating teaching methods, with improved concept formation and knowledge acquisition for the students as the set goals. This happens every time the instructor reflects on how the actions are undertaken and proceeds to suggest ways that improve the methodologies applied to the teaching (Melter and Charles, 2008).

In action research the instructor is required to take critical and objective stances in making evaluations of the planned actions because without that it is possible to lose focus and end up not solving the problems under research. In view of self-reflexivity, I then make informed evaluations of the

processes and actions. Hence as the study ensues, I can make adjustments to the chosen methods and activities so as to improve the delivery of subject matter.

It is also important to deliberate on why action research is preferable to other methodologies that could be used in a study of this magnitude. First, being a professional approach it augurs well in teaching to avoid taking issues for granted. Rather I deliberately do away with rote and mechanical instruction and promote discovery learning (Bruner, 1961) and enthusiasm to gain knowledge on the part of the instructed (Sagor, 2000). Although it is not always an obvious case that the outcomes of action research yield desirable results, it should be underscored that it builds confidence for the teacher, especially when the desired progress is actualised. Sagor (2000) also points out that action research builds reflective, critical analysis by the instructor, which is important when making self-evaluations of the actions applied to the teaching of subject matter. It also allows me to take a closer look at cause and effect issues related to implementing and evaluating the outcomes of the research.

3.5 TEACHING THE *NYUNGA NYUNGA* MBIRA

The instructional approach to the *nyunga nyunga* mbira is informed and guided by the use of carefully constructed lesson plans for all the selected mbira tunes in this study. A total of 10 tunes are used with their variations transcribed into staff notation. Some of the tunes have up to four variations. Some detail on the tunes ensues in the presentation and discussion in chapters four and five. Some of the variations consist of high-pitched notes with polyrhythmic motifs inherent in mbira music and this marks the climax of the performance of the tune. Three instructional slots allocated a minimum of an hour and a maximum of two hours per session are set per week. During instruction a variety of activities are engaged in; these include performance as class, individuals, pairs and ensemble. The lessons employed a variety of methods and activities with the key feature of using an overhead projector to administer CAI as indicated in the lesson plans in the study. Each lesson is evaluated and an honest view and recommendations are made to inform the following lesson in terms of the requirements of action research. I undertake a total of 128 hours in lessons over a period of 12 months, spread over two semesters.

To avoid habitual teaching that lacks lived experience, as the instructor I provide a variety of introductions ranging from quizzes, demonstrations, questions and answer sessions, explanations, watching videos, analysing the previous lessons' performances and discussions. The common attribute in teaching ascribes students to sight-reading of music through staff notation using Sibelius

7 to read music in the treble clef and playing the *nyunga nyunga* mbira instrument. The lesson plans use the following format:

Lesson plan structure

- a) **Lesson number:** 1
- b) **Venue:** NSB35
- c) **Date:** 11/03/14
- d) **Time:** 1400-1500
- e) **Category of participants:** Level 1.1 (Mixed group ability)
- f) **Topic:** Basic playing with use of thumbs
- g) **Tune title:** e.g. 'Kukaiwa basic tune' Variation 1
- h) **Objectives:** By the end of the lecture students should be able to play the basic variation of Kukaiwa using thumbs through a consistent tempo.
- i) **Teaching equipment:** Computer, overhead projector, amplifier and speakers, 11 *nyunga nyunga* mbira instruments, 5 Apple desktops.
- j) **Proposed methods:** Guided discovery, lecture, discussions, observations and analyses. Question and answer, demonstration, and simulation.
- k) **Activities:** These include individual work on chords, simultaneous and melodic thumb plucking, impromptu group, pair work and individual playing, demonstrating placement of thumbs, and chord identification, playing, singing and playing the Kukaiwa basic tune.
- l) **Conclusion:** This states whether the lesson was a success or failure and the main outcomes in the teaching and learning experiences.
- m) **Evaluation:** This focuses on what causes failure or success of lesson focusing on the instructor's methods and students' activities, the attributes of success, good aspects on methods and activities. The suggestions for the future include the arrangement of the classroom, choice of methods, activities, and equipment to be used to guarantee future success.

Basing on this lesson format one can identify each lesson for further study and analysis of the events that unfold during the course of the teaching. The actual lesson delivery also depends on many other factors such as stage of the research and complexity of tune under instruction as well as the students' aptitude. Hence, in some instances, deviations from the plans and activities are normal, especially when influenced by unavoidable factors alluded to earlier in this discussion. The plans also serve as a record for each lesson, which could be identified by number, place, date, time and category of participants, for example Level 1.1 or 1.2 Music and Musicology students. Also, the details of tune title, equipment, methods and activities used are also presented as part of the lesson. The techniques

used to conclude the lessons are also declared in the lesson and evaluations at the end are based on three key standpoints: strengths, weaknesses and recommendations for future lessons, through appealing to the principles of action research.

The upcoming lessons drew from the strengths of the previous lesson to reinforce the concepts of each lesson. Weaknesses are addressed through making informed reviews of methods and activities and efforts are made to reduce possible drawbacks. It should be noted that the way the students conceptualise the skills taught determined the number of lessons presented. More lessons are needed in instances where students face challenges to accommodate follow up strategies. Also important to note is the fact that some lessons, especially at the beginning of the research, require more time as students need to master a number of musical concepts such as basic theory of music, the stave and the note values used (the crotchet, quaver, semiquaver, and dotted quaver etc.). Doubling as an instructor and a participant observer can be cumbersome if one does not have assistance in the use of the pertinent equipment like video camera, audio recorder and taking note of important matters of concern. Hence I enlisted an assistant to cover the audio and video recording. I personally took notes on important issues as they unfolded in a diary kept for this research.

3.6 RESEARCH METHODS

In the ensuing part of this chapter discussion is the research instruments and articulating participant observation as it relates quite closely to action research since it requires writing ethnographic notes for later transcription. The discussion in this segment deals with three methods, which are observation, interview and questionnaire. This sets out the rationale for using the chosen research tools and discusses the merits of using them in the data collection as set out in the thesis. The research tools are chosen to derive triangulation and test the validity of findings from the research.

3.6.1 Participant observation

The discussion critically examines the above-mentioned methodology so as to come up with a balanced view of functionality thereof in this research. It is vital to note that the key facet of participant observation revolves around human involvement, that is, the roles played by the researcher and the research informants. However, dealing with humans is easier said than done because there are a lot of dynamics relating to human behaviour, and this needs to be taken into account. Nonetheless the above methodology has been tried and tested in a variety of social and scientific

research settings like traditional ceremonies, rituals, contemporary festivals, and teaching in formal education.

Guest, Namey and Mitchell (2013: 75) note that participant observation is both natural and challenging in the task of data collection. This statement is important because there is some guarantee of interaction with the people under study, even though the levels of interaction are largely dependent upon whether the subjects are willing or not. Ethical considerations come into play and cannot be taken for granted. Hence special reference to the consideration of what is acceptable and not acceptable, especially in terms of the researched, is very important. Even though the ethical concerns are taken care of, sometimes people view a participant observer with suspicion and may interact with him/her with reservations and/or scepticism. This might not be easy to detect.

Participant observation as a tool lends itself more to the qualitative research paradigm as it calls for personal engagement into the venue or context. Personal involvement in research studies requires, to a great extent, strong commitment and the need to be objective in the way researchers see and treat things. In such studies one needs to interpret proceedings with careful thought. In view of the above notion, a participant observer needs to shun biases and be objective in their research endeavour. Sometimes researchers become insiders in a community and end up seeing things differently due to getting excessively used to participants. In a bid to combat such tendencies the research is guided by a scholarly thrust in reference to the proceedings, even though there could be an assistant undertaking valuable recordings to capture information for later analysis (Kothari, 2004).

Jorgensen (1989) argues that participant observation is crucial in any type of study so that one can describe what goes on in the research rather than have others do it on their behalf. I concur with the view that this approach is ideal to factor personal academic experience into the data collection. For this reason, the method generates exploratory and yet descriptive data quite useful for critical examination of theories and claims to certain knowledge (Jorgensen, 1989). This method is predictable in many ways but in some cases one can encounter surprises because human beings behave differently depending on what is happening around them. Through many years of experience in teaching I have noticed that sometimes people become extreme in their actions, such as acting with the intention of attracting attention, and/or opening up too much. On other occasions people can close up when they meet and interact with researchers, especially those that are new to them. Where this happens it may not be easy for the researcher to promptly detect this and act accordingly, even if ethical concerns are taken care of. The process of research can be open ended and flexible, hence adjustments are necessary to suit any given context.

The fundamental tenets of participant observation are that data collection is based on human behaviour from an insider's view, hence it requires sufficient time to gather germane information. Furthermore, it entails detailed in-depth qualitative descriptions of the relevant information from an objective perspective rather than mere reporting (Jorgensen, 1989:14). It is possible to employ several other data collection strategies as part of participant observation. In this vein I include the interview and questionnaire as well. The ability to employ a variety of tools for collecting information makes participant observation suitable for the research problem.

I also share the same thoughts as Jorgensen in that, “[u]ltimately the methodology of participant observation aims to generate practical and theoretical truths about human life grounded in the realities of daily existence” (1989:14). Indeed, the findings from the research are likely to be applicable in the praxis of music performance, especially with the *nyunga nyunga* mbira. Some practical aspects are informed by this research and could cascade down to the primary level of music education.

Although the possibility of succumbing to personal biases is always present in scholarship, one should always be guided by the call to be objective and critical as a matter of concern. The ability to apply empirical evidence to test any of the findings gathered through participant observation is also critical. Participant observation requires more time in the research field and in the case of insufficiency the whole research is rendered futile in the end. The time needed does not depend on the nature of the study but predominantly on the disposition of the people. Some people need more time to build reasonable rapport. Such processes could be a disadvantage to research work that strictly follows a rigid time allocation. In recent research undertaken the participants demand certain material benefits and gifts such as money, clothes, beer, snuff, and cigarettes. Hence, in order to conduct research within such a community, one would need to meet such needs. Some demands can stifle the research if the researcher cannot afford them, even if they are small and/or negligible. In typical cases, just a gift of a packet of 10 cigarettes to the chief or headman is good enough to secure permission to undertake the research.

The human mind is wonderful and as researchers we rely on it to progress with studies logically. Nevertheless, through personal experience I noted that certain events can go unnoticed by the researcher. The above point is quite natural yet the missed event could be carrying apt information. Some of the missed events may never get to be repeated, even if the research were to be undertaken over and over again. The point is that with participant observation one cannot adequately multitask and capture every detail of the proceedings on the spur of the moment. Again on other occasions

where proceedings are forgotten, I may want to rely on memory; yet as a demerit the human mind is subject to some inaccuracies. Furthermore, participant observers face the concerted task of balancing observations and interpreting what is observed. This is the place where biases tend to take place and lead to misrepresentations of findings. To counter such a challenge Jorgensen (1989:14) advocates that researchers should subject their work to team review to avoid personal biases. This fact applies in this study, as reviews of the area under investigation are a worthwhile common practice.

Participant observers tend to change their usual way of behaviour to fit into the context of research. However, such a way of dealing with issues creates an artificial scene for the researcher, even though it helps them to undertake their studies. As a human being, one can forget to observe the ethos of a group of people and suffer rejection or reactivity, especially where one is an outsider. Therefore, this method makes the researchers more alert and open to any new calls for change so as to remain relevant to the context. This method can be difficult if applied in an area with populations that are scattered over a large geographical area. More money and energy to travel around may be needed to complete the research in such an area. Important to note is the fact that this study is conducted in the normal teaching space and time. If some aspects of the research problem exist outside human behaviour, participant observation becomes inapplicable and for that reason other useful methodologies may be needed to salvage the situation (Jorgensen, 1989:13).

One of the challenges associated with participant observation could be that in some contexts the researcher has to first confirm their intent in order to be accepted by the people. At the same time I should avoid becoming the centre of attraction throughout and that is not easy to cope with. The researcher should always be careful to avoid activities that undermine the focus of the research even if the people ask me to participate in other activities. In Zimbabwe and some parts of Africa people do not use the Western conventions of a watch for time keeping. Instead they use the rising and setting of the sun and this tends to confuse researchers with a Western orientation who rely on Greenwich Mean Time (GMT). While the above issue is not a major disadvantage, I think it takes time to adjust to this concept of time, especially for people who are not used to dealing with new ways, or such conceptual frameworks, of doing things.

3.6.2 Interview

Using an interview to ask questions to a selected population sample is useful in a variety of situations in any research field (Walliman, 2009). McCracken (1988) cited by Trochim and Donnelly (2008) embraces the view that interviews are among the most challenging and also rewarding forms of

measurement largely because I have to be sensitive as well as holding to the set objectives of the interview. In concurrence with these views O'Leary (2007:10) advances the point that an interview is a convenient way of asking questions and listening to individuals in order to understand what they think concerning certain issues.

In real terms, the interviewer undertakes some multitasking as an individual and this becomes an intricate responsibility, especially in dealing with participants who need to give out personal information. The personalities that may be included in an interview do not always think uniformly and are not predictable during the interviews. An interview can be done personally, through teamwork or research assistants can be engaged to gather information from respondents. In this study I only engage an assistant to help with the recording of audio and video of the proceedings, not for interviews. However, personal involvement gives a balanced view of the proceedings.

Reason and Bradbury (2001:354) submit that interviews are not merely a means of extracting ideas but a powerful process that engages important stakeholders. Research interviews call for careful planning to provide and derive the appropriate information. From the look of things, it might appear simple and easy just to ask questions to respondents. It should be noted, however, that it might not be as easy to keep interview conversations within the confines of the interview guidelines, as there is always a chance for the process to stray off the target. For these reasons, both the researcher and the interviewees need to play their part in order to succeed. In some instances, the interview strays away from the core business, chiefly due to the relaxed conditions and good rapport that's built around the research context. The interviewee(s) might crack a joke or two, and while it's good for both parties to relax, it can stall the process if it is overdone. Furthermore, the researcher has to be careful not to infringe upon the rights of the respondents and this also depends on the respondents' attitude toward the interview proceedings. In view of this point it should be noted that some respondents call for patience and ample time for interviews to take place. On some occasions, I may just agree with the respondents to adjourn and then continue with the interview later at a convenient time. Negotiating for what is best for the research is a virtue because it gives pre-eminence to the research.

Interviews do not aim at peremptory answers to the problem under research and for this reason I only take the route that gives authentic findings. In many ways I am forced to be patient, mainly when handling difficult cases while conducting interviews. In this study I opt for the semi-structured interview type, which discussion takes place in the following section.

Walliman (2009:285) hails the use of the semi-structured interview as a research tool that gives room for further probing solicited answers while including more open-ended questions. In this research I concentrate on dealing with people who differ in social skills, hence I choose to use the semi-structured interview on the basis that it gives more relaxed and flexible conditions in dealing with respondents. O'Leary (2007:164) mentions that semi-structured interviews are neither fully fixed nor free in terms of conducting them. They allow for flexible and relaxed conditions on the part of the interviewee. Questions are not rigidly imposed on the respondents, which empowers the researcher to probe further in cases where there is need to gain clarity of ideas and further elaboration.

A semi-structured interview is a compromise between the rigidly structured and the open unstructured interviews, whose challenges this research opted to avoid. Semi-structured interviews take care of the interviewer and interviewee in both formal and informal contexts. Even though one can still undertake semi-structured interviews in formal contexts, I prefer the informal in order to do a relaxed and flexible exercise in situ. Under the semi-structured interview, I possess the opportunity to assess the nature of answers, evaluate them and come up with appropriate follow-up questions.

Egan (1994) in O'Leary (2007:167) proposes the five stage SOLER model, which are:

Square on - facing each other as a sign of paying attention to the course of events

Open posture - interviewer is willing to accept and the interviewee is not defensive

Lean forward - shows involvement with interest

Eye contact - depiction of interest consistent, looking down may mean lack of interest

Relax - an exhibition of a relaxed flow of information and smooth movement.

The SOLER model assists me to check and make prompt adjustments where necessary to curtail any challenges that arise when respondents begin to exhibit certain actions, whether favourable or unfavourable during the course of the interviews. However, the application of the above model is more important than merely getting to know it out of context. Notably, the issue of eye contact and posture in the Shona culture takes looking directly into the eyes of interviewer and vice versa, in the case of elderly or female respondents, as problematic, as it can be misconstrued as being too intimate. Notwithstanding the non-neutrality of interviews as an insider dealing with Shona people, I keep an academic focus and professionalism and avoid prolonged gazing into the eyes of the respondents. The above point on focus helps to maintain validity and produce credible results. Even though the interviews are prone to interference of cultural norms, the participants are from Shona and Ndebele-

speaking cultures. Our official language is English and this accommodates all students as a common language hence it makes life easy on matters that are not easy to explain in Shona or Ndebele.

However, the respondents' eye contact is not an issue and in this research it is not a challenge either. While the SOLER model is a commendable starting point, different ethnicities have different ways of interpreting posture and eye contact, hence I need to be careful in applying it. An interviewer has a mammoth task to win the trust and respect of respondents and for this reason good rapport is a basic necessity for the study. Through concerted effort I build rapport through a deliberate initiative. Rapport can also be a threat to an otherwise well-structured interview, from the point of the researcher and respondents, in the sense that the two might take each other for granted. If a researcher is casual, the respondent may not see the seriousness of the study and end up giving information that is not credible. However, to counter this possible setback I constantly reflect on the topic of research, the statement of the problem and methodology to make sure they are all in sync with the research question and the set objectives.

An interview is a flexible way to gather information and gives the interviewer the ability to determine how the proceedings take effect from the beginning to the end. Even though it is widely held that the researcher is well positioned to assume control of what takes place in an interview, it is not easy to predict the course of events once the conversations begins. Since I choose to be a participant observer, the chances of conducting an interview in very informal and relaxed conditions are high, and the interviewees do not realise this fact, especially when writing things down is substituted with recording devices, so that only a few important issues are taken note of. I prefer to use the semi-structured interview because the subject matter under research belongs to both qualitative and quantitative data, hence the use of informal contexts. Since the group comprised of 16 students there was no need to have a focus group interview as I looked out for personal views in as far as the teaching and personal experience of the *nyunga nyunga* mbira is concerned in view of the use of CAI.

O'Leary (2007:162) states that interviewing is a convoluted thing since it has to be well timed and planned, hence one needs to verify whether it is the most appropriate method to be applied. In relation to the above author's view, interviewees can more often than not show signs of being uninterested in what is going on and may not be ready due to reasons ranging from fatigue to the need to go home. As such, I have to read between the lines and allow them to go. This advantage of dealing with respondents face to face also makes it possible to fine tune the questions and/or probe for further information.

On a different note, Walliman (2009:284) states that “face to face interviews can be applied to a variety of situations, in the home, at work, outdoors.” The suitability of this interview model for a variety of situations makes it possible to engage with students in a classroom without changing the context of the respondents or the setting of the classroom. Furthermore, this interview model allows any researcher to evaluate the progress of the interview process and to be able to come up with reasonable recommendations for commensurate actions to be undertaken so that the objectives of the interview are achieved. Using this type of interview suits many situations in a classroom or even outside the venue. It also promotes openness without coercing the respondents into saying things which provide answers to questions.

3.6.3 Questionnaire

From the research experience I have discovered that a properly structured questionnaire can be convenient for respondents to fill in because of the guaranteed anonymity, which increases the probability of honest answers. Even though as a researcher I cannot make a full-proof guarantee to this view, at least it gives me the researcher and the respondents the confidence to tackle the questions at hand. In the study I elected to use questionnaires due to several reasons. Among them is the need to get responses from the participants in the study in a fairly short time frame (Popper, 2004; Cohen, Manion and Morrison, 2011). Where one has many other commitments, the questionnaire is handy in offsetting the shortage of time to carry out investigations on certain matters pertaining to the study.

The questionnaire enables me as the researcher to undertake bulk data collection, thus requiring rigorous analysis of the same. It also makes it necessary for many questions to be answered by many different respondents who may not know each other and that reduces the risk of biased views. Another favourable feature of questionnaires is that one can plan ahead of time or undertake a pilot study in advance to evaluate the strengths and weaknesses thereof to arrive at a feasible array of questions building up into a comprehensive form of investigation and into some hypothesis even though this study does not have one (Cohen, Manion and Morrison, 2011). The virtue of using a questionnaire is also that it can be used to cover special cases, especially those that are esoteric and sensitive to the public and yet anonymity can still be upheld throughout.

While it is good to embrace the strengths of using the questionnaire it is equally vital to appreciate the demerits that come along with its usage. To think that everyone would respond to the questionnaire and return the response to the researcher is problematic to some degree because questionnaires do not depend on the establishment of a rapport between the researcher and the

researched, as in face-to-face interviews. However, due to anonymity there is a risk of having a low response rate where some may decide not to bring them back on time or even decide to ignore them. This possibility makes it an unreliable tool to collect data and consequently the purpose becomes futile. According to Bordens and Abbott (2008), if the questionnaire is not well understood respondents may just do what they purport to be the right thing to do and there is no way the researcher can avert that once the complete questionnaire has been returned. There is virtually no need to explain if the questions are targeted at people with the (musical) skills pertinent to the area under study. The questionnaire has to be concise for it to be clearly understood by respondents and that is very important (Milne, 1999).

3.6.4 Data collection procedures

I now turn to discussing data collection procedures. The first thing to be undertaken is the informed consent form filled in before the undertaking of data collection. I made my intention clear as far as my agenda is concerned and managed to get the participants (students) to fill in the forms. I assured the participants of their safety, respect and confidentiality. The signed informed consent forms are accessible in a safe locker. After obtaining consent from the respondents I began collecting data by applying instruction of the *nyunga nyunga* mbira to the 16 students. During this process I diarised all the important features of the proceedings. I also undertook interviews and administered a questionnaire to the same students at the end of the study.

The information for this study was gathered through the above-mentioned research instruments and following the procedures that are discussed in this segment of the chapter. My overall research plan followed an action research orientation, coupled with participant observation, together with interviews and the administration of a questionnaire (see detailed discussion on action research under section 3.2 and 3.3 in this chapter). With action research the gathering of information follows a series of lessons that are planned, implemented, evaluated, and analysed and then new ideas are re-implemented into the teaching until the selected mbira tunes were finished. More related details to the analyses and structure of the tunes are presented in Chapter 4. As such, the tunes are presented using Sibelius 7 via a multimedia projector for all participants to follow in both reading and playing the mbira instrument. The mbira tunes range from four to six bars in length and some of them have up to four variations for each. It is valuable to understand that each lesson was conducted according to the action research paradigm whose theoretical underpinnings advocate for ways to improve how to teach the tunes through CAI, as proposed in the study. A diary to outline the events and proceedings is kept and the entire lesson plans are dated, taught, and evaluated for record keeping. Recordings of

the proceedings were done to preserve the information in the context of the research. The recordings also enabled further consultations of the data in carrying out comprehensive analyses of information.

Some personal observations, video and audio recordings of myself as the researcher with the students, students with students and student-researcher-student interactions were captured for transcription and analysis. As a participant observer it is not easy, especially at the onset of the research, to capture everything through diary notes. As such, a video camera was used and the cameraperson moved around within the given space and time for the research without causing disruptions.

To avert the problems of too many movements for the camera operator, the wide angle was used for zooming in on the proceedings for an overall video of all the proceedings. Participant observation can easily become routine if not carefully structured; so to counter that likelihood I took each day with its own challenges and diarised events following the way they unfolded. I also diarised issues that may have not been planned for, as long as they took place within the context of the study. This reduced the danger of leaving out issues due to misjudgement. At the end of each day the diarised notes were collated and consolidated into a comprehensive report in relation to the video and audio recordings during the lessons. On each day of the research, at most two hours involved teaching, practical work for individuals, pair work and group activities and these I noted as key observations in the research.

Concerning the interview as one of the tools used to gather information; a properly organised schedule of events was set for all the participating students after seeking their preferences on time and convenience. On average, the time for the interviews was about and 55 minutes. As the interviews continued, my questioning technique improved with time and for that reason less time was spent on the last few interviews which had an average of about 35 minutes each. The relaxed atmosphere enabled the gathering of information to take place with no hiccups. Since the interviews were done right at the end of the study, I had gained trust from the participants, which worked to my advantage. I employed the one-on-one interview approach and not the focus group largely because the students had varied background knowledge in the study of music. It became vital also to understand the respondents' views as individuals rather than as groups. Instead of taking note of the key issues arising from the interviews, I used an audio recording and deliberately avoided the video. The reason is that most of the students were comfortable with audio recording when they presented their views.

Before administering the questionnaire, then I had to explain the tasks at hand. For ethical reasons, respondents did not need to reveal their identity on the questionnaire. The administration of the questionnaire was somewhat different. Sixteen questionnaires were administered at the same time to the students who were present on the day and they completed the questionnaires and returned them

to the instructor. There were no glaring problems associated with the filling in of the questionnaires, the total response rate was 100% and this is attributed to rapport between myself as the researcher and the students. Analysis of the information gathered through the questionnaire and other research tools is presented and analysed in Chapter 5 of this thesis.

3.7 POPULATION

Population in this research is taken to mean the people from whom the sample for the research was drawn. The population could be the entire place or institution and in the case the whole university, faculty and/or department. In this segments I will start by explaining the nature of the population of the university (MSU) where the research was conducted. The population for this study is drawn from a context of a tertiary institution with nine faculties and each has several departments offering a variety of studies including Music and Musicology, where the researcher belongs.

A population of more than 15 000 for Level (years) 1, 2 and 4 students occupies space at four campuses of Midlands State University. First year students constitute up to a third (5 000) of that population. It should be appreciated that during the third year in Level 3, students spend their year on industrial internship, referred to as the work related learning (WRL) component. In Level 3 all students are engaged in practical work in industry where they have hands on and minds on experience in areas of their choice of specialisation. More specifically, the Faculty of Social Sciences is the second largest faculty with a third of the first year student population comprising seven departments, each with an average of 400 students. Music and Musicology has an average of 80 to 100 students for level 1, 2 and 4 and is, as such, the smallest department in the entire university. The Department of Music and Musicology enrolls on average 10 to 15 students per semester. The past five years have seen a gradual decline in the number of students opting to study music, hence the desired target population has become difficult to sustain, let alone attract new students. Also, attrition and economic woes contribute to the high rate of dropouts and some classes have dwindled to six students (Matiure, 2013).

3.7.1 Sampling procedures

Population sampling is the process of selecting a subset of a population for the purpose of research. The sample size for this research targets at least 15 students to sustain it. However, the intakes for both the January and August semesters for 2014 fell below 15 students, each with 10. For sustainability, both classes have been included in the research using the availability sampling

technique. Bhattacharjee (2012:22) proffers that researchers should carefully choose the target population and a strategy to select a sample from the entire population. In this case the research does not require a random selection but a specific population of students studying music.

A non-probability sampling purposive technique is employed in this research as a way to do away with chances of choosing random participants. In any case, this sampling method deliberately allows for taking available, purposive, and convenience samples to be included in the study. Kothari (2004) mentions that deliberate sampling involves purposive selection of units and that creates convenience arising from the fact that the researcher sets out selection criteria and has control over who is required in the research. The researcher uses their discretion to come up with the sample size and determine the skill that the sample is expected to have. Tongco (2007) mentions that purposive sampling relies on knowledgeable informants based on the discretion of the researcher. Furthermore, the inherent surprises of the random sampling method can compromise efficiency of the research. I agree to a large extent because as a researcher the element of surprise should be eliminated and one should just deal with participants that are most likely to give the desired results, since reliability and competence of the informants is critical to the results of the study.

In choosing the sample there are critical considerations I undertook and one of them was to set out selection criteria that justified the sample design. As already indicated, the availability sampling method was preferred for this study because it gives me convenience in the sense that there is no need to look for a special space to house the project since the university provides classrooms with basic furnishings freely.

The classroom is furnished with electrical plugs, a plasma TV screen monitor, five Apple desktop computers loaded with Sibelius 7. There are speakers to project the sound from the computer and 10 pairs of headphones are available for use by the participating students when carrying out individual and pair work. By virtue of being a staff member at MSU, engaging in research with students from the department was allowed. The sample created convenience also because the mbira instrument under research is taught as part of the curriculum in the Department of Music and Musicology, hence there was no need to buy extra instruments for the students. At least 25 instruments were available for use during the course of the research.

The purposive sampling method was also preferred because all the informants were enrolled for music at MSU. It was befitting to include only those studying music regardless of whether or not they had the skills. Their motivation to study music was deemed enough for the department. In Chapter one I

made reference to the traits of students who enrol for study in the Department of Music and Musicology at MSU. Most of the students have not studied music at Ordinary and Advanced Levels in their secondary school. They join the department out of interest and the motivation to engage in musical performances. Only a few of them have participated in choirs, school percussion bands or church bands and the rest are new to the subject. However, the ability to read and play music for all of them needs development, hence none of them would have an added advantage over the others, in sight-reading particularly.

In this context my thesis focuses on testing the validity and reliability of using CAI, specifically in teaching *nyunga nyunga* mbira tunes and not a general application. Since I had an overall responsibility in selecting informants, there was always a danger of letting personal biases interfere with the research. I could have ended up selecting those that I deemed to be favourable and this could deviate the research results. Even though the danger of personal biases presents a potential threat to the research, the antidote is to remain scholarly and endeavour to produce valid and reliable results. Kothari (2004: 59) states that personal elements have a chance of interfering with the selection process and these elements will go on until the end of the study and affect the results. As such, scholarship calls for objective population sampling, collection, and analysis of data. To a large extent the size of sample in the availability method depends on what is available. There is always the danger that if the sample becomes too small the purpose of research falls out. For instance, if enrolment decreases to five or less students, the university could declare the classes not viable and this outcome would negatively affect the research.

3.8 DATA ANALYSIS PROCEDURES

The presentation and analysis of data would be incomplete without looking at ways to implement multimedia in teaching/learning of the *nyunga nyunga* mbira. Obviously each of the participants would have something to say about the whole study pertaining to the use of modern technology, hence the research analyses the impressions that the informants formed concerning the *nyunga nyunga* mbira after this practical course. At the end of the study a critical and honest evaluation of CAI is undertaken in as much as it relates to the teaching of the *nyunga nyunga* mbira. As such, the evaluation is not a one-person issue as it includes the events that ensued during the course of the study, personal observations, informants' personal involvement and a scholarly view of all the proceedings from the first day of the research up to the end of the study. The analysis generates premises and a basis for making conclusive underpinnings in conjunction with the topic, research questions, theoretical framework of the study and the methodology underlying the philosophy of this research. In the end,

the discussion makes an appeal to the hypothetical standpoint of the thesis in regard to the efficacy of CAI in teaching the *nyunga nyunga* mbira.

3.9 CONCLUSION

The objective of this chapter was to inform the readers of the research design and methodology as deployed in this study. The preferred research design was, to a great extent, action research oriented with some bias toward experimental research. The set of ideas embedded in action and experimental research were discussed showing the pros and cons thereof. I also considered the choice of the methodology in this research, thus the teaching of the instrument was undertaken together with participant observation to gather the required information. Participant observation informed the methodologies in gathering data for this research. The chapter also presented the structure and format of the lesson plans to guide and focus the teaching of the *nyunga nyunga* mbira instrument. The semi-structured interview was chosen as the preferred format for one-on-one interviews with respondents to gather information for the research.

In discussing participant observation, the interview and the questionnaire I pointed out possible weaknesses in using them for data collection. In addition, I also presented proposals to ensure that the possible weaknesses were curtailed. In the discussion, the population came under the spotlight as I explained the sampling method and size. I discussed the strengths and weaknesses of using the preferred sample design, thus providing some ways to conquer the threats and weaknesses which could compromise the findings. The chapter went on to justify the sample size and the context of the population sample. Lastly, I highlighted how the data is going to be presented and analysed, showing how the data is treated in terms of discussions, statistical information, tables, percentages and illustrations.

CHAPTER FOUR

CONTEXTS OF THE *NYUNGA NYUNGA* MBIRA

4.1 INTRODUCTION

The ensuing chapter explores a variety of contexts involving the mbira instrument. In the discussions I tackle issues around the recreation and revolution of the *nyunga nyunga* mbira. I go on to deal with some underlying principles in the traditional indigenous beliefs in as far as they connect with the instrument. This section also examines the place of the *nyunga nyunga* mbira in primary, secondary, and tertiary music curricula. The section also delves into the state of the mbira instrument and conditions it has been subjected to in research and innovation, among other things. I also look at the proponents of the musical instrument so as to analyse how they embrace the instrument amidst changes brought about by modern technology, especially pertaining to the instrument's performance and the preservation of mbira tunes. The chapter ends with a focus on challenges and proposals, in view of the philosophy of the *nyunga nyunga* mbira and trends around the use of modern technology in Zimbabwe.

4.2 BELIEFS ON THE MBIRA INSTRUMENT

There are indigenous beliefs and theories associated with the performance and context of the *nyunga nyunga* mbira instrument among the people of Zimbabwe. The beliefs connected with mbira permeate both the formal and informal contexts. In this thesis, the formal sector encompasses all formal institutions teaching music. The institutions also include primary and secondary schools, some tertiary institutions (colleges and universities) under the parent ministry of Higher and Tertiary Education Science and Technology Development, the Zimbabwe National Army (ZNA) band, the Zimbabwe Republic Police (ZRP) band and the Zimbabwe Prisons and Correctional Services (ZPCS) band. The informal context in this study denotes the performance of the instrument by individuals outside formal contexts. There are mbira ensembles both private and public engaged in the entertainment industry and these fall under the informal sector. The study of the formal and informal contexts of the *nyunga nyunga* mbira helps in analysing the objectives, learning, and expected outcomes on the instrument. There is a general belief that mbira is a sacred instrument and a property of the ancestral spirits (mbira *dzavadzimu*). This view has been a subject of debate as certain people hold that the mbira *dzavadzimu* is another name for the *nhare* mbira, largely because of its association with rituals, *mapira*, (Berliner, 1993). Others argue that all mbiras are an endowment of the ancestors, hence they belong to them (ancestors) and can be referred to as mbira *dzavadzimu*.

dzavadzimu. As an insider of the Shona speaking culture, I can vouch that the mbira *dzavadzimu* is generally accepted as the view mentioned by Berliner (1993) in his research findings. In Chapter 2 of this thesis there is a brief discussion of Nembire's (2000) innovation in using staff notation to teach 'Nhemamusasa', a tune for mbira *dzavadzimu* (*nhare*). It is vital to note that the mbira *dzavadzimu* or *nhare* mbira falls outside my research and not much detail is undertaken in this discussion. Interestingly, since my childhood I have noticed that the mbira *dzavadzimu* (*nhare*) is treated with reverence and it is not a common instrument in music education as compared to *nyunga nyunga*. In primary and secondary schools, the commonly used instrument is the *nyunga nyunga*, which is not associated with rituals. Even though the *nyunga nyunga* is found in schools, not many of them embrace the instrument, especially the Christian missionary church schools who believe it to be profane (Muranda, 2010 and Dutiro, 2007). Their assertion is largely based on the notion of ancestral spirits' association with mbira *dzavadzimu*.

From experience I have also noticed that most people believe that the mbira instrument is complex and difficult to play. Their view is that a special endowment of skills is required before one can play the instrument. Throughout my teaching experience I have not met any instances where the *nyunga nyunga* is associated with traditional indigenous rituals. The above belief arises from a standpoint where people confuse different mbira instruments we have in Zimbabwe as one thing. As a music educator, I have learnt that some skills require proper methods in order to be taught effectively. Regardless of special gifting to play the instrument, it is still an important thing for prospective mbira players to undergo some kind of tuition on how to play the instrument. The primary and secondary schools that embrace the *nyunga nyunga* rely on qualified music educators to offer such tuition. The teacher training institutions and music colleges in support of that cause have the *nyunga nyunga* instrument in their curricula.

Basing on the current trends the *nyunga nyunga* mbira instrument is finding inroads into some of the Christian church congregations in selected devotional songs. However, there are no traceable specific functions of the instrument other than providing accompaniment to the singing in the church services. Being a musician, educator and researcher I have noticed that Christian church services characterised by the use of musical instruments and electronic sound reinforcement equipment are more vibrant as compared to those that are not. Inclusion of the *nyunga nyunga* mbira somewhat adds to the vibrancy of the music in the churches, especially the unique sonic character of the instrument's warm sound and interweaving polyrhythmic motifs. The belief that appears to be prevalent among people is that the use of musical instruments in any musical event helps express feelings better.

The performance of the mbira instrument on its own has been explained by some of the informants in this thesis as soothing and relaxing. My personal experience in 2009 in Finland (where I performed the instrument) confirmed that the majority of the audiences felt that the instrument had a powerful effect on their feelings. Some of them indicated that it placed them into a state of peace and tranquillity that cannot be attained ordinarily without its music. A 75-year-old man (he opted to remain anonymous) I interviewed in 2013 mentioned that, “*kurira kwembira kunodzamisa pfungwa panezvose.*” This literally means, “the sound of the mbira will drive one into deep thought about everything.” This explains that the instrument’s sound has a powerful influence over its listeners. In 2012 in a *nyunga nyunga* mbira performance at MSU a number of participants in the audience mentioned that the music made them feel goose bumps and drove them into a frenzy of excitement. The point here is that mbira music exerts a certain feeling upon listeners and performers alike. It is amazing that different people from across cultures are quick to notice the power that is carried by mbira music as it is performed. As an insider researcher I have also noticed that there is something unique in the mbira sound. The above observations also suggest why some churches shun this instrument; it is because of its inherently unique power, especially where they suspect its association with profanity.

An affirmative action could be that of taking advantage of the power that the instrument wields in a positive way in the context of Christian beliefs and using it for their benefit. There is a generally accepted view among many *vanagwenyambira* (mbira players) that the instrument is a mirror reflection of the person performing it (Gahamadze, 2016). If the instrument is played by a sacred, consecrated performer, consequently the music thereof would become sacred as well. This perspective proves that the nature of the instrument’s performer determines its functionality, hence people should not be afraid of using it. In reality the instrument is not sacred but the context and the performer determine what comes out of the instrument. The inclusion of the instruments in formal institutions of learning and some government institutions of Zimbabwe proves that it is a non- sacred musical instrument; otherwise it would have caused problems in colleges and schools.

One strong belief among the Shona people is that the songs that accompany the tunes influence mbira music. Sacred tunes create a context conducive for spirit possession, and *mapira* ceremonies in ancestral rituals of libation. Whenever indigenous people perform the mbira instrument for leisure they seek ancestral consent to avoid unplanned spirit possession and/or engagement into unexpected rituals (Matiure, 2014). This measure is undertaken to separate rituals from entertainment and leisure and this is a serious matter of importance because most of the tunes are owned by ancestors. I would like to inform readers that the ‘Nhemamusasa’ tune played on the *nyunga nyunga* mbira is performed

with no connections with rituals or spirit possession (Chipendo, 2014). Some tunes borrowed from the mbira *dzavadzimu* and played on the *nyunga nyunga* do not carry any connotations of rituals as the context of the performers and their performances do not carry any rituals relating to the *nyunga nyunga*.

In a research study that I conducted in May and June 2015 observations revealed that several Christian churches in Zimbabwe used the *nyunga nyunga* in their musicals. Although the use of the instrument was received with mixed feelings, informants mentioned that there is nothing wrong with using *nyunga nyunga*. Some of the informants did not see sense in engaging in a debate about issues of faith in God or beliefs, hence they kept their feelings to themselves. Even though personal preferences among congregants differed, the common biblical principles united them on matters dealing with whether or not to accept the mbira. The young generation in the churches that came under research expressed a lot of appreciation of the inclusion of mbira instruments in church. Some of the elderly congregants viewed the use of the instrument as missing the old time religion where they claimed that worshipping without musical instruments was the ideal thing. One reason that makes the elderly succumb to the demands of the young generation is the fear of losing the youth to other churches that are tolerant in the use a variety of instruments. Hence, inclusion is just a stopgap measure to retain the young generation as part of their congregations. They accommodate the youth's desire, especially that of playing musical instruments. They allow this to make church services attractive and lively. Consequently, they maintain their numbers.

Outside the church and in indigenous belief systems people generally regard the instrument as revered, with a sacred function and played by only the gifted ones. Some people try to play the instrument but, due to lack of motivation, give up easily and construe it to be very difficult. The sight of many lamellae against the use of three fingers and making fingertips sore is another source of frustration to aspirant mbira players. Experience has shown me that one needs to be patient with oneself to play the instrument, especially with the pain in the fingers. The use of indigenous methods also gives enthusiasts with Western music education orientation challenges in learning to play the instrument. The cultural context requires spontaneous performing of the instrument without printed staff notation to follow as one plays the instrument. Playing without music scores is widely believed as the ideal way for playing mbira in order to experience the embodiment of the music, instrument and the performer as one being.

4.3 THE PRIMARY SCHOOL MUSIC CURRICULUM

The primary school curriculum and policy in Zimbabwe upholds the inclusion of the *nyunga nyunga* mbira among many other indigenous and Western musical instruments in music education. In spite of being part of the curriculum in Zimbabwe music teachers, to a great extent, do not teach the instrument in the classroom. Lack of adequate resources and time allocated on the timetable hold them back from teaching the instrument. To add onto this, the general view towards music as a subject is negative, with many parents not keen on embracing the value of the subject (Shoko, 2015). Through interviews with teachers in Gweru in 2014 and personal experience in teaching I discovered that music as a subject is not given much attention as compared to other subjects in the curriculum. According to policy, music is allocated an hour and 15 minutes per week for grades 1 and 2 with five 15 minute lessons. For grades 3 to 7 the subject has two 30-minute lessons adding up to an hour per week. In consequence, a music educator cannot afford to skip a lesson because the subject would suffer a big loss. Considering that mbira is one of the various instruments that schools may want to expose pupils to, it is not easy to exhaust all the instruments adequately in one term, let alone in a year.

The above music education policy provides for co-curricular activities for pupils as a matter of critical significance. Under the co-curricular segment, which is usually after normal lessons, pupils play a variety of musical instruments in real life. Nevertheless, the challenge with co-curricular work is that it does not cater for many pupils in the school at any given time due to large numbers. The main focus of the music syllabus is three core: appreciation, theory of music and performance (music making). Music making is largely possible with use of locally available percussion instruments, improvised instruments and the voice. As for the *nyunga nyunga* mbira the common aspect of it is appreciation through listening, dancing, and singing along with the music teacher's performances. In music as a co-curricular activity a few pupils manage to do the performance practice of the mbira because of inadequate instruments. In the early 1970s when I went to school, through the 1980s, music was taught by specialists and I went through such a system in my primary education. I noticed that until the mid-1990s music specialist teachers in primary schools were no longer there. Consequently, all primary teachers from grade 1 to 7 had to teach music in their classes. During training as a primary teacher from 1987-90, I taught music separately among other subjects in class. The above scenario presented challenges in that some of the teachers not musically endowed, despite undergoing training in pedagogies at teachers' colleges, would not teach music as expected. Some school heads that had little or no appreciation for the subject in favour of Mathematics, English, Science and Social Studies also compounded the challenges encountered by teachers. After the reintroduction of music specialist

teachers in the mid-1990s some primary schools embraced the policy and began to promote music in both classroom and co-curricular activities. However, certain schools have not enjoyed such a policy toward music, hence there are schools today without notable musical activities (Shoko, 2015). Recently there has been a debate on increasing specialist music educators in many schools. The above issue implies that those without specialist music teachers will suffer.

Marozva (2015) cites the current Minister of Primary and Secondary Education, Lazarus Dokora, as advocating for a new policy to uplift practical and vocational subjects with effect from 2016. The minister bemoaned the low candidature in music that stood at only 211 nationally for 2015 'O' Level examinations. This scenario points to the low esteem the subject enjoys from society. Parents also play a part in supporting policy implementation at primary schools through supporting their children and participating in school development associations. However, most parents view certain musical instruments as profane, especially the indigenous instruments such as drums (*ngoma*) and mbiras. Razemba (2014) asserts that Zimbabwe Schools Examination Council ZIMSEC published the pass rate for practical and vocational subjects as 20.72% for 2013, an improvement from 18.40% in 2012. The statistics are a cause for concern but it should be clear that the subject does not attract many pupils. It is largely driven by self-motivation and interest whereas other subjects are compulsory. Such a view could be misleading in the end. In spite of the call for a new policy that promotes music and other practical subjects, some members of society are slow to embrace this policy.

Some Christian churches believe that mbira instruments are connected to the spirit world. Some children come from families with such attitudes and beliefs and therefore snub listening to the music played on the above instruments. In 2013 an apostolic faith church leader, who chose to be anonymous said that, their religious beliefs did not allow their children to become corrupted by the profane artefacts of the secular world. Quite a number of religious believers do not embrace the mbira and during my primary school teaching years I saw pupils become tense when I taught this type of music. As a way to respect their rights I never forced them into doing what they detested.

My experience as a specialist music teacher (between 1994-99) highly informs this thesis. Some teachers in the school where I taught would not allow the music specialist to conduct lessons as they always wanted to use the time to cover work in other subjects. In a typical school there were four streams from grade 1 to 7. The only way musical experience was availed to all the pupils was through choir and traditional dance. These activities only took in small numbers, at most 40 pupils in the choir and 15 for traditional dance, in a school with an average enrolment of 1 300 pupils. In my view, primary school creates a stage for pupils to discover their natural skills and endowments and this

makes it the best place to scout and groom talent. One hopes that once the talent identified at primary school is nurtured it will grow in secondary school and be developed further at tertiary level. However, Zimbabwe has a different situation in that the secondary school music curriculum has a missing link in music education (Shoko, 2015). Not all schools in Zimbabwe have undertaken the teaching of music as a subject at secondary school level. In the next segment I present a discussion on the secondary school context looking at the *nyunga nyunga mbira*.

4.4 THE SECONDARY SCHOOL CONTEXT

Relying on the national subject manager's information, by 2013 about 30 secondary schools offered music as an examinable subject under the ZIMSEC. It is important to note that these secondary schools are spread across the country's 10 provinces. The number of secondary schools offering music as an examinable subject is insignificant compared to the total number of secondary schools in Zimbabwe. The current trends in Zimbabwe are that music is not compulsory for all secondary schools, hence students can opt not to take it up. The following secondary schools are some of the few that offer music as an examinable subject. Private schools offer the subject under the auspices of Cambridge General Certificate in Secondary Education (GCSE) examination board that is administered in the UK.

- Harare - Prince Edward, Girls High School and Mabelreign High School
- Mashonaland East - Watershed and Peter House Private Secondary Schools
- Manicaland - St Joseph's, Marange, Masase Secondary and Rukweza Secondary Schools
- Mashonaland West - Chinhoyi and Chipadze Secondary Schools
- Masvingo - Gokomere, Mucheke 2 and Victoria Secondary Schools
- Matabeleland North - Victoria Falls - Mosi oa Tunya Secondary School
- Midlands - Chaplin, Mkoba 1, Mkoba 3, Thornhill High, and Midlands Christian College.

Most of the students who study music up to 'O' Level pass the subject, even though some never progress with it to 'A' Level. Most of those that pass 'O' Level music do not enrol for college or degree studies in music, which makes one wonder why they opt to take the subject in the first place.

At MSU we notice as the Department of Music and Musicology that parents dictate what their children should study even sometimes against the wishes of their children. Since the parents are the ones paying for tuition fees they usually have their way. Two students, who chose to be anonymous in 2014 had a brawl with their parents upon refusal to consent to their desire to study music at MSU.

The parents eventually succumbed to their children's wishes after the two resolutely stood their ground. Currently they are doing very well with their studies and are among the best in their group. The above scenario proves how low music is rated and treated by parents and teachers. The co-curricular side of secondary schools is quite vibrant as the above referred secondary and high schools have been on record many times for churning out prolific mbira performers among other music instrumentalists. Secondary school is the place where the continuity of the instrument under study usually gets choked. The students undergo immense peer pressure on choosing a career path and some of them feel undermined when they take up music while their peers take up Mathematics, English and Sciences which are generally highly regarded in Zimbabwe. There is a gap between secondary school and university, especially with regard to the *nyunga nyunga* mbira. Many prospective students who come to study music meet the instrument for the first time at university. The above view is true with all the students who participated in this research; in spite of having come to study through self-motivation, many of them had never played the *nyunga nyunga* instrument, and had not studied music at secondary school. This explains that a lot of challenges surround the study of music at secondary level and this needs a different research project in order to come up with proposals to solve the sticking issues in secondary school music education.

The ZIMSEC Music (6020) 'O' Level syllabus for 2012-2016 provides for the tuition of the *nyunga nyunga*, *nhare*, and *njari*, among other African and Western musical instruments. Expected outcomes of the syllabus are the ability to sing and play the mbira, playing within an ensemble, as well as individual performance. From this music syllabus the candidates are examined from the repertoire given by the examinations body. The examinations are based on practical performance and theory of music. A typical examination entails coursework through projects in which students create and perform the instruments, in addition to written exams. Important to note is the requirement for the students to play the mbira using the number notation as provided. The performance of the mbira requires that students use the same number notation system for all the variations to mbira tunes. With the same number notation, the students are also required to improvise with brilliance, exhibiting the art and dexterity in the chosen mbira instrument. From this discussion we notice that the blue print for music is quite focused and the set aims and objectives are in line with preparing students to acquire pertinent skills. The only hitch is that not many schools offer music as an examinable subject. The few schools that offer music as a subject do so because it is a special skills subject, therefore not as many students take it up, as evidenced by the low numbers that undertake the subject at college and university. Also, schools might not have enough resources to support the tuition of music, especially musical instruments and qualified teachers to teach and manage the subject area. Currently, many factors influence the course of events as schools, together with the parents and governing bodies, have

now been given the mandate to decide on development matters. Schools may choose what to purchase in order to promote the curriculum for their students, although they should comply with matters of policy.

4.5 NYUNGA NYUNGA MBIRA IN COLLEGES OF MUSIC

In Zimbabwe, tertiary education allows for the study of several certificate and diploma courses for students with at least 5 'O' Level subjects, including English, among these is music. There are colleges of music such as Mutare Polytechnic College (MPC), Music Cross Roads (MCR), Zimbabwe College of Music (ZCM), Midlands Academy of Music (MAM), Zimbabwe Academy of Music (ZAM) and all the University of Zimbabwe's (UZ) Associate Colleges for primary and secondary teachers' training. I should point out here that not all the associate secondary teachers' colleges offer specialisation in the teaching of music. It is different with primary school teachers training, as all of the trainees undergo pedagogics in music education for the primary school syllabus. The colleges of music expose students to a wide variety of repertoire of music pieces. They are expected to perform with brilliance. All the colleges teach the *nyunga nyunga* mbira as part of the music curriculum. This study could be relevant to these colleges, hence a brief look at what they do is vital. The colleges of music offer tuition to candidates with a thrust to producing music performers, who may in the end become instructors in the formal and informal sectors. Their careers depend on individual choices, especially in the way they want to do things. Most of the graduates from the MCR, ZCM, ZAM, and MAM end up as music directors in churches, performing artistes, music producers and engineers. Notably, most of them also become recording musicians with songs on the popular charts on national radio stations. It is fascinatingly noteworthy that many performing musicians today fuse their music with the *nyunga nyunga* mbira. Some of the notable performers include Edith WeUtonga, Fungisai Zvakavapano-Mashavave, Tariro NeGitare, PaChihera, and Mukudzei Mukombe also known as Jah Prayzah, just to mention a few. Their approach is flexible as they combine both secular and religious music in playing the *nyunga nyunga* mbira instrument. They have demystified the stigma attached to the mbira instrument by some members of society who regard it as not consecrated. A video by Fungisai Zvakavapano-Mashavave and Jah Prayzah (2014) (which is available on YouTube) where they fuse a *nyunga nyunga* mbira into gospel music is yet another example worth mentioning.

Even though views concerning the instrument vary, those that have undergone music education prove to be more forbearing, even though others abhor the instrument. This view demonstrates how formal institutions directly and indirectly influence the beliefs of people who undertake these curricula. Directly, institutions offer tuition to the enrolled students and indirectly as the students interact with

members of society through the knowledge and skills they acquire during study time. The Merriam-Webster Online Dictionary (2016) refers to education as the action or process of teaching someone especially in a school, college, or university. It refers to it as “the knowledge, skill, and understanding that you get from attending a school, college, or university.” Indeed, education can transform individuals’ ways of understanding issues and their subsequent actions. The fact that graduates from some of the above-mentioned colleges of music have done well is proof of how education shapes both the graduates and the society in which they live. The above premise sets a strong point for music educators to draw hope and motivation for aspiring students to study music at these colleges. As music instructors we are motivated by the mere prospect of students undertaking music and graduating after four years with skills to play mbira and other musical instruments.

The power of music is gradual yet forceful; many people cannot resist it and this is why there is a notable positive change in the way the *nyunga nyunga* and other mbiras are viewed locally. Many colleges engage in cultural exchange programmes where they tour places far and near with the *nyunga nyunga mbira*. In 2015 MCR and MSU had an exchange programme with their students and lecturers performing solos, ensembles with *nyunga nyunga mbira* and other instruments. It is, however, not possible to have large numbers of prospective students studying at colleges in Zimbabwe because resources are limited. However, the few music colleges in the country have a marked presence in the music industry regardless of the economic slump in Zimbabwe. The college graduates have dominated music performance spots in Harare, the capital, since it is the hub of the music industry in Zimbabwe.

4.6 PRIMARY SCHOOL TEACHERS COLLEGES

In this section the focus is on primary teachers colleges, which offer a two-tier programme, main and professional studies in music. The current primary school teachers’ education curriculum produces two kinds of teachers, one who has done music as the main study and the other a professional study of music in syllabus B (didactics for classroom music). Notably, the main study student also undertakes the teaching and learning skills offered in syllabus B. As a researcher I participated in a triennial review of both music main study and professional studies B syllabi for the United College of Education in February 2016. I noticed that the main study only takes an average of 30 to 40 students who study *nyunga nyunga mbira*, marimba, keyboard, voice and guitar. The rest of the students fall under the professional studies B syllabus, which does not offer the *nyunga nyunga mbira*. It should be appreciated that in this section enrolment can be up to 500 which is unsustainably high for effective tuition of the *nyunga nyunga mbira*. Only those in the main study section undertake tuition on the

nyunga nyunga mbira, although 30 students are too many considering that only four lecturers offer personal tutorship for instruments. The students at the primary teachers colleges also engage in co-curricular activities to develop their skills in music and other areas. However, only a few opt to join the music related co-curricular activities because of demanding schedules of work during the time they spend in residence at college. It is pertinent to state that the current model for Zimbabwe's primary teachers training colleges is 2-5-2. The code means that students spend their first two terms (a term is approximately four months long) in residential phase at college, five terms of teaching practice in schools and the final two terms in residence at college. This model exerts pressure upon the students because they should be equipped with skills in the main subject and professional studies in music as well as other subjects before they go out for teaching practice. The five terms of teaching practice are loaded with work and students need to also do distance education (assignments and research) at the same time. During teaching practice, workplace schedules leave them with little time to participate in notable performances in the music industry.

Most of the music main subject student teachers concentrate on teaching and playing the instrument in the classroom. Some of them just concentrate on teaching other subjects and ignore music, since the mind-set to play musical instruments, the *mbira* included, is an intrinsic attribute. However, there are national competitions organised under the auspices of the Tertiary Institutions Festival for Arts in Zimbabwe (TIFAZ), and the Research and Intellectual Output in Science, Engineering and Technology (RIO-SET) for all colleges and universities in Zimbabwe to showcase research throughput and conference paper presentations. Also tertiary institutions hold music competitions in a variety of musical instruments and categories. The competitions are run in August and September every year and the Minister of Higher and Tertiary Education participates with interest. In 2013 and 2014 these competitions included the *nyunga nyunga mbira* performance and this fostered a generally positive view of the instrument. It is unfortunate however that only academics largely attend these competitions with very few people from the local community patronising them. This is mainly because the competitions are held at venues and times the general public may not be able to attend as they will be at work or doing their business. In 2015-16 the organisers decided to streamline the number of musical instruments in these competitions to three at a time. Hence, the 2015 edition included guitars, marimba and choir. They excluded dance, *mbira* and folk choirs. However, it should be highlighted there have been concerns over adjudication and the fact that some colleges enter these competitions without full knowledge of the competition rules. At the end of the day, participating colleges feel short changed and this undermines the spirit and otherwise noble objectives of the competitions. A case in point is when challenges arose over the use of both hybridised and ordinary models of *nyunga nyunga mbira* in the competition. In this case it was apparent that contestants lacked

knowledge and appreciation for the various types of mbira available for use in music education. They thus detested the inclusion of hybrid mbiras in favour of the 15-key *nyunga nyunga* mbira, even though the adjudication criteria were silent on whether or not to include or exclude hybrids in the competition.

The teachers colleges have made huge strides in training music main subject teachers to play *nyunga nyunga* mbira. After graduation these teachers have the opportunity to influence primary schools and their host communities with their musical skills. Pupils in schools can also engage in instrument performance with their teachers and grow to appreciate the music thereof. Since primary school includes young children from infant-hood, the teachers have a noble task to inculcate a mentality that embraces the *nyunga nyunga* mbira. Hence, the probability of some of the children growing up to appreciate the value of music is very high. One can only hope that the children will, in turn, be able to spread an appreciation of the *nyunga nyunga* instrument to their family members and peers. The primary school training colleges provide the engine to stimulate the appreciation of music in the elementary stages of pupils at primary school and, as such, this is a fundamental place to embrace the development of music in Zimbabwe. The discussion now shifts to secondary schools and their role as part of the puzzle in music education of Zimbabwe and the *nyunga nyunga* mbira instrument.

4.7 SECONDARY SCHOOL TEACHERS COLLEGES

Secondary school teachers colleges enrol student teachers who have at least two 'A' Level passes and they undergo a two-year training course. Their approach is that a student teacher chooses a double major for the study. For example, one can take Music and English, and/or the following subjects: Shona, History, Religious Studies or otherwise. Hillside and Mutare are notable colleges that offer curriculum in music for aspiring teachers. Their tuition covers teaching and learning skills, and main study of music focusing on theory of music, instrumental practice, history of Western music and choir work, among other concepts. The curriculum for secondary teachers colleges is such that on completion of their college studies they teach only their main subjects or both majors. Their curricula include piano, guitar, *nyunga nyunga* mbira, theory of music, and traditional indigenous dances, among other musical concepts. Unlike the primary school teachers colleges where all the trainees undertake didactics in music, only those studying music engage in teaching and learning skills in music. On average the enrolment for classes is around 40-50. However, these figures are too large considering that tuition for musical instruments is supposed to be individualised. Originally the available resources and classrooms were meant to cater for about 30 students but the large numbers create congestion for students and little time for a learner-centred approach.

The majority of students who undertake music at colleges to train as secondary school teachers will not have had prior experience with the *nyunga nyunga* mbira, let alone music at 'A' Level. This gap has a glaring impact on the quality of skills acquired by the student teachers during training. It was noticed that some of the students opt for music as a last resort as they would have been left out from other subjects due to low 'A' Level points. Because there is no music subject at 'A' Level the colleges enrol based on interest and inherent musical skills, like singing and simple playing of musical instruments if these are at all exhibited by candidates. No wonder why some of the graduates end up not teaching music at secondary schools. I only took up music at the teacher training college simply because that was the only department that could accommodate me since all the others were full and were no longer interested in taking new students. However, I had an interest in music, although it was against the wishes of my parents they could not stop me because I received government grants for college fees. Nowadays there are no government grants any more and parents or guardians, who pay the fees, can dictate what their children should study. For this reason, some students are denied the chance to study music by their parents and guardians. The pressure at secondary teachers colleges is not as much as in the primary school colleges and so the skills acquisition tends to be more fruitful. Trainee teachers spend one term on teaching practice with the rest of the time spent in residence at college over a period of two years.

The current situation at secondary schools is that schools offer music to students who choose to have it as part of their study. Earlier in this discussion I stated that a few secondary schools offer music under ZIMSEC, hence some college graduates end up only teaching their other main subject and not music. This is because upon completion of their college studies secondary teachers either teach one of their major subjects or they take both of them. The choices depend on the school to which they are deployed. This is why some teachers who major in music end up not teaching the subject at all. Some teachers deliberately decline the offer to teach music and focus on their other major subject since they can be taught with minimal resources. In spite of the challenges in secondary schools, the graduates from secondary teachers colleges have continued to do well. However, a policy review is necessary to close the gap between primary school and university that has tended to throw music away from the formal context until one enters college or university level. It can be argued that the current situation leaves it late for prospective music students to decide their final career paths.

4.8 THE NYUNGA NYUNGA MBIRA AT UNIVERSITY

In Zimbabwe there are four universities that offer academic studies in music and these are Africa University (AU), Great Zimbabwe University (GZU), Midlands State University (MSU) and University of Zimbabwe (UZ). The above institutions have a niche-driven curriculum where they specialise in different aspects of music ranging from performance, music education, teacher education, musicology and ethnomusicology. However, all of the four offer tuition in the performance of the *nyunga nyunga* mbira in their curricula. Whereas AU's focus is inclined to music education, GZU's thrust is on ethnomusicology and music performance studies. The University of Zimbabwe specialises in producing teacher educators while MSU does ethnomusicology, musicology, music technology and performance. Most of the graduates from the above institutions are absorbed by secondary and primary schools. However, those from GZU and MSU are required to obtain a teaching qualification in order for them to become qualified music educators. In this discussion I do not include every mbira instrument and, as such, the focus is on the *nyunga nyunga* only. All four universities offer tuition on the *nyunga nyunga* using the Maraire notation method (discussed in Chapter 2).

As in teachers colleges, after learning the basics university students perform and improvise to create their own songs based on prototypes of the *nyunga nyunga* mbira tunes. The most common tunes played using the number notation are 'Bungautete', 'Chembere dzemusango', 'Chemutengure', 'Chigwaya', 'Chikende', 'Bhutsu mutandarika', 'Kukaiwa', 'Mugarandega', 'Nhemamusasa', 'Vamudhara', 'Vanotambarara' and 'Zimbabwe yakauya nehondo'. The most difficult *nyunga nyunga* mbira tunes are 'Chembere dzemusango', 'Zimbabwe yakauya nehondo' and 'Nhemamusasa' while the easy ones are 'Bungautete', 'Chemutengure' and 'Vamudhara'. Several other contemporary *nyunga nyunga* mbira tunes are played but these draw from the above-listed prototypes. Individuals who should be credited with crafting and contributing to the instructional approach to the mbira include Andrew Tracey, Abraham Maraire, Jege Tapera, Perminus Matiure and Tendekai Kuture. The necessity for innovation has seen new ideas come into the playing of the instrument. The tunes proper will be discussed in detail later in this chapter.

All the curricula in the universities offer a practical study of the instrument and the theory around the instrument. At university, students analyse the music and, in some cases, are challenged to transcribe the music using modern methods such as the notation software packages, for example Finale Note Pad, Musecore, and Sibelius. At MSU there is a whole course where students study transcription and analysis of music and they transcribe marimba and *nyunga nyunga* tunes. The skill to transcribe is

hampered by a shortage of resources. Although there are free software packages on the Internet not many students have the patience to surf for these and use them.

Transcription and analysis are skill requisites for research, especially for ethnographic studies. I noticed from all the universities referred to that these skills are critical yet difficult to execute. In this thesis my research capitalises on the transcriptions of the tunes and in the process the students undertake some analysis as they play. The more they play and analyse the tunes, the more they understand the flow of the tunes and their rhythms. However, at MSU they use the number notation tablature (Maraire number notation) and this is combined with playing through the ear as a look-and-do approach. For the transcription of *nyunga nyunga* mbira music there are three approaches that are used and these are pulse, staff and number notations. Since my study hinges on staff notation I spare the detailed discussion on the underlying principles of pulse and number notations in this chapter as they are presented in Chapter 2. The Department of Music and Musicology at MSU has adopted the use of guitar pickups on the *nyunga nyunga* mbira (hybridised instrument) although in class they teach the 15-key *nyunga nyunga* mbira. At university, besides teaching the instrument a lot of research and innovation goes on around the *nyunga nyunga* mbira, resulting in some radical shifts from the traditional indigenous instrument. A detailed discussion is presented in section 4.13 of this chapter where I tackle the impact of modern technology on the instrument.

4.9 THE NYUNGA NYUNGA MBIRA IN THE UNIFORMED FORCES OF ZIMBABWE

The uniformed forces in Zimbabwe are made up of the Zimbabwe National Army (ZNA), Zimbabwe Republic Police (ZRP), Zimbabwe Prisons and Correctional Services (ZPCS) and the Air Force of Zimbabwe (AFZ). All of them have a strong allegiance to music as proven by their displays at national events such as National Independence Day celebrations, the opening of parliament and burial ceremonies at the National Heroes Acre, just to mention a few. The ZRP band has a programme with full-time musician police officers that train performers in music for all state functions. The same is true with the ZNA, ZRP Military and Dance Bands that have proven to be prominent as they provide musicals for all the uniformed forces. They also provide music skills training courses for forces in Zimbabwe in special ways (Manyame, 2015). In 2014 they introduced the *nyunga nyunga* in their curriculum and it has gained popularity among the new recruits. At the time of this study, four policemen were enrolled from the ZRP band and I had an opportunity to interact with them at their depot. Their mbira tunes include the most common *nyunga nyunga* mbira tunes like ‘Chemutengure’, and ‘Nhemamusasa’ and other contemporary tunes, which are totally different from those included in this thesis. The ZRP band in particular is an interesting case because they are taught to play through

sight-reading. Their training and education department takes up theory of music to grade 8 Associated Board of Royal Schools of Music (ABRSM). The transcribed mbira tunes being short and repetitive could be interesting to introduce as part of their curriculum. In 2012 the MSU had three students from ZNA who enrolled for the degree programme. Upon completion and graduation, they went away with the culture of playing the *nyunga nyunga* mbira. The culture of including African musical instruments in the uniformed forces is still in its infancy due to the dominance of the Western legacy of using brass winds, especially in the military band. According to my study of Morris Depot, they are looking at ways of including traditional instruments in the marching formations. However, one constraint is how to amplify and fit them into the band. In connection with the above, the dance band section has accommodated the mbira but fuses them with guitars. The AFZ have the *nhare* mbira in their musical performances, hence I will not discuss them as this is outside the area of focus.

4.10 THE PHILOSOPHY OF NYUNGA NYUNGA MBIRA

The philosophies relating to the *nyunga nyunga* mbira look at theories of indigenous knowledge systems guided by cultural principles, the customs of conservation and preservation of musical practices. Indigenous people are regarded as the custodians of traditional musical instruments, responsible for issues of continuity and preservation of the instrument. The *gwenyambira* (the players) that are involved in performance of the instrument strive to preserve that instrument in many different ways, one of which is oral skill. Understanding the indigenous context of the instrument helps the owners of the instrument to uphold and advance the philosophy of the instrument. The performers and the *nyunga nyunga* belong to each other, hence performances thereof emulate deep conversations, as the tunes are call-response. It can be likened to intimacy where the performers become engrossed in the act of belonging to one another. The performance of the *nyunga nyunga* denotes unity and singleness of purpose. Proprietary rights of *nyunga nyunga* mbira music are collective. They are to be enjoyed by all and are for all members of the community. Indigenous knowledge systems refer to information that remains informal, holding that preservation is ensured through oral tradition rather than texts, legal codes and canonical knowledge. Furthermore, indigenous people are the custodians of the indigenous knowledge systems. Indigenous knowledge systems involving the use of mbira embrace cultural contexts and removal of such renders the underlying meanings void. Some indigenous people impose operational rules for outside researchers in order to preserve their legacy. For example, in some places indigenous leaders will require one of their own members to be an assistant in any form of research to make sure their ideas are well represented. I experienced this during research among the Tonga people of Binga in 2013. At times they may require a critical review of the research findings before publication. Their concern is more

focused on the welfare and preservation of their culture as a community rather than the personal rights of individuals. In the context of Zimbabwe, such rules depend on the community where one is undertaking research. However, in general, outside researchers have to comply with terms of reference for their studies. A minimum requirement for an outsider is to have a valid visitor's visa and, usually, local people to guide them in their research. It would be impossible for one to come as a stranger and carry out research in a particular community. The conservation of mbira cannot be sufficiently done in a museum or through recording via paper or electronic means. Hence, the use of mbira in the cultural context is critical whether in indigenous or contemporary contexts.

In the above-referred contexts the people are responsible for generating knowledge and also developing ways to adapt to emerging trends. It is through these endeavours to survive that the *nyunga nyunga* mbira has undergone some metamorphosis from an acoustic to an electronic instrument. Exploiting the available resources in different ways has facilitated the survival of the instrument. One philosophy relating to mbira is a "hands on minds on" instructional approach; consequently, the owners of the instrument are always proactive in preserving the mbira. In view of the above point, practices that undermine the above indigenous philosophy are likely to face resistance from the custodians of the instrument. Kwaramba (1997) mentions that the early missionaries to Africa, Zimbabwe in particular, embraced a derogatory stance towards mbira, resulting in some indigenous people detesting Christianity and the bible. As a matter of policy the curriculum in Zimbabwe takes cognisance of the indigenous knowledge systems. Consequently, the custodians of the *nyunga nyunga* mbira look forward to be complimented by formal education, which embraces indigenous knowledge systems in schools, colleges, and universities. The view by missionaries that the mbira is profane is gradually losing its grip, owing to diversity in culture through appreciation of different musical traditions offered in music educational institutions from primary school to university.

In the traditional context mbira performers have a variety of functions, both in private and public contexts. First, they have a responsibility to engage in serious performance so as to fulfil their individual aspirations in music making and recreation. But more importantly the mbira instrument unites people through performance, both at family and community levels. However, at the time of this research there were no known rituals associated with the performing of *nyunga nyunga* mbira. According to Matiure (2014 interview) the tune and song 'Nhemamusasa' performed on the *nyunga nyunga* is ritual borrowed from the *nhare* or mbira *dzavadzimu*, however *vadzimu* (ancestral spirits), the owners of the song would not respond to it as the context and sound of the instrument are strange to them. It is an accepted ascription to the *nyunga nyunga* that the instrument is used to accompany folk songs and lullabies. Some of the songs are also contemporary compositions by pop musicians in

Zimbabwe as they take prototypes of folktale and folksongs and rearrange them. This is possible because these tunes fall into the public domain and there is no copyright infringement. Some of the mbira tunes played on hybridised mbira combine different types of mbira songs. Hybrid mbira is covered under chapter 4.13 where I analyse the impact of modern technology on the *nyunga nyunga* mbira.

4.11 CONTEXT AND CONTENT ANALYSIS OF NYUNGA NYUNGA TUNES

According to Nettl (1964) the attempt to undertake transcription and analysis of mbira music using staff notation is something associated with musicology. It is a Western concept and thus imperfect. Early proponents for notating African music, according to Stone (2008), included the likes of Hornbostel in 1928. Their aim was to represent sound in symbolic form using characters not common in Western music, which could be decoded as music. Once a model of notation was established, it meant that one could then transcribe the music and subsequently undertake an analysis based on the system(s).

However, indigenous performers of the instrument may not have seen the need to transcribe and analyse the music because their pre-occupation was to offer performance in the appropriate contexts, be it traditional (ritual) or contemporary entertainment (*dandaro*). Seeger (1958) cited by Stone (2008) further argues that there is a conflict where one transcribes music that is outside the native confines of one's culture. This line of thought is plausible to a certain extent although one thinks transcription becomes problematic if it falls short of representing the actual music. In his view, Seeger regards Western staff notation as inappropriate for non-Western music. While transcription may present issues of conflict with certain non-Western music, it could be reasonable to maintain that such problems are not always common with transcription considering that on staff, C sharp or B flat are universal although they are not used by some ethnic people in the world. Hence transcription can be done by anyone who understands the tune structure and form of the mbira tunes. The growth in numbers of transcribers having both indigenous and Western knowledge systems places the process in a context where people can undertake unbiased transcriptions. Furthermore, impartial transcriptions reduce the prevalence of tunes that are extremely detached from their context. Mishra (2014) remarked that the use of notation helps one to remember, improvise and more importantly to sight-read. Despite the fact that transcription focuses on sight-reading, the other two components, to remember and to improvise, play a very important role as they can co-exist. These three aspects complement performers of the instruments, especially where they have to deal with large volumes of

scores in the form of printed music. Even though this study does not deal with large volumes of sheet music, the idea is applicable to working with short tunes that are presented in staff notation.

Transcription of African music is often difficult due to complex rhythms, even though, on the contrary, form and style of the music may not necessarily look intricate. The tunes for mbira are rather cyclic and because of that they can be played non-stop. In each cycle one can bring in a new improvisation and that can be difficult to comprehend for those not acquainted with indigenous mbira music. The issue of improvisation in mbira performance is spontaneous rather than timed and rehearsed because of the freedom of participation that is rife in indigenous music performances. In this study improvisation is defined as a deviation from the given score of the tunes. The reasons performers improvise differ with contexts and the nature of performances. For entertainment, improvisation is freely undertaken while in the schools, colleges and universities improvisation is informed by the time, nature of the examination and context. In some instances, the examiners or instructors set the parameters for the performance by providing a rubric within which the students ought to perform. The same students in their leisure and pastime can improvise anyhow because the performance is outside the context of formal instruction.

Furthermore, it would be difficult to set a benchmark for assessment for performance that has too many spontaneous improvisations as it would override the mbira tune and create a problem of sticking to one transcription. However, the melodies of each instrument interlock, thus combining into complex sounds that are not easy to separate out. This research presents some short tunes transcribed from *nyunga nyunga* mbira tunes characterised with variations that combine to create complex sound.

The quest to understand indigenous African musical instruments and their music for teaching in modern education prompts research seeking to improve understanding of this subject. Action research in particular avails the necessity to transcribe and analyse mbira tunes amongst many other musical instruments in the academic study of music.

In the African traditional context music was preserved and transmitted through oral tradition hence the ear was mostly relied upon (Matiure, 2015). Kumar (2013) mentions that oral tradition is found all over the world and before the onset of modern technology, this enabled society to maintain continuity of existence across many generations. Even though a sizeable section of the current society relies on modern technology, we still use oral tradition in our music to a large extent. McLucas (2009) argues that oral tradition and memory are components of the same thing. Based on these views, it can be argued that the oral tradition and modern technology can still be used today. Experienced ears of

tried and tested specialists provide a warrant for the preservation of the musical instruments to the next generations of mbira players. The mbira tunes and modes (the indigenous prototype mbira tunes) are orally learnt and handed over to generations. The kind of analyses done in the indigenous context are oral; people do not worry about writing down their views because they can discuss them. Innovation is acceptable in as much as it helps protect the customs and beliefs around the instrument. Notwithstanding the above, I think that mbira players are free to stray from given mbira tunes to totally different ones.

Regardless of the usefulness of education, some Africans (Shona-speaking in particular) who pursue formal music education do not consent to academic studies in music arguing that it is not the major objective of going to school. A notable mbira player today in that category is Tendai Gahamadze (2016), a graduate with a Bachelor of Science in Metallurgy who has devoted his life to the performance and development of the *mbira* instrument. He has no formal music education from university. He says in an interview that he felt he needed to perform some Zimbabwean music, especially after he failed to present music while he was studying in Germany. Upon his return home to Zimbabwe he has given himself to the performance of mbira music to date. He has revolutionised the mbira instrument with the innovation of using guitar pickups. Today he has recorded and produced several albums with his ensemble Mbira DzeNharira, which have also graced the popular hit lists on radio and television broadcasts in Zimbabwe. Because of the endeavours of Gahamadze and other *gwenyambira* (performers), mbira music has seen a remarkable revolution. Mbira and other indigenous music for a long time remained largely oral until researchers (Matiure 2014, Matiure 2013, Rutsate 2008, Kuture 2003 and Tracey 1997) began to transcribe African music into staff and pulse notations. This thesis does not engage in a debate to find which of the forms of notation does justice to mbira music. Notably, it should be appreciated how notation represents music on paper. Even though the study points out that written analysis of mbira music is owed to scholarship, the above researchers transcribe mbira music informed by both indigenous African and Western knowledge systems. The constraint with oral analysis is that it is often fraught with memory loss as people forget the finer details around the subject matter with the passage of time. If one fails to remember the details it means that some aspects are lost forever. As a measure to curb loss of traditional tunes the Shona people entrusted the specialist *gwenyambira* (expert mbira performer) who could remember the mbira modes (prototype tunes) and could construct new instruments based on the ones they kept (Matiure 2009 and 2013).

Western researchers and educators such as Berliner (1993) and Jones (1995) who came to Zimbabwe marvelled at how the people could maintain a tradition of mbira music over many years. In their

research and bid to have greater understanding of what was taking place they documented the music, the structure of the instrument, keys, soundboard and description of the physics of its sound production. In this way articles and books were published, the proponents of this venture being Hugh and Andrew Tracey, as documented on the ILAM website (2015). What the above view implies is that analyses of mbira took place even though some of these were not undertaken in writing by the indigenous people, hence the need to now produce tunes for scholarship.

4.11.1 Contexts of *nyunga nyunga* tunes

The central features for discussion of mbira music are the tonal centre, time signature, rhythm, texture, form, and context. In order to appreciate the *nyunga nyunga* mbira tunes and their contexts I examine transcriptions of the following tunes: ‘Bungautete’, ‘Chembere dzemusango’, ‘Chemutengure’, ‘Chigwaya’, ‘Guva rangu’, ‘Kukaiwa’, ‘Nhemamusasa’, ‘Vamudhara’, ‘Vanotambarara’ and ‘Zimbabwe yakauya nehondo’. I should point out that these tunes are not the only tunes played on the *nyunga nyunga* mbira. There are several other tunes based on the *nyunga nyunga*, nevertheless the selected ones provide a basis for this thesis.

4.11.2 ‘Bungautete’

‘Bungautete’ is a tune that is played in the context of a hunter who uses gunpowder. The song text suggests that the hunter sings as he prepares the gunpowder using a clay pot placed on a fire and as the mixing of the ingredients takes place the hunter would play the song and sing to pass time. In the song the *gwenyambira* articulates that he is engaged in an activity to prepare gunpowder, suggesting also that there is more than one person involved in the performance. In this context some are preparing the gunpowder and the others playing and singing to accompany the instrument or both whilst occasionally attending to the core business. In reality, the performers are not preparing the gunpowder per se but they are depicting the activity through the performance and singing of the tune.

‘Bungautete’

Transcribed by R. Muranda

Zimbabwe Folk music



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The two or more personae can all be involved in singing as can be deciphered from the context of the song that the one who is preparing the gunpowder cannot be playing the instrument at the same time. It is not clear whether the song has more than one *mbira* instrument accompanying it, although this is possible because the preparation of gunpowder may not have been a communal activity such as harvesting or winnowing grain. Although the preparation of gunpowder was a special activity for hunters, all members of the hunting expedition could celebrate through *mbira* performance and song. The output of sound for the *mbira* is soft, hence a few performers could provide entertainment to all participants with an accompaniment of hosho (shaker) to provide the rhythm and a steady beat to the performance.

The tune's tonal centre is in key F. It has a simple rhythm made up of quavers and semi quavers. The tune has one chordal variation while the rest of the variations are melodic. It is in compound time signature 6/8 typical of African polyrhythmic music. The rhythms of the tunes are ordered in a call-response with the high notes playing the call and the lower keys providing the response. The call is

either a question and/or a point of tension while the response creates an answer to resolve and/or end of phrase or system. In the case where more than one instrument is played, one of them acts as the caller and the others respond. The call-response ensures that all the players participate as members of the group pursuing one objective. The context of the performance of this tune emphasises an active audience rather than a passive audience. The performance is recreational and lends more to entertainment in an indigenous communal context.

4.11.3 'Guva rangu'

This tune is an indigenous traditional style *mbende* that is also associated with a dance movement that was once banned by the colonial regime. The colonial masters deemed it a vulgar fertility cult dance that exhibited sensually intrusive body contact. In an effort to offset the stigma attached to the dance the indigenous people coined the name *Jerusarema*, derived from the biblical holy city of Jerusalem. However, following Zimbabwe's independence in 1980, *mbende* was declared an intangible national heritage through a 2005 UNESCO proclamation. This meant that the dance was now recognised and accepted internationally as apart of Zimbabwe's traditional legacy. The lyrics depict a *gwenyambira* who upon his death wishes to be buried on the bedrock. The singer is celebrating the end of his/her life, especially upon realising that death is inevitable before one enters the spirit world.

Even though the singer is singing about death, the tune is largely in the context *dandaro* entertainment than it is connected to the ritual of death and dying. Even though the embedded meaning speaks to the incidence of death, the real context is pastime, instilling courage among those participating. It is presented in 2/4 time signature with quavers and semiquavers. However, there is a defined feel of 6/8 compound time. The tune follows a call and response pattern to suggest that it is ideally performed by more than one person. The variations are made up of short phrases of four bars played repetitively with room for improvisation by participants. The basic melodic tune keeps recurring throughout the performance. Some performers come in with variations, improvising both the song text and the performance technique. There is a *hosho* to maintain the tempo and keep the rhythm intact.

‘Guva rangu’

Transcribed by R Muranda

Shona Folk song



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4.11.4 ‘Chembere dzemusango’

‘Chembere dzemusango’

Transcribed by Richard Muranda

Abraham Dumisani Maraire



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‘Chembere dzemusango’ is one of the spiritual songs played on the *nyunga nyunga* mbira. The song speaks about ‘Chembere dzemusango’ in reference to ancestral spirits. It queries the “arrival” of ancestral spirits (to possess a medium) without formal invitation (invocation). The singer asks who has invited the ancestral spirits as their untimely arrival unsettles the hosts. The invitation of ancestral spirits is usually planned and well organised, hence people prepare beforehand to host the ancestral

spirits. Singing about the ancestral spirits is said to be invocative and as such it is not to be taken lightly at all. The song and *mbira* tune depict a person who finds themselves in a state of surprise where the ancestral spirits have paid them a visit without prior notice or warning. Thus it is an expression of concerned hosts who cannot handle the unexpected guests, ‘Chembere dzemusango’. In the context of this research the song is treated without any spiritual connotations, even though the text and tune are the same as performed by Maraire, the exponent of the *nyunga nyunga mbira*.

4.11.5 ‘Chemutengure’

This tune is one of the most common among students who study music and play the *nyunga nyunga mbira*. The main reason behind its popularity is that it has been part of most music repertoires at primary and secondary schools, teachers colleges and universities. It is played on marimba, mbira, guitar and steel drums just to name a few. The song text refers to the driver of a cart who is showing off, asking the question: ‘How do you know I am a cart driver?’ The answer to the question enables him room to show that he is the one behind the cart. The whole song is a conversation between two people where the other is being told a story.

A cart is a special asset that not everyone can afford and, as such, the cart driver is envied by many for having made it in life. The composer of the song is not known but it is a folk song that has been passed from one generation to another. It is written in keys F and C and these can be played well on the *nyunga nyunga mbira*. The music is polyrhythmic though played in simple quadruple time 4/4. Like other tunes it maintains the call and response pattern. The song and tune are wholly tailored for entertainment and bears no connection to rituals. The text that accompanies the tune can be improvised by the performers of the instrument whenever they feel like doing so. In ‘Chemutengure’ bars 1 to 8 is an introduction and this is simple to execute as the rhythm is in crotchets. Bars 9 to 25 are variations joined together to build up to a climax of high notes. From bar 26 up to the end bar 32 of the tune the performer plays the settlement. The settlement allows the performer to sing and improvise text for the song. The settlement is also the section of the tune where the performer keeps the same variation and allow others to improvise on their instruments if the performance is done in an ensemble with many members.

‘Chemutengure’

Transcribed by R. Muranda

Shona Folk Music

1 **Moderato** 2 3 4 5 6

7 8 9 10 11

12 13 14 15 16

17 18 19 20 21

22 23 24 25 26

27 28 29

30 31 32

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4.11.6 ‘Chigwaya’

‘Chigwaya’ is a fish personifying an individual who enjoys power and strength in his own territory. The text depicts a man whose welfare is above average. He has everything that he needs and is able to provide for his wife and family. The song is an open show-off to those without something to show to their name. Just as a fish has strength in water, so is the singer drawing power from wealth acquired over the years. The tune can be performed at any social gathering as required in the Shona people’s traditional indigenous and contemporary contexts.

‘Chigwaya’

Transcribed by Richard Muranda

Shona traditional folk music

2 3 4 5 6 7

8 9 10 11 12 13 14

15 16 17 18 19 20 21

22 23 24 25 26

27 28 29 30

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The song and the tune are all in key F. The tune is either played in 2/4 or 6/8 times although the compound time is more befitting to such a tune since the two beats are divided into triplets of some kind.

4.11.7 ‘Kukaiwa’

This is a song about a troubled person. It is actually a complaint to say someone is troubling me all the time. The rhythm is very simple comprising crotchets, quavers and semiquavers and it is in simple 3/8 time. It is in the key of F.

‘Kukaiwa’

Transcribed by R. Muranda

D.A. Mararire



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The phrases to the tune are short but repetitive and that makes it simple to transcribe. The tune has many variations that the writer discovered to be impossible to transcribe and play in one semester. However, as one plays the variations a lot of discoveries are made. If more than two mbiras are played the resultant sound is polyrhythmic and complex as the melodies cross and complement each other. The tune follows the traditional model of conversation in communion with call and response. The context within which the music is performed is primarily for entertainment *dandaro* with no intent to invoke any forms of sacred or spiritual engagement on the part of the performers or the people gathered around.

4.11.8 ‘Nhemamusasa’

‘Nhemamusasa’

Transcribed by Patson Manyame

Zimbabwe Indigenous



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‘Nhemamusasa’ is believed to be one of the oldest prototypes of mbira tunes. It is connected with Shona rituals of spirit possession (Berliner, 1993). Many Shona-speaking Zimbabweans can attest to this view as they treat the song with reverence. However, its adaptation into music education has somewhat removed the private and sacred function and brought it into the limelight of the secular and public spectacle. Through the pursuit to earn a living, some culture bearers have actually migrated to Europe and America to perform their mbira music and this has resulted in a context that is devoid of the sacred function of the song. The tune is borrowed from the *nhare* and is played on the *nyunga nyunga* mbira. Due to the limited number of lamellae on the *nyunga nyunga* in comparison to the *nhare* it exhibits some limits in the expression of the melodic motifs common of ‘Nhemamusasa’.

Their *nyunga nyunga* version of ‘Nhemamusasa’ is unique to the instrument even though the tune is generally the same. The ‘Nhemamusasa’ played on the *nyunga nyunga* is not used for any sacred purposes. According to Rutsate (2015) the spirits recognise their instrument and its music whenever they are played. It therefore does not come as a surprise that the *nyunga nyunga* is seldom used for ritual purposes but the *nhare*.

4.11.9 ‘Vamudhara’

‘Vamudhara’

Transcribed by R. Muranda

Anonymous



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‘Vamudhara’ is more of a pastime song. It does not have any kind of spiritual or ritual function. The song is mocking a man for putting on sandals made of old tyres as if they were a status symbol. The singer asks *marinzwepi somunemari* which means, “where is the beer as you behave like you have money to buy the beer.” The singer says *ndomutevera mambo*, which literally means “I will follow you (perhaps to share the drink).” The old man in response says *tevera* to mean “follow if you want.” The tune and song are performed for fun and enjoyment. There are no special contexts attached to it. Because of the points discussed the song is commonly played in schools on both *nyunga nyunga* and marimba.

4.11.10 ‘Vanotambarara’

‘Vanotambarara’

Transcribed by P. Manyame

A.D. Maraire

q = 80



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The tune is traditional Shona indigenous in terms of meaning and context. The exponent of this tune

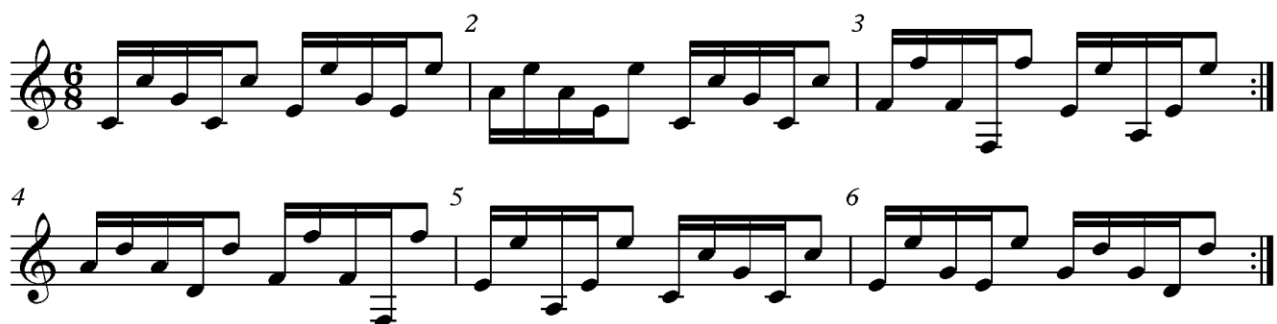
is Maraire who recorded it while he was in America, came to Zimbabwe and taught the same at the University of Zimbabwe. The song text for this is protest; ‘Vanotambarara’ means the colonialists who used to thrive at the expense of the oppressed African people. The singer is refusing to have a scenario where people oppress others; he/she says Zimbabweans refuse oppression of the majority by just a few. The whole of Africa refused to succumb to colonialism and sought independence. The tune was commonly sung during the early years of Zimbabwe’s independence. As Zimbabweans embraced the birth of a new era of freedom of expression and political emancipation from the colonial masters, they played this song on the *nyunga nyunga* mbira. The tune does not have a traceable connection with mbira other than the *nyunga nyunga*.

4.11.11 ‘Zimbabwe yakauya nehondo’

‘Zimbabwe yakauya nehondo’

Transcribed by P. Manyame

Chimurenga Music



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The above tune is included as one associated with the *nyunga nyunga* mbira. It derives its name from the liberation war for the independence of Zimbabwe. The song text attributes the independence of Zimbabwe to the war that saw both civilian and freedom fighters work together in the Zimbabwean liberation war zones. A lot of blood was spilled.

It was through the war that the people of Zimbabwe won their sovereignty. ‘Zimbabwe yakauya nehondo’ is in key F and is performed in a moderate tempo. Although it reminds the listener of the sad loss of life in the war for independence the tune is taken as a celebratory reminder of the experiences that culminated in a free Zimbabwe. Independence effectively saw the removal of racial restrictions in many spheres of life including education. The place of the song in formal education is to inform students about the importance of the struggle for independence. The key signature, which is in compound time, suggests that the tune is quite indigenous in nature. The feel of the dotted crotchet as the main pulse of the tune befits the Shona songs that are largely performed in compound

time.

4.12 CHALLENGES AND PROPOSALS WITH NYUNGA NYUNGA MBIRA

Researchers such as Maraire (1991), Berliner (1993), Azim (2011), and Jones (2016) discuss their experience through studies in Zimbabwe on mbira instruments and their varieties *Dzavadzimu*, *Njari*, *Matepe*, *Karimba*, *DzevaNdau*, and *Tonga*. Some of their findings have stirred controversy and debate as to which one of the mbiras is dominant. The researchers who visited Zimbabwe - Hugh and Andrew Tracey (1972) and Paul Berliner (1993) - met the Shona people who used the *nhare* (mbira *dzavadzimu*). Although mbira *dzavadzimu* is not the major focus of this study it is important to briefly discuss it and in relation to other mbira including *the nyunga nyunga*. These researchers considerably covered mbira music and ceremonies around it. Substantial information is documented about the *nhare* mbira and the world has been made to understand mbira *dzavadzimu* as the proper name for *nhare*. However, the expression mbira *dzavadzimu* connotes instrument ownership, that is 'mbira belonging to the ancestral spirits'. The above term also stems from the understanding that the *nhare* mbira was and still is associated with spirituality of the Shona people much more than any other mbira type.

What becomes apparent in this discussion is that if the instrument is property of the ancestors (*vadzimu*) then wherever they (*vadzimu*) are they have control over it. This is why *nhare* has come to be referred to as the mbira of the ancestors. However, the same instrument in some contexts cannot be subject to ownership by the ancestral spirits if the owner does not ascribe to that belief, hence the name *nhare*. Several other performers of the instruments play it in non-ritual contexts that never invoke spirituality.

The *nyunga nyunga* mbira has no traceable connections with rituals even though tunes like 'Chembere dzemusango' and 'Nhememusasa' are associated with Shona rituals of *kurovaguva* (bringing the spirit of the deceased home). They are played on the *nyunga nyunga* mbira on many occasions and these songs never invoke spirituality. In spite of the above debate it can be argued that once a mbira tune belonging to *vadzimu* is played, the performer creates a point of contact with the ancestral spirits because the music also belongs to them and they respond when they hear the sound. I have experienced occasions where spiritual possessions have been invoked through a mbira *dzavadzimu* song on a disc is played. Matiure (2014) mentions that mbira performers of old would engage in entertainment *matandaro* after asking the ancestral spirits to spare the people from spirit possession since they would be playing their music just for leisure. This plea to the ancestors is done to avoid

the *vadzimu*'s untimely visitation among the revellers at a traditional beer party or other forms of pastime not meant to be ritualistic. Matiure (2014) further says that the ancestral spirits would heed the call and allow the people to enjoy themselves without any spiritual possession interfering with their entertainment. Most musical instruments in Africa, including the mbiras, are handed down to the next generation by the elders who in turn would have inherited the same from their fathers who would have become ancestral spirits upon death and passage into the spirit world. The above notion proves that mbira instruments are ancestral property, hence they can be referred to as *mbira dzavadzimu*.

Regardless of the above notion, people have a right to ownership of the instrument with or without allegiance to ancestral spirits. It is for this reason that some Christians have not allowed the use of the mbira instrument in their churches. People fail to distinguish between the ownership of the instrument and the stigma attached to playing it. Some embrace its use in the secular world but not in the church. For Shona traditionalists whenever the mbira instrument is played there is some spiritual activity that ensues. However, in the schools it is performed without any spiritual connections or connotations. While it may be held true that the mbira plays a big role in rituals, Muranda (2010) argues that the spirituality of the instrument depends on the beliefs of the mbira player. In a personal interview with Mararike (2005), he insisted that the instrument is sacred and many players regard it as a sacred object. Furthermore, it is sanctified for divine worship of the mighty creator (*Musikavanhu*) and as such it should be treated with reverence. According to Mararike, in the traditional context the instrument was not supposed to be touched by any person except the owner or someone who led what traditionalist regarded as pure or untainted life. However, nowadays anyone can touch the mbira instrument, especially in institutions of learning, researchers and those in the entertainment industry, hence the sanctity of the instrument has been watered down. Mararike said that the instrument lost its sacredness due to institutionalisation and the intrusion of Western civilisation that embraces an inclusive ideology.

4.13 IMPACT OF MODERN TECHNOLOGY ON THE NYUNGA NYUNGA MBIRA

Before the use of computers, the tuning of the mbira would be preserved using the ear and/or another mbira of the same kind. Preserving the instrument in this way required the experience of experts in tuning the mbira or the tune would be lost. Western education and training encouraged research to explain tunings of various mbira instruments including the *nyunga nyunga*. Even though tunings differ from place to place, there is general consensus on how the *nyunga nyunga* mbira is tuned. Through using computer software packages such as Sibelius 7 one can notate the tuning as indicated

in Figure 17 in Chapter 5. Such tuning guide helps manufacturers set the keys on the instrument to the exact pitches. However, the problem with technology is that the tuning guide is based on a system and sound registers that are foreign to it. The piano, which offers tuning guides for a plethora of musical instruments, was used to create the *nyunga nyunga* tuning even though the indigenous tune has a somewhat different timbre. Modern technology has allowed the analysis of mbira tunings by way of notation and/or recording of the sound. This study does not prescribe any particular method hence it is entirely up to individuals whether or not to embrace and adapt to modern technology.

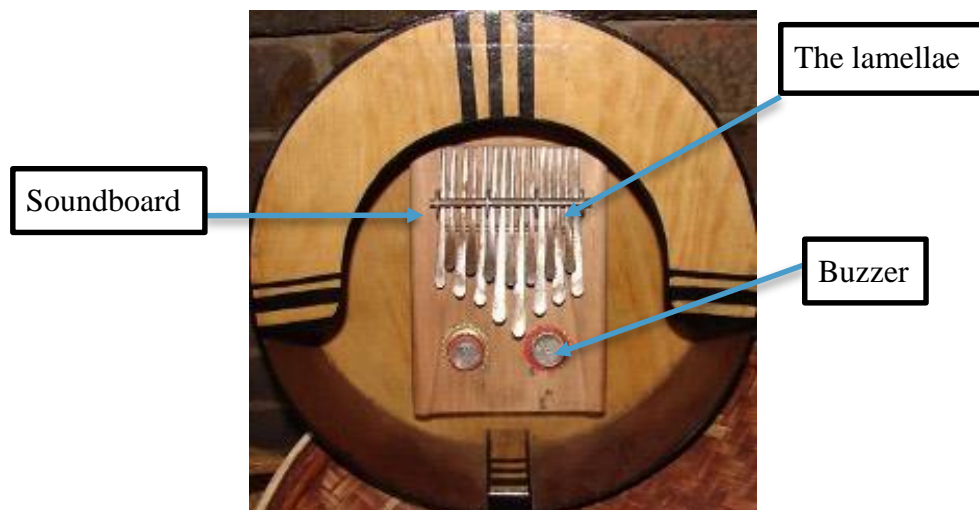


Figure 8: The Nyunga nyunga in a wooden resonator (Courtesy of Absolom Mutavati).

Modern technology has brought changes in as far as the *nyunga nyunga* and other mbira are concerned. Figure 8 shows the *nyunga nyunga* mbira acoustic version within the wooded resonator. It is the version that was developed at Kwanongoma College of Music in the 1960s. However, the *nyunga nyunga* mbira as a musical instrument has since undergone tremendous evolution from an acoustic to an electronic instrument. A more detailed discussion on the electronic *nyunga nyunga* mbira is presented later in this segment. The instrument has also changed function from private to public entertainment. It has also shifted from being confined to small to large ensembles that compete on the popular music stage. In Zimbabwe, several popular musicians and bands that use the *nyunga nyunga* mbira have emerged and they include the late Chiwoneso Maraire, Mbira DzeNharira, Zvirimudeze, Jah Prayzah, Fungisai Zvakavapano-Mashavave and PaChihera just to name a few. In this thesis I examine Mbira DzeNharira and Zvirimudeze because they use remodelled *nyunga nyunga* mbira in their performances. The study will not delve into the others because the impact of modern technology on their instruments is not significantly connected to this study.

Mbira DzeNharira, under the leadership of Tendai Gahamadze, deserve significant credit for revolutionising the mbira instrument into an electronic and hybridized *nyunga nyunga*. Gahamadze

attached guitar pick up microphones onto the mbira to amplify the sound. The sound board is removed from the usual calabash resonator and a strap is attached to it for ease of handling while playing and execution of body movement and dance. The buzzers are also removed to allow the guitar pickups to be attached to the soundboard and pick up a clean sound. As a result, the sound from the instrument is amplified and played through the loudspeakers. In an interview with Gahamadze (2012), he mentioned that he was mainly prompted by the need to amplify the mbira sound for a bigger audience. His efforts have placed the *nyunga nyunga* and other mbira instruments into a context befitting popular music.

The instrument can be used on its own or together with other Western electronic instruments such as guitars, keyboards and drums. In the original indigenous context, the instrument never combined with very loud instruments because of its soft sound output. Even though the African drum is a common instrument among the Shona, in their wisdom they never use it with the mbira because it drowns the latter. Thus Gahamadze's innovation has enabled his ensemble to share the same stage with the rest of the popular musicians in the music industry. In their first recorded album it is amazing how their instruments sound like guitars, even though they do not use any guitars. Their band also emulates the Western pop style in using lead, rhythm, sub-rhythm and bass mbiras instead of guitars. Owing to modern technology and innovation, Mbira DzeNharira use four mbiras, which are the *Nhovapasi* for bass, *Duriro* main rhythm, *Dongonda* sub-rhythm, and *Nheketo* lead. Conversely, their main form of percussion remains a pair of *hosho* (indigenous shakers). Through modern technology they record, play and promote their mbira music. They are also involved in the music business just like their counterparts who use guitars and drums.

One thing of note is the creation of a hybrid mbira where performers fuse the *nyunga nyunga*, *Nhare* (serving as *Duriro*) and *Dongonda*, *Nhovapasi* mbira types to play tunes in one ensemble. Even though the three mbira types have different origins, Gahamadze put them into the same key so that they now belong to a family. A brief background to the three serves to create an understanding of the instruments. The *nyunga nyunga* originates from Mozambique among the Nyungwe people. Jege Tapera brought it to Zimbabwe upon visiting his relatives. Later it found a place at Kwanongoma where they began to manufacture the mbira we have today.

The mbira in Figure 9 is the bass version of the *nyunga nyunga* mbira attached with bass guitar pickups. This innovation changes the structure and layout of the *nyunga nyunga* mbira.

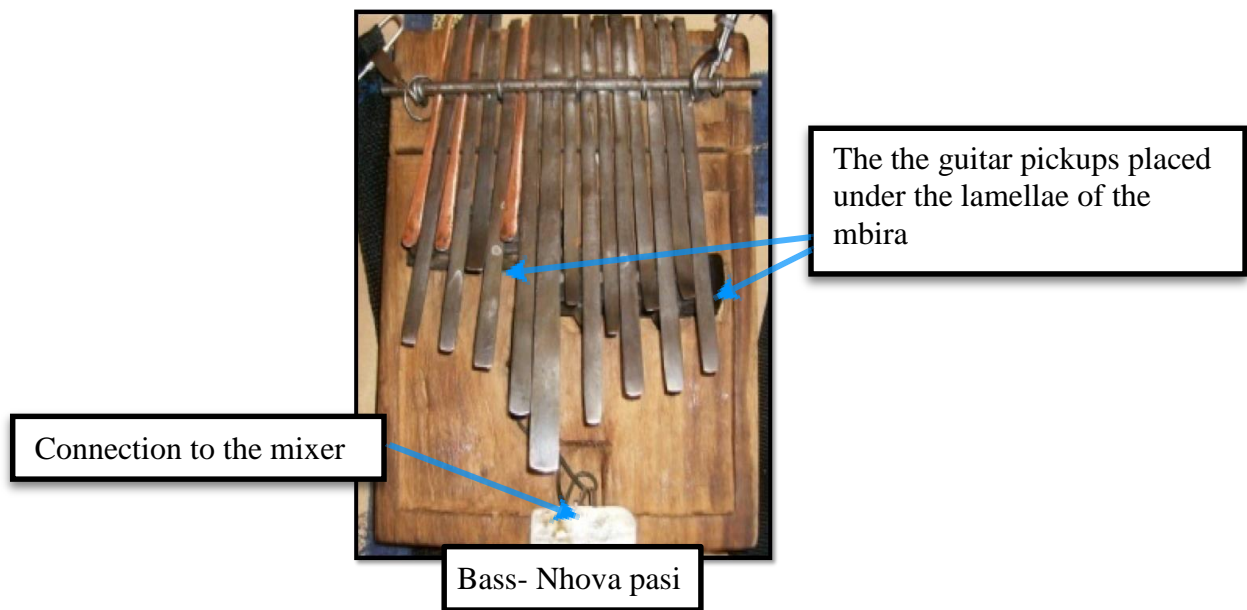


Figure 9: Nhovapasi bass for the nyunga nyunga mbira (Courtesy of Absolom Mutavati).

The *nhare* is the mbira *dzavadzimu*, an instrument that is associated with the Shona people of Zimbabwe. The Shona use it to conduct rituals and ceremonies in indigenous African religious beliefs. Gahamadze mentions that *Dongonda* is a mbira of the Korekore people around the Dande region of Zimbabwe. It has no close connection with the *nhare* and *nyunga nyunga*. However, it has been adapted to suit the current context of Mbira DzeNharira. Their *nhovapasi*, and *duriro* are related to the *nhare*, and the *nheketo* is derived from the *nyunga nyunga*.

A related contemporary mbira ensemble hails from MSU and they play three mbira versions of the *nyunga nyunga* manufactured by Gahamadze. The mbira in Figure 10 provides the rhythmic function of the performance bridging the gap between bass and lead mbira. Even though all of them play melodies the *Duriro* is critical in keeping the tempo of the performances.

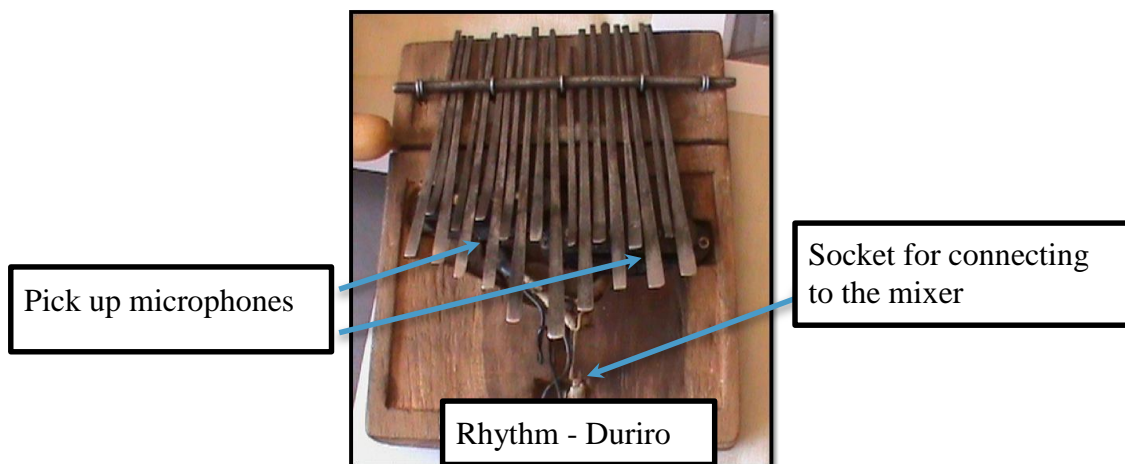


Figure 10: Duriro rhythm for the nyunga nyunga mbira (Courtesy of Perminus Matiure).

Zvirimudeze is a band of lecturers from MSU and they have a drum set and pair of shakers *hosho* as their percussion instruments. Their instruments are modelled on Western popular music with bass *Nhovapasi*, *Duriro* rhythm and *Shauro* lead mbiras.

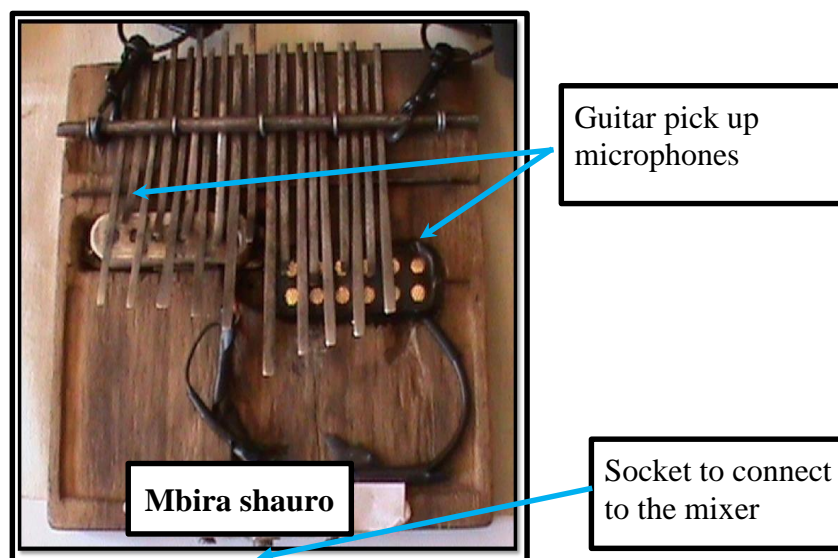


Figure 11: Mbira shauro lead for the Nyunga nyunga mbira (Courtesy of Perminus Matiure).

This instrument in Figure 11 occupies the upper threshold of sound as the leading mbira, usually playing the leading melody for each tune, while the rest play a supportive role to the performance.

Zvirimudeze uses the Western pop drum set and they sing mainly Shona songs whose themes focus on social issues. They released their first album in 2015 with nine tracks and they hold shows in Gweru and Harare. Modern recording techniques have really placed the instrument on the entertainment scene. After attending one of their shows, I noticed and heard revellers arguing that their sound was not mbira music because it resembled guitars due to the refined nuances of the electronic mbira. In both ensembles, Mbira DzeNharira and Zvirimudeze, the instruments are devoid of the *mateze* resonators due to the attached guitar pickups. The shell buzzers normally attached to the instruments are absent too. The absence of buzzers removes the warmth of the sound that is associated with the acoustic mbiras. The use of pickups to amplify the sound also enables the instrument to be played with ease. Zimbabwean society has had a gradual rural-urban migration in search of employment opportunities, hence people seek substantive pastime after work. Zvirimudeze ensemble provides entertainment at academic gatherings and state functions such as Independence and Heroes' commemoration days. The electronic mbira has enabled multi-track recording, allowing for live mixing of the different instruments to share the stage together, especially in the case of Zvirimudeze who use the drum set. Both Mbira DzeNharira and Zvirimudeze have recorded music that is played on radio stations. However, Mbira DzeNharira has been in the music industry longer than Zvirimudeze.

The Internet has facilitated an increase in sales and exportation of the mbira instrument and its music to different places in America and Europe, owing to research and entertainment through e-commerce. A number of resources ranging from websites, electronic publications and fora are available on the Internet. Some of these include www.mbira.org, www.dandemutande.com, www.mbiramagic.com and YouTube, just to list a few. However, the Internet is loaded with information and not all of it is credible; hence it needs to be interrogated. It is the task of people who are informed to check the credibility of such information. The endeavour to critique information posted on cyberspace depends on the background knowledge of people. Chances are those that do not know may just embrace it without question. At university, students are groomed to be critical thinkers who must cross-examine the information presented to them.

Modern technology could also be credited with presenting opportunities for students to study the instrument through research and practical involvement. Through modern technology such as computers, state of the art microphones and recording machines the mbira legacy is set to reach many parts of the world just at the click of a mouse button. To date the Internet allows for publications to be accessed through the university's repository, JSTOR, EBSCOHOST, Routledge, Francis and Taylor and the open repository just to name a few. The publications are available to the academic world for reading and reviews. Such opportunities promote research and subsequent preservation of knowledge about of mbira and other related musical instruments. Figure 12 is a hybrid of the *nyunga nyunga* and *nhare* mbira instruments brought into one instrument through research and innovation.



Figure 12: Matiure's Nyunganhare (Courtesy of Perminus Matiure).

Through research, Matiure (2010) created the *nyunga nhare* mbira that is a hybridised version of the *nhare* and the *nyunga nyunga* mbira types. With the *nyunga nhare*, performers combine the *nyunga nyunga* and *nhare* mbiras into an ensemble performance at the same time. This flexibility arises from

hybridisation owing to modern technology's influence on Matiure's conceptualisation and innovation. In another innovation Matiure (2013) presents the *nyunga nyunga mbiramutatu* three-in-one instrument. The instrument uses *nyunga nyunga* mbiras with three registers namely high, middle and low in a tri-resonator. The performer can play the high frequency lead mbira *shauro* or the mid or rhythm *Duriro* and/or bass frequency *Nhovapasi*. In 2016 the *mbiramutatu* was undergoing research to examine ways of using guitar pick up microphones. To this effect Matiure (2016) had undertaken substantial research to avail a finished product by end of the year. The *mbiramutatu* serves to showcase how modern technology has transformed the ordinary *nyunga nyunga* mbira with 15 lamellae.

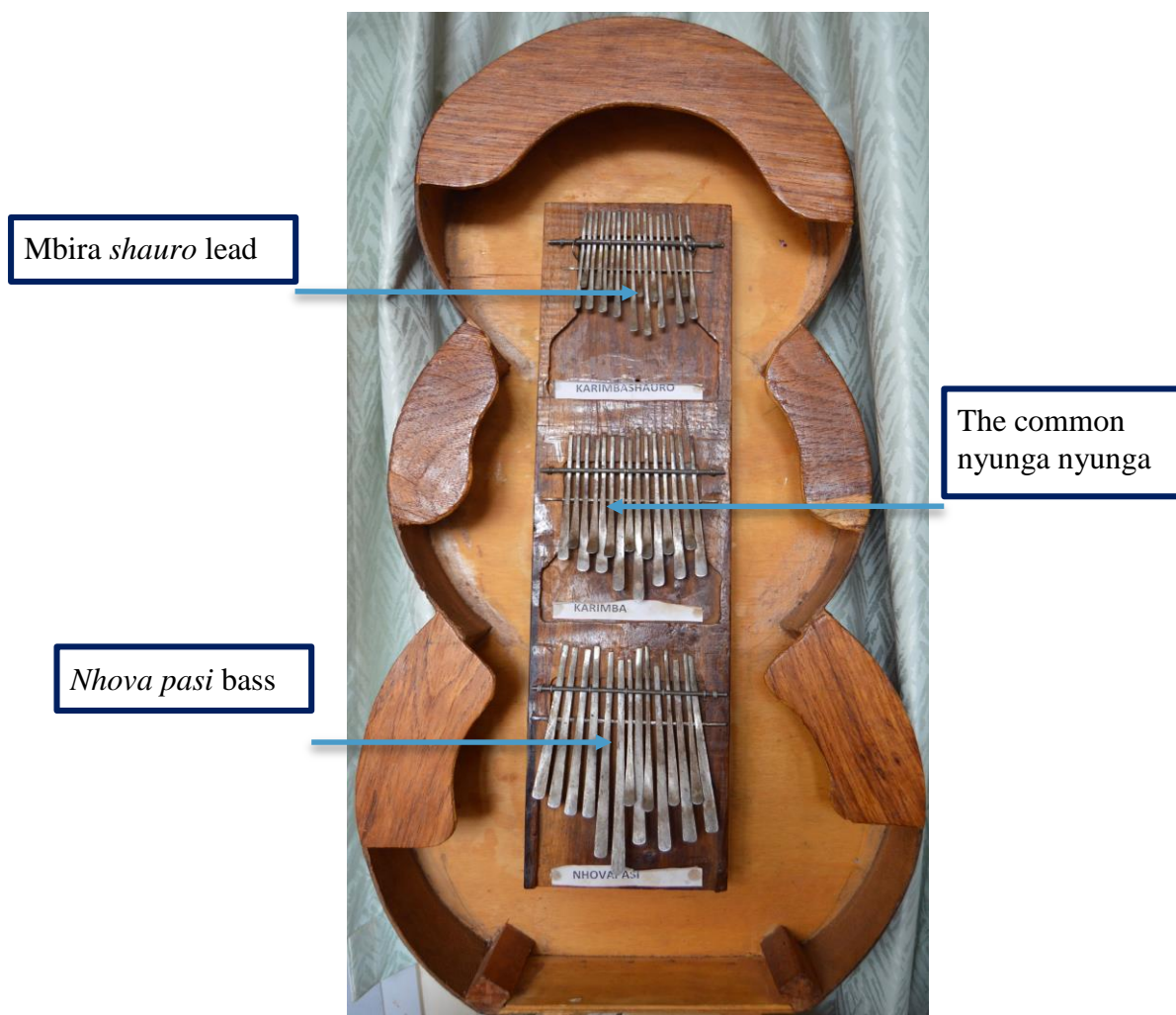


Figure13: Matiure's Mbiramutatu (Picture by Richard Muranda)

As illustrated in Figure 14 Matiure also exhibited at The Research and Intellectual Output Expo Science, Engineering and Technology (RIO-SET) 2015 edition his *mbiragita*. The instrument is a hybrid of the *nyunga nyunga mbira* and corresponding 15 guitar strings. The upper layer of the

nyunga nyunga corresponds to some steel guitar strings and lower layer of the instrument is aligned to the nylon guitar strings.

Plucking the *nyunga nyunga* mbira instrument results in resonance of the strings of the *mbiragita* and results in a hybrid sound of the guitar strings and the mbira. The sound produced is unique to the instrument and is owed to modern technology. Although in the above research the endeavour upholds preservation of the instrument, it shifts the instruments into a totally new context. It avails a variety of contexts from which people can choose. However, all the above innovations tend to place the instruments into a commercial domain which requires capital to manufacture more instruments of that kind.

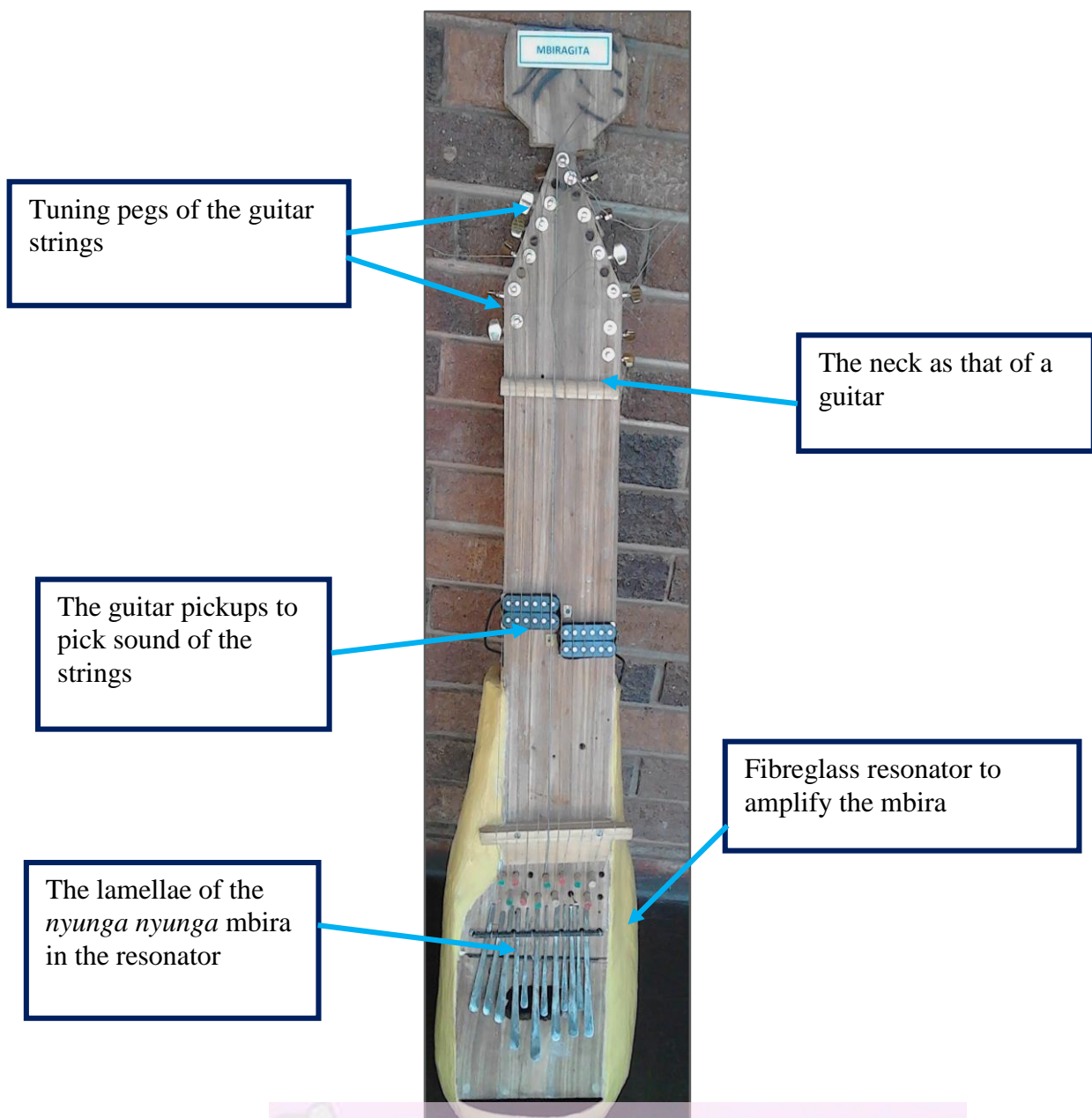


Figure 8: Mbiragita by Perminus Matiure (picture by Absolom Mutavati)

List of research project topics and materials

The above discussion leads to the notion of the array mbira, courtesy of <http://www.thearraymbira.com/> - an instrument built according to the Western format of octaves just like the piano. People outside the framework of the array mbira should appreciate that even though there are many other types of instruments, the creator of that type of mbira could have found it ideal in the context of their culture. In fact, there is a variety of array instruments manufactured by the company Array Instruments and the mbira is just one of them. The array mbira in Figure 15 extends the musical range available up to five octaves.



Figure 15: Five Octave Array Mbira (Courtesy of Array Instruments).

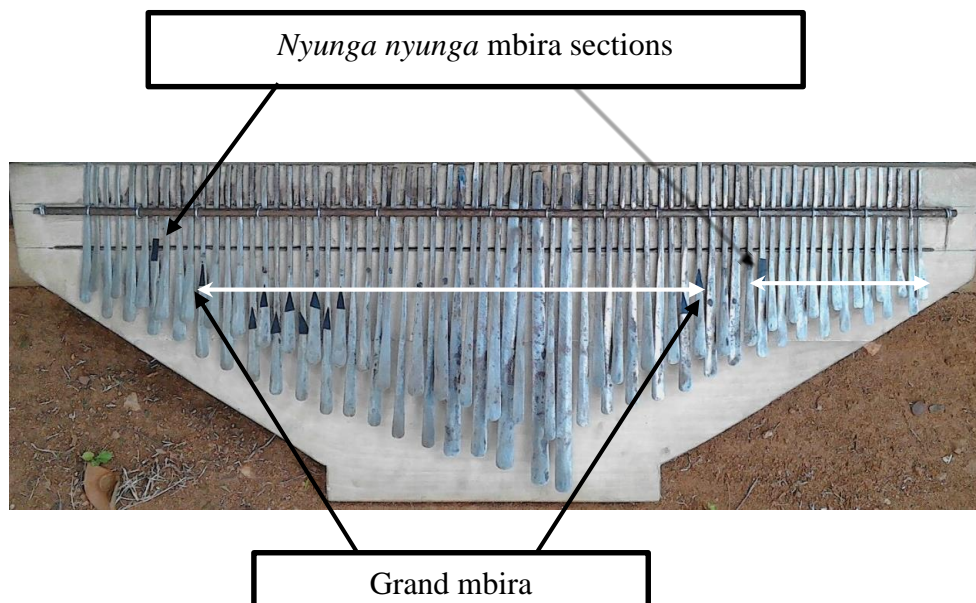


Figure 16: Matiure's Hybrid Grand Mbira (picture by Richard Muranda).

At the time of this research, the concept of the array mbira had not had a notable impact on Zimbabwean mbira music. However, one such instrument modelled on an array mbira by Matiure (2016) is his *nyunga nhare* hybrid, a combination of *nyunga nyunga* and *nhare* mbira instruments. The name for the instrument in Figure 16 comes from the large range of pitch from the lowest to the

highest with many lamellae, like the grand piano on the soundboard. It does not have successive octaves for the *nyunga nyunga* and *nhare* mbiras. On the extreme right of the instrument, with black rectangular marks are the *nyunga* mbira lamellae. The black triangular marks from the left to the right of the hybrid instrument denote the range of keys for the *nhare*, with the lowest sound register at the centre of the instrument. The innovation here is that it extends the tonal range to one lower than both the *nyunga nyunga* and *nhare* mbiras. At this point, it cannot be argued that the array mbira is a misrepresentation of the mbira instrument, since it is an innovation that the inventor of the instrument is entitled to.

Through modern technology, collaborative research is ongoing with a colleague where I am exploring the possibilities of developing a virtual *nyunga nyunga* mbira which can be played on computer screen, iPads, tablets, and smart phones. Suffice to say that this innovation creates an interactive virtual mbira that uses samples of the real instrument in a tone bank. Through a virtual interface installed on a smart phone or touch screen computer, one is able to learn how to play the instrument. This project allows for the virtual instrument to be learnt or taught in both formal and informal contexts. The interactive virtual mbira can be utilised as a marketing tool for the instrument through smart phones and the Internet. The innovation can also be adopted as a precursor to the actual performance of the real instrument. Although the virtual mbira instrument has the potential to be more user friendly, it certainly would not replace the real instrument, the natural mbira instrument. What is important to note is that modern technology can in some ways create convenience in learning how to play the instrument although this could lead to an inevitable decline in the use of the real mbira instruments in favour of the virtual mbira.

This thesis presents a study on the teaching of the *nyunga nyunga* mbira through CAI and this is anchored in developments in modern technology. This thesis is not about whether the new approach is embraced and the traditional approach discarded. The findings of this study are presented in Chapter five where I discuss topical matters in the research. The discussion finds it important to credit the advent of the Internet as an avenue that can promote interaction between people who may not need to meet physically to discuss issues of interest relating to the *teaching* and learning of the mbira.

4.14 CONCLUSION

This chapter dealt with issues relating to contexts within which the *nyunga nyunga* mbira exists in Zimbabwe. The discussion tackled topical matters ranging from traditional, indigenous to modern contexts. I also looked at theories and beliefs held for and against the instrument. Some of these

beliefs are, to a large extent, conservative and liberal especially in religious and indigenous knowledge systems. My thesis does not adjudicate on such matters; they are presented as matters surrounding the instrument in order to appreciate the role played by proponents of such beliefs in the continuity and change of the *nyunga nyunga* instrument.

I also examined the education system in Zimbabwe and noted that *nyunga nyunga* mbira is one of the core instruments in the curricula for primary and secondary schools, primary and secondary school teachers colleges, all colleges of music and universities in Zimbabwe. Regardless of their focus, whether performance, music education, ethnomusicology and/or teacher education, they all offer tuition for the *nyunga nyunga* mbira. This is important because the results and recommendations for this study could eventually benefit these institutions. Furthermore, the uniformed forces in Zimbabwe, as mentioned earlier, have also placed the *nyunga nyunga* mbira in their curricula and this firmly supports the basis for the existence of *nyunga nyunga* and its music.

The chapter also highlighted that the instrument has no sacredness or sanctity connected to it and does not evoke or invoke spiritual possession. It is simply an instrument used for entertainment without any rituals related to it. For this reason, many people find it easy to embrace the *nyunga nyunga* mbira, which largely explains its popularity in the education sector.

The chapter presented an analysis of 10 mbira tunes and presented the transcriptions thereof, followed by analyses of text, form, texture, time, tempo and context of the music. It was highlighted that two of the songs are derivatives of the ritual songs ‘Chembere Dzemusango’ and ‘Nhemamusasa’. Chipendo (2013), in his doctoral studies, mentions that the songs define the context of the mbira, however, the two songs are just recreational without connotations of ritual ceremonies at all because their context is music education.

The chapter discussed challenges related to the instrument and proposals to tackle them were suggested. The challenges mainly relate to religion and it is not easy to force the instrument on people. Whereas some people view the use of mbira in church as profane, others hold indifferent opinions. The law in Zimbabwe does not force any religious beliefs on citizens, rather there is freedom of worship and association. The conflict between the school curriculum and people’s religious beliefs is a challenge for educational institutions. However, a sensible option is to let students choose musical activities they feel free to participate in, especially after giving them information about all musical experiences in both indigenous, Western, and educational contexts. This could develop some appreciation of music and the role played by the *nyunga nyunga* mbira.

The chapter analyses the effect of modern technology on the instrument. The fact that many studies have been conducted on mbira instruments makes it plausible to suggest that modern technology keeps people informed of what is happening with the instrument and its music. Technology also impacts upon the mbira in many ways. For example, the instrument has transcended traditional confinement in private performances to the public arena. The pros and cons of electronics on the mbira have also been discussed. The overall impression is that the debate on the use of mbira with or without electronic amplification is an unending issue. The study does not try to resolve this debate but rather create an appreciation of the problems that arise because of value judgment. However, it should be understood that modern technology has both merits and demerits. One of the merits is that the instrument's reach has now spread to many parts of the world owing to the Internet, enabling people to exchange ideas, knowledge and musical instruments. However, the instrument is also undergoing change every day due to modifications to the extent that it would not be surprising to find one day the original indigenous instrument having metamorphosed to a totally different instrument. Even though people can choose what they want to use in terms of electronic or acoustic mbira, the trend to embrace an amplified mbira is on the rise, even though conservative mbira performers whose preference is that of the acoustic instruments still has a large base of followers. Based on this, chances are that we might still be able to stay with both types of mbira for a long time. Moreover, people have personal choices on the types of mbira they like to use at certain times and contexts, and this means there will always be a variety of mbira music. The next chapter delves into data presentation and discussion of the underlying details from the research field.

CHAPTER FIVE

DATA PRESENTATION, DISCUSSION AND ANALYSIS

5.1 INTRODUCTION

This chapter presents, discusses and analyses the research data. The discussion is informed by the proceedings of the action research that ensued in the study. Some of the presentations in this section are made in prose accompanied by illustrations, tables, and descriptive statistics where possible to derive and attach specific meanings drawn from the research. To aid the analysis I created sub-themes that point to the topic and the research problem in this study. The first theme for discussion deals with the use of computer-assisted instruction as a method of instruction of the *nyunga nyunga*. I also consider the method in association with instruction of indigenous music instruments, taking a careful review of CAI. I also discuss the justification of teaching the traditional *nyunga nyunga* mbira in music curricula.

The chapter goes on to interrogate the time allocated to teaching the *nyunga nyunga* instrument, especially in the contexts of research and the curriculum at Midlands State University. It also examines the diverse ways possible in use of multimedia in teaching and learning of the *nyunga nyunga*, as experienced in this study. The chapter analyses impressions held by the students who participated in the study with reference to the *nyunga nyunga*, especially after this practical course. Lastly, I evaluate the computer-assisted instruction method employed in this study in order to have an honest view and thus be able to make feasible conclusions and recommendations in the next chapter.

5.2 COMPUTER-ASSISTED INSTRUCTION AND NYUNGA NYUNGA

Before delving into the crux of the instruction of the *nyunga nyunga* instrument, it is important to discuss the details of the participants as part of the introduction to the data presentation and analysis of the experiences that were undertaken in the research. To facilitate analysis and discussion I place all the elements of the research are placed in a table that summarises the details of all the participants.

5.2.1 Background details of the participants

Table 1: Summary of participants' details

Students	Ave Age	Gender		Prior mbira skills	Prior Musical skills	Fast pace	Slow pace	Basic Music theory	Tunes
		M	F						
16	21	11	5	None	Guitar - 3 Keyboard -7 Voice - 16 Shaker - 3 Drum - 4 Recorder -2	7 M 4 F	4 M 1F	Scale Sight-reading. Note values, Quaver, Semiquaver, Crotchet, Time signatures (compound and simple) Rhythms,	'Bungautete' 'Chembere' 'Chemutengure' 'Chigwaya' 'Guva rangu' 'Kukaiwa' 'Nhemamusasa' 'Vanotambarara' 'Vamudhara' 'Zimbabwe yehondo'

Table 1 presents information concerning the participants included in this study. 60% of the participants are males while 40% are females. Looking at the enrolment statistics the male to female ratio is a common trend in MSU's Music and Musicology Department where males have continued to dominate since 2003. Being a member of the department since its inception this trend is attributed to a common misconception that music is not an important academic pursuit, especially practical performance, hence prospective students shy away the programme. According to the participants in this study, female students specialise in areas that are viewed by society as ideal for women such as management, accounting, psychology, food science and chemistry.

However, issues of gender are not the focus of the study hence not much is drawn from that view. The participants added that a few students opt to study music largely because their parents do not see any value in the programme. Furthermore, they mentioned that most popular musicians, some of whom are very successful, had no traceable academic records in music and, as such, education was not viewed as an important factor. The participants saw public music performance as a challenging experience, even though they all professed a personal motivation to undertake studies in music at university.

The 16 students who participated in the research all registered to study music in 2014. They went through the different levels of the practical course for all the selected 10 *nyunga nyunga* tunes. The above table also indicates that all the students had various prior abilities in music, which included playing guitar, keyboard, voice, shaker, drums, and the descant recorder. However, none of them had ever played the *nyunga nyunga*. The only music skills that some of them possessed were the keyboard and voice but these were deemed insignificant as they are not closely related to mbira playing. This worked well for the research because it helped me as the researcher to evaluate the effectiveness of CAI on students starting from a blank slate.

The evaluation would certainly be different if I had worked with students whose prior musical skills would perhaps complement their skills acquisition in performing the *nyunga nyunga* and other musical instruments offered in the department of music. In the study I further examine how other musical skills relate to the tuition of the *nyunga nyunga* instrument. Before the four participants dropped out from research I noticed a trend where 12 students (8 males and 4 females) were fast students and the other 4 (4 males and 4 females) were rather slow students. The above sample of fast and slow students in this research depicts heterogeneous academic dispositions. My personal observation, as one of the founding members of staff in the Department of Music and Musicology in 2003, is that there has never been a group of students bearing a uniform performance and scholastic aptitude, whether as high flyers or otherwise. For this study, this view is a preferable and acceptable condition, calling on the instructor to take care of the individual needs of the students. In this study slow learning does not mean that students do not understand the concepts taught, rather that they conceptualise subject matter at a slower rate.

The fact that the participants in this study were of different academic dispositions represented an ideal context for research. As a way toward preparing the participants for the practical teaching of the *nyunga nyunga*, a preliminary course on basic music theory and computer skills was conducted so that the participants could have an appreciation of music theory and computer literacy. The course focused on fundamental knowledge and skills requirements necessary in manipulating the following concepts:

- The scale and the tuning of the *nyunga nyunga*,
- The rhythms and time names quaver, semiquaver, crotchet as note values in 3/8, 4/4, 6/8, and 12/8 time signatures,
- Basics for sight-reading, colour code,

- Computer keyboard, monitor and use of mouse with Sibelius 7 notation.

5.2.2 Preliminary music theory course

Table 2: Observations on the basic theory course

Concepts	Scale F, G, A, C, D, E and the colour code	The <i>nyunga nyunga</i> tuning.	Time signature and rhythm patterns.	Sight-reading.	Basic computer skills.
Expected skills	Ability to identify the scale on mbira. Finger placement on the mbira. Practical application of the colour code.	Humming the tune of the mbira. Tuning the mbira using the software tuning guide.	Identifying time signatures. Clapping to the basic time notes. Mouthing rhythm patterns. Plucking the rhythm patterns on the mbira	Clapping to the time notes. Plucking the mbira keys to the time notes. Plucking the notes on the instrument by sight.	Manipulating input using the computer keyboard. Use of the mouse to command inputs. Control of playback and outputs keeping time and computer playback.
Outcomes	Ascending and descending plucking was difficult to master. Descending was easier both lower and upper manuals. The colour code made it easy to use. of few numbers also effective	The tuning of the mbira was easy in minims, the semibreve was too slow. The computer software gave guidance, especially with crotchets and quavers. The plucking of mbira keys was easier with crotchets than quavers and semiquavers.	All 2/4, 3/4, 4/4, and 3/8 time signatures were executed and 6/8, 9/8 and 12/8 basic pulses were mastered. Plucking of basic rhythms was executed without using both hands.	The computer provided an effective guide. The colour code gave cues The numbering was done away with as intended to defeat sight-reading.	Typing of commands was taken with moderate speed. Control of output was satisfactory, keeping time in playback was inconsistent but quite promising. Over excitement robbed the accuracy of performing along with the computer playback

The information in Table 2 indicates both the expected skills and the actual outcomes in the participants' experiences in the preliminary basic skills course. This segment articulates how I endeavoured to prepare the participants for the instruction of the *nyunga nyunga* through CAI.

The initial stage to identify the scale of the instrument was deemed vital to allow the participants to understand the structure of the instrument and the sound it produces. The outcomes of the preliminary course necessitated formation of group A for fast and B for slow students. The formation of the two subgroups took place before some of the participants dropped out. Notably, after the drop outs, group A students remained with six males and three females and group B students had five males and two females to make a total of 16. The 16 participants managed to go through the course right to the end. As such, the presentation, discussions and analysis are based upon these 16 participants.

5.2.3 Musical scale of the *nyunga nyunga*

In the preliminary session, it was noted that group A managed to execute scales, ascending and descending, quite well, with a fast tempo of about 110 crotchet beats per minute. Group B had a slower tempo of about 90 crotchet beats per minute. From the observations, group performances were a confidence booster as there were no glaring hiccups, save only for interruptions that were done deliberately to stop the performance by the instructor in order to give further instructions to the participants. As tempo increased Group A coped with up to 120 crotchet beats per minute but the slower group could not go beyond 100 crotchet beats per minute. After group work on scales the students were placed in pairs for practice. However, pair-work was not as good as the group-work. Participants were further tasked to practise as individuals and later they were allowed to showcase their skills. Unfortunately, the individual work was fraught with mistakes as some individuals were nervous and shy to do it alone. It should, however, be understood that acquiring confidence is a gradual process that requires time, hence the need to delay showcasing of individual skills.

A least 11 of the students grasped plucking the mbira scale after the first four hours (two sessions) of the study and five lagged behind. These five however, caught up with the rest after six hours (three sessions). Articulating the scale of the *nyunga nyunga* was done with strict finger and thumb placement as indicated by colours and numbers. At first, all of them expressed that their fingers were rigid. However, they gradually understood the placement of the fingers and thumbs on the lower and upper manuals of the instrument. The use of the colour code (black, green and red), together with

playback of the computer, enabled the students to read the *nyunga nyunga* scale. The colours and numbers assisted them to read and pluck the lamellae on the instrument. The numbers were very useful when they plucked random keys within the scale as I gave them instruction. Subsequently, sight-reading took place as the computer playback was taking place. Initially, without computer playback it was difficult to play the scale and tune the instrument. In the groups, the opportunity to engage in collective practical work boosted confidence amongst participants. Hence group performance sessions were more ideal to showcase the skills to pluck the scales, ascending and descending, on the lamellae of the instrument.

The group preliminary exercises yielded 100% of the expected outcomes; paired individuals followed with 87.5%. There were less than two stoppages and uncoordinated instances. These constituted 12.5% of the paired students. The major setback on pair-work is that it created a tense atmosphere for participants as some of them could not work well together. The individual work saw 10 individual performers going through the scales smoothly, which is 63% of the participants. The other 6 individuals (37%) had problems of abrupt stoppage, shyness and losing tempo. The most common mistakes were inability to keep tempo, plucking the wrong keys and lack of confidence. Initially they had performed confidently as a group without a problem, proving that it was too early to plunge them into individual work. However, all the above matters are indicative of the need for more time to develop skills and gain confidence before solo performances. However, this preliminary course was necessary to afford the participants more practical experience as a precursor to the forthcoming practical course as required in the research.

5.2.4 The *nyunga nyunga* tuning guide

A critical skill requisite for the introductory course entailed participants practising the above tuning guide, tracing the tuning and layout of the lamellae on the *nyunga nyunga* upper and lower manual. The tuning guide was also explored with the aid of computer playback. The students were tasked to follow the notated tuning guide through sight-reading. The computer played back the score using the left to right orientation. The participants were exposed to the upper manual first and then the lower manual. The sound from the computer played through a small loudspeaker. Initially, the students' instruments were too soft as the loudspeaker sound output was above their level of loudness. Even when the sound was reduced, it was not possible to match the sound from the instrument to that of the loudspeaker. At that stage, what mattered was for them to see the score and hear the sound of the computer playback, hence playing softly helped them to follow. After one hour of practical exercise, the class played loudly along the reduced volume of the computer playback. Although the virtual

piano did not sound exactly like the *nyunga nyunga*, the tuning was mastered by the end of this preliminary stage.

Nyunga nyunga tuning

Notated by R. Muranda

The image displays two staves of musical notation for the Nyunga nyunga tuning. The top staff, labeled 'UPPER MANUAL LEFT' and 'UPPER MANUAL RIGHT', shows a sequence of notes: E, D, C, F, C, D, E. The first three notes (E, D, C) are grouped under a black bracket labeled 'Right thumb section- black'. The last four notes (F, C, D, E) are grouped under a green bracket labeled 'Index finger section- green'. Fingerings are indicated below the notes: 4 for E, 3 for D, 2 for C, 1 for F, 2 for C, 3 for D, and 4 for E. A box with an arrow pointing to the F note contains the text 'This is either plucked with right thumb or index finger'. The bottom staff, labeled 'LOWER MANUAL LEFT' and 'LOWER MANUAL RIGHT', shows a sequence of notes: A, G, F, A, F, C, D, E. The first four notes (A, G, F, A) are grouped under a black bracket labeled 'Right thumb section'. The last four notes (F, C, D, E) are grouped under a red bracket labeled 'Left thumb section'. Fingerings are indicated below the notes: 4 for A, 3 for G, 2 for F, 1 for A, 1 for F, 2 for C, 3 for D, and 4 for E. The copyright notice 'Copyright © 2012' is centered at the bottom.

Figure17: The nyunga nyunga mbira tuning guide created by Richard Muranda

Through observation and involvement, I noticed that four of the 16 participants were getting impatient and I had to change the mode of presentation to focus on the theory behind the tuning and key of the *nyunga nyunga*. One thing that surfaced in tackling the *nyunga nyunga* tuning is that the use of semi breves was too slow and clumsy and was not ideal for the introduction of the tuning. Hence crotchets and minims were used to increase the tempo of the tuning guide playback. An assessment of the mastery of the skills ensued with random selection of participants to demonstrate to the class. I also opted to have them perform initially in groups, then pairs and lastly as individuals. The hitch with groups is that there is no individual attention to the participants, even though they performed well. The pair work was executed with 14 participants doing their tuning guide with confidence. One pair had a stoppage but then did well after they got another chance to start over. As for individual work, initially there was lack of confidence but with encouragement eight of the participants managed to demonstrate their skills, albeit with some stoppages. The rest did not play even though they had played well as groups and pairs, due to lack of confidence. It should be mentioned that this situation is normal for any one learning something for the first time, because the class was made up of students with different capabilities and that is acceptable. From the whole sample I noticed that 12 of the

participants (75%) performed confidently with only four (25%) requesting more time to build self-confidence in their skills.

5.2.5 Time signatures for *nyunga nyunga* tunes

The students were exposed to the concept of time signature and then a variety of time signatures, which they would meet in the tunes that are included in the study. Although compound time signature was the most prevalent for most tunes, the simple time signatures were also examined so as to enhance concept formation among the students. The 3/4 time signature for the tune ‘Kukaiwa’ was demonstrated using the simple chords on the thumbs. The focus of this fundamental requirement was not to play the tune, but to count as well as let the students feel and experience the time line of the tune. Typical of *nyunga nyunga* tunes and other indigenous music, it is critical to understand the pulse and flow of music before the practical performance. In this instance the count of three is pertinent in most of the signatures. The count of three is felt in 3/8, 3/4, 6/8, 9/8, 12/8 time signatures. With the aid of the computer playback all the compound time signatures were done with the clicking pulse in Sibelius 7. All the students clapped and tapped along with the computer playback. Later on they plucked the instrument’s lamellae guided by the colours and numbers to the set tunes. The actual plucking of the instrument used basic chords for the tunes ‘Bungautete’ and ‘Kukaiwa’.

‘Bungautete’

Transcribed by R. Muranda

Zimbabwe Folk music



Copyright 2013

Figure 18: Bungautete melodic variation with the colour code illustrated by Richard Muranda

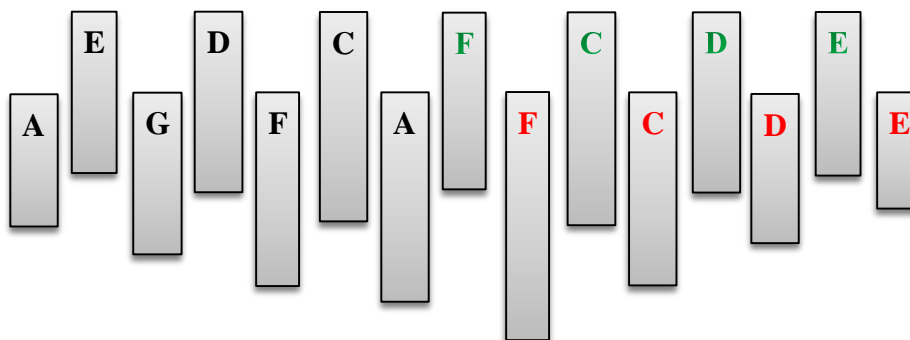


Figure 19: The structure, arrangement and colour code of the nyunga nyunga lamellae by Richard Muranda

5.2.6 Sight-reading

My preliminary sight-reading course lasted three 2-hour sessions for the pace setters and four 2-hour sessions for slow students. Twelve students grasped the concept of sight-reading the four bar tunes even though three of them wanted to just memorise the tunes. As a counter to the tendency to cram, the tuning guide was introduced as soon as each tune was grasped. The tuning guide was meant to equip the students with the ability and skill to keep the instrument in tune and as a reminder of the scale, and also to read the music. Sight-reading is a key feature of the research which endeavoured to break mechanical playing of the instrument. There was some resistance to the concept of sight-reading as the students wanted to play freely without restriction. The danger of free play was that it would bring deviations from the set tunes which would then defeat the premise for this research. This problem was curtailed by insisting on sight-reading of the presented tunes. As the study ensued, the students developed their own cues to read by sight considering that not any one of them had such a skill before. They all exhibited concerted commitment to using notated *nyunga nyunga* tunes as I worked with them in small groups, pairs and individuals.

‘Kukaiwa’

Transcribed by R. Muranda

D.A. Mararire



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Figure 20: Kukaiwa simple chords with the colour code illustrated by Richard Muranda

The preliminary course on sight-reading involved largely the use of the thumbs since it was simple to follow. This helped to build the confidence of the performers. However, each tune had other variations that included the high notes for the right finger in green and the left thumb in black. Since the high notes came at the end of the tune, it was not necessary to introduce them before the practice began. At the end of the preliminary session all the groups could play the basic scores (lower left and right of manual). See Figure 17 *nyunga nyunga* layout using the left and right thumbs on the instrument through sight-reading.

‘Nhemamusasa’

Transcribed by Patson Manyame

Zimbabwe Indigenous



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Figure 21: Nhemamusasa melodic variation with the colour code illustrated by Richard Muranda.

5.2.7 Computer basics

The essential basics for computers in this course included the use of Sibelius 7 notation software package. The expected skills included starting up and running the software, retrieving tunes from the folders and making keyboard and mouse commands to operate the computer. Outcomes were taken note of, discussed and analysed. The colour code was included in the preliminary course to help the students to read the music and be able to play the instrument by sight. The other requisite computer skills included operating the computer, controlling playback and levels of loudness. In addition, they were also required to read staff notation on the screen in class as groups, pairs and individuals. Using the computer, I presented guidelines on finger positions with the aid of the colours. The numbers served also to aid finger and thumb positions. The numbers worked together with the colour code since both the notes and the numbers were indicated in colour, as shown on the above tuning guide. As the software tuning guide played on, the participants followed on the overhead projector. I noticed that the four keys indicated in black were plucked quite well with the left thumb. The left thumb was assigned to keys indicated in black, even though it is permissible to play key (1) in green on the top right side of the instrument with the left thumb. The left thumb proved to be the busiest of the index fingers as it can be used to pluck a total of eight keys as indicated. Since the basic computer skills took care of the basic tunes mostly with red and black keys, the index finger was used sparingly since it was the first practical experience for the participants. As new performers they managed to follow the instructions that I gave them to use the tuning guide, especially finger positions and colour coding.

Some ideas generated from the preliminary course show that the use of both numbers and colours was a double emphasis, which might be deemed unnecessary even though it worked well for concept formation. The use of both colours and numbers served as a guide; the participants would then choose their preference, either the colour code or the numbers. Doing away with colours would have meant that students would rely on colours only, hence that would confuse them since the thumbs and the fingers are all assigned to the numbers 1 to 4 respectively. In this case the use of numbers only would also not suffice even if the colour codes were to be left out. Nevertheless, in this research I preferred colours to numbers because they offered a more distinctive view of the keys. From the observations, the participants were more comfortable dealing with colours than numbers. At the end of the course the I adopted the numbers and colour code as the mode of presenting the tunes to the participants. A brief exposure to Sibelius 7 software was given in conjunction with playback and control of tempo to enable personal preferences in group and individual practice sessions where necessary. Aided with two laptops, all students were able to control both volume and tempo of the operational modalities of the software and the computer. Since the computer skills were not the core objective of the study, the outcomes of the preliminary stint of the computer was seen as successful. The practical exercise to run and open tunes in Sibelius 7 was executed with reasonable confidence by all 16 students.

5.3 JUSTIFICATION OF TEACHING NYUNGA NYUNGA THROUGH CAI

The teaching of the *nyunga nyunga* followed a repertoire of 10 tunes starting from ‘Bungautete’ to ‘Chembere dzemusango’, presented to the students with some variations of these tunes in a spiral approach through CAI and sight-reading. The spiral approach takes the tune in small manageable units, in this case three to four bars of the tune were taught at a time. This gives a sense of achievement to the participants even if the whole tune is not finished. Some notable observations to justify CAI in teaching the *nyunga nyunga* are worth discussing in this thesis, especially from the instructor and participants’ viewpoints. Methods and activities planned for the students are accordingly presented below where I further analyse the underlying techniques and activities that support the use of CAI in this study.

One thing that is certain is that CAI entails a lot of planning and preparation before the actual teaching of the subject matter. The preparations include writing the procedure of instruction, especially the transcriptions and the playback of the tunes, in a selected notation software, in this case Sibelius 7. When planning it is critical to undertake prior simulation of the teaching so that one can anticipate the challenges and strengths likely to be encountered in the real situation. My planning for this research allowed for the evaluation of the teaching to be possible. Evaluation would then allow for

recommendations to improve on the previous lessons' methods and activities. Planning creates multimedia materials for teaching in graphics, motion graphics, sound and coloured text.

A critical feature for this research was to lay down a strong foundation for the theory of music commensurate with the concepts that were expected to be experienced by the students. After the foundation course the instructor, together with the participants, established a pitch and rhythm inventory for each tune, inclusive of the variations. The inventory helps the participants to identify the lamellae to be plucked in the given tune. It also facilitates identification of the intervals, time signature, and common recurring rhythmic motifs, especially the difficult and or easy ones. Each tune has specific notation, consequently the inventory enables the instructor to inspect the tune prior to the instruction and class work. In this research a simulation of the teaching took place before the practical teaching was undertaken. The simulation was also meant to ascertain how the unfolding of events would pan out. At that stage the facilitator would work on the colour code, placement of index finger and thumb positions, noting the intervals and playing of the tune through sight-reading. Where necessary, the difficult rhythms were played back repeatedly by the computer to allow practice or drill of the given motif of the tune. For example, the inventory for 'Baguette's high notes variation features the crotchets and quavers. The advantage of establishing an inventory for each tune is basically that it allows participants to identify easy and difficult parts of the music. In this research, the process was done for each tune and then explored together with all participants to consolidate and understand the tune, including all its features.

Since the spiral curriculum approach works well with CAI, it is a fundamental basic requirement to start off with simple tunes and rhythms, and increase complexity as the instruction progresses and the performers acquire the skills to perform the instrument. As the tune variations increase, so does the complexity of the tunes. However, the incremental approach is ongoing and the computer can be used with gradually increasing tempo. I capitalised on the playback to reinforce the schema of the students. The complex parts of the tunes were played back by the computer and students followed along with sight-reading. Using Sibelius 7 software enabled flexible playback to emphasise some rhythmic motifs, noting how they are to sounded. The computer-assisted playback (CAP) can also be done simultaneously with the participants' performance to increase confidence in performing the instrument. Settlement is the point where the performer plays the instrument without changing the variations, thereby settling on one variation which enables the performer to sing and dance with ease. The performance often reaches a climax when playing the complex motifs in these tunes and this marks the gradual fading of the tune to the end.

Performers reach a point of settlement as they grow in confidence with their instrument. Playing of the settlement comes with experience and for new students it is not an easy aptitude. For first time students, playing the settlement often happens when he or she gets to the point where they play what they have grasped. In this research, the settlement was executable when the students were able to sing and perform body movements with ease. Any variation of the tune could be used as a settlement within the performance, thereby giving the performers a sense of achievement. New students to the *nyunga nyunga* settle at the variation where they play the instrument. In using CAI, I noted that the computer playback enables the students to choose the point to settle and climax *nyunga nyunga* performances. Using a computer makes it possible to choose any variation for playing settlement and climaxing at the click of the mouse via manipulation of the keyboard.

As the computer was manipulated, singing along with the performance of the instrument made it possible to practise the song text, guided by the instrument and the computer playback. The computer guidance through playback implies that students can mark their entry and exit points for their singing. Even though the computer does not sing, it promotes hand-eye coordination on the part of the students since they engage in sight-reading. Due to the need to look at the score and read ahead of the time, Sibelius 7 allows for the panoramic layout which converts the score's view portrait to landscape, hence they play in time. The eye watches the score as one plucks the instrument at the same time. Such a skill comes in handy in performance of this and many other indigenous instruments. Through sight-reading the student notices when to play soft or loud and slow or fast, depending on the tune's complexity. All these performance directions and dynamics can be controlled via the computer.

Though useful, computer playback does not dictate emotions or expression of self. These are only executable from a personal point with singing along. With experience, performers can still dance and conduct movement relating to the tune. Even though the *nyunga nyunga* scores are notated, one can still engage in some creativity and improvisation, guided by the flow of the tune and rhythm thereof. CAI makes it possible for performers to play different variations at the same time without duplicating each other's lines. For all the tunes that have many different variations, participants in the study gained skills for ensemble performance practice. Considering that individual performers develop at different rates, the computer provided a virtual performer to guide them in developing musicianship in utilising space and time among other performers. In this method all participants have an opportunity to explore the sound as it plays on the computer and develop skill to identify the notes used in each of the tunes or variations through listening and sight-reading the music. The course is designed to present short but related tunes that could be played as a standalone performance or joined together into a complete tune. All of the tunes whose time signatures are in compound meter are

played with rhythms that have triplets. The participants can listen to the pulse of each compound time signature before and during the performances of the tunes through playback of the computer, reinforcing concept formation.

The use of the modern technology in this research relied greatly on the fundamentals of music theory thereby making the approach accessible to people in the Western and other parts of the world where the use of staff notation is deeply rooted in the theory and practical performance of music. The playback of the transcriptions in Sibelius 7 scores enabled the students to practically see, hear and gain understanding of the mathematical connections that exist between the musical time in rhythm notes. An example to help understand the theory under discussion is the way the crotchet and the quaver are related. The theoretical relationships between the *nyunga nyunga* tunes also forms a core for understanding the articulation of the tunes in general. Since most of the tunes are notated in compound time signatures, the students can establish the relationships that exist between the different time signatures from a practical, hands-on point of view.

Computer playback generates interest to play the tunes and most of the basic tunes would have become some of their favourites even before they played them in real life, as they could play well with increasing tempo. Playing along the computer playback guided sight reading, however playback eventually was removed. Personal motivation to play well without the aid of the computer pushed them to read the tunes. The resultant effect of the removal of playback subsists in self-discovery when the tempo is increased or reduced. However, the ultimate goal for this whole study is to enable the performers to sight-read and play along. All the groups concurred on the usefulness of the computer playback as reinforcement. The requirement to read music discourages participants from cramming the music before mastery. The participants were encouraged to read the music in the manner one reads written language. The challenge arising from this was that most of them had never been exposed to sight-reading of music and they began to show signs of resentment, largely because most indigenous Zimbabwean musical instruments are played by ear. This research therefore constitutes a paradigm shift toward the deployment and use of modern technology, via the manipulation of multimedia in a computer to motivate participants in pursuing sight-reading and playing of the *nyunga nyunga* music.

The use of modern technology (as in working with computers) in teaching the *nyunga nyunga* instrument seeks to avail the *mbira* to anyone who is able to read music through staff notation. Acquisition of the skills to play the *nyunga nyunga* *mbira* instrument can only be justifiable if the participants in this research are able to play the instrument. The above is simply another method of

tackling the instruction of *nyunga nyunga*, different from the usual indigenous approaches. Notwithstanding differences in instructional tactics, this method could be used to complement the teaching of this instrument worldwide.

5.4 TIME ALLOCATION FOR THE TEACHING OF THE *NYUNGA NYUNGA* MBIRA INSTRUMENT

The amount of time allocated to each of the tunes depended on the levels of complexity of each, as shown in this section. The lessons were planned with an objective to finish the core concepts required for each tune. The tunes thus had to be rated before the actual instruction took place.

Table 3: Time allocated for the teaching of the nyunga nyunga tunes

No.	Name of tune	Level rating	Match	Hours	Lessons	Practice
1.	‘Bungautete’	Simple	None	10 hr	5 hr	5 hr
2.	‘Vamudhara’	Simple	None	8 hr	4 hr	4 hr
3.	‘Kukaiwa’	Challenging	3&4	14 hr	7 hr	7 hr
4.	‘Chemutengure’	Challenging	4&3	12 hr	6 hr	6 hr
5.	‘Guva rangu’	Difficult	None	12 hr	6 hr	6 hr
6.	‘Chigwaya’	Difficult	None	14 hr	6 hr	6 hr
7.	‘Nhemamusasa’	Very Difficult	7&9	14 hr	7 hr	7 hr
8.	‘Vanotambarara’	Very Difficult	None	16 hr	8 hr	8 hr
9.	‘Zimbabwe yakauya nehondo’	Very Difficult	9&7	14 hr	7 hr	7 hr
10.	‘Chembere dzemusango’	Complex	None	16 hr	8 hr	8 hr
	Total			128 hr	64 hr	64 hr

Although I tried to rate them, the actual experience during the course of the research served me with the correct rating of the tunes. The first and second tunes were handled in that order and the rest were taken at random. At the end of the study the experiences and outcomes on time were organised as shown in Table 3 above. The 10 tunes were rated according to levels of complexity starting with those that were simple up to the difficult ones. All the tunes and their variations were taught and students performed them as class, groups, pairs and as individuals. However, each mbira tune required different time allocations in order to fulfil the set objectives.

The rating for the 10 tunes is mainly according to the different levels of challenges that were encountered during the practical course. Table 3 indicates the name of each tune, level of complexity, shared matching features in the tunes, time spent on teaching each tune and practising of each tune. The personal knowledge of the tunes helped to come up with a decision on which tune should be taught first: ‘Bungautete’ and ‘Vamudhara’, were chosen as they were regarded as simple because of their slow tempo and the use of crotchets and quavers in the basic tune and the variations. The time

allocated to each tune was not predetermined because I was not aware of the aptitude of the participants. I only made sure that the set tunes were covered in order to come up with a comprehensive analysis of how the proposed method functioned. Each tune had its own number of variations whose performance had diverse melodic contours. 'Bungautete' and 'Vamudhara' took the least time to teach; even though the variations are simple, they sound intricate when played. By the end of the 8 hours, the first tune was complete, followed by 'Bungautete' which took 10 hours for all the variation to be finished. The fact that the variations related closely to the basic tunes made it possible for the students to notice the deviations and be able to pluck the tunes. Thus a tune became complete when performed with all its variations. The instructor conducted an informal assessment of the performances to encourage confidence. Singing along to the two was not difficult because the basic tune is chordal and uses the thumbs. The songs also followed the flow of the tune, making it quite easy for all the students.

'Kukaiwa' and 'Chemutengure' have similar rhythms and variations though they differ in their time signatures, 6/8 and 12/8 respectively. Although the two tunes are challenging, interesting songs accompany them, hence students derived motivation to perform the tunes. It took an average of 13 hours to finish the teaching and learning each of the two. A noticeable aspect is that the two have many variations that are not exhaustible, but interesting. The two tunes were left to the participants to explore the variations as the course progressed. The tunes were given to the participants to practise in class and on their own. That way they developed independent performance as well as group participation. Singing along with the performances reinforced the art of keeping the tempo in their performances as groups and pairs. 'Kukaiwa' was a precursor to the next tune because most of the work done bore similarities to the tune, 'Chemutengure'. 'Chemutengure' took less time to finish, dealing with basics and variations. At this point the participants were also getting used to the art of sight-reading and plucking with the thumbs and the index finger.

The next level of tunes included 'Guva rangu' and 'Chigwaya'; these can be referred to as difficult, especially their rhythms. Some dotted rhythm motifs recur in these tunes, making them difficult for all the students. The other challenge is that they do not have similarities at all. 'Guva rangu' is fast, while 'Chigwaya' is moderate, hence the teaching of one did not have any beneficial influence on the other in terms of similarities. Even though the two are different, they have tied notes and dotted quavers and crotchets. However, on a positive note the tunes did not have many variations, hence in the end the students managed to play them. The few variations reduced the tendency to take more time on each tune. Irrespective of the few variations, the time taken to teach and learn these two tunes

was 14 hours for 'Guva rangu' and 12 hours for 'Chigwaya', with half of the total time for each tune dedicated to practice of the instrument.

It should be underscored that the next three tunes 'Nhemamusasa', 'Vanotambarara' and 'Zimbabwe yakauya nehondo' were more difficult for the participants to learn. Group performances were not done as much as planned and expected of the students. They took more time than was anticipated. Notably, 'Nhemamusasa' and 'Zimbabwe yakauya nehondo' bore some similarities in their time signatures and rhythmic structure. At that level 'Vanotambarara' was the most difficult of the three. Despite having no variations it took the most time, 16 hours, to teach. 'Zimbabwe yakauya nehondo' and 'Nhemamusasa' took 14 hours each.

The tune 'Chembere dzemusango' stood out from the rest. With only one tune and a slight variation, it nevertheless proved complex. Although singing along to the tunes was a priority for all the tunes, none of the participants sang along to 'Chembere dzemusango' with confidence. Indeed, it was difficult for them to sing along as they played. The other notable challenge that required more time was that the tune did not bear any similarities to any other tune. Consequently, it was not easy for them to emulate skills from playing other tunes. The tempo of this tune is slow and steady, due to the complexity of the tune and because of this more time was spent on the tune (about 16 hours). Much of the time on this tune was spent on practice to reinforce the acquired concepts and skills. The tune was difficult to tackle and at some point there was contemplation of excluding it. However, it was eventually successfully managed.

After the course the students indicated that the time allocated for the study was not sufficient. They alleged that this was a result of the tight schedule of studies undertaken in their curriculum. However, it should be realised that time management is a personal discipline that develops with experience. Even though all the students were enthusiastic about their involvement in this study, it was clear that they generally took the study as an extra-curricular activity. This attitude was not a drawback because at the end of the study they were not obliged to do a formal examination for the course. For this reason, the study took more time than was anticipated in order to cover the curriculum designed for the research. I had to be patient with the participants to avoid frustration. Even though the approach was formal, I relied on their good will and, as such, only managed to motivate them through allocating them more time per week. Personal practice was not handled well because there were only three machines with Sibelius 7, hence the individual work was slowed down due to insufficient machines to cater for the 16 participants. The participating students took turns to do their individual work with the supervision of the teacher. Time spent on individuals depended on how they progressed. Fast

students took less time – on average, 5 minutes or less per tune. The slow students took an average of 8-10 minutes. Tutorial, practice and performance time depended on the individuals' aptitudes. Although at tertiary level, performance students do recitals of 45 minutes or more, the participants were not subjected to performing before a large crowd. This requires adequate practice time considering that students develop at different rates and that the study sought to develop skills to play the instrument not necessarily performance before a crowd.

Concerning the time allocated to the teaching of musical instruments, including the *nyunga nyunga* mbira, the MSU undergraduate minimum requirement is 36 credit hours for students (3 hours per week). That time allocation includes lectures, field trips, group discussions and tutorials on the formal timetable. Students devise their own time for practice to perfect their skills in playing the instrument. However, the formal music curriculum may not handle as many as 10 tunes in one semester; rather they have tuition on three or four tunes and then they discover how other tunes are played on their own.

In this study I allocated per week, two hours of tuition and the other two for skills practice in groups, pairs and individuals. Judging from this study, the allocated time can be viewed as sufficient even if the tunes were numerous. Thus the research was spread over two semesters so as to cater for 10 tunes. If this method is applied to the current curriculum, it would allow for the teaching of either up to five simple tunes, three difficult ones, or only two very difficult ones. The discretion of the instructor usually takes pre-eminence in choosing the types of songs to be learnt.

Choosing simple tunes will allow the students to actualise their ability to play the instrument, while also building a good repertoire of mbira tunes. The difficult tunes might take longer than the simple tunes before the students can confidently play them proficiently. If more time is taken and in the end there is no substantive skill to be displayed, the instructor and the students might become frustrated. It is important to begin the use of the above method with simple tunes because complex tunes can frustrate students and discourage progress. It is thus prudent to start with simple tunes and then increase the complexity of the tunes gradually. The teacher can also discuss the features of the tunes and their variations so that students appreciate what they are doing in class and on their own.

5.5 IMPLEMENTATION OF MULTIMEDIA IN TEACHING/LEARNING OF THE *NYUNGA NYUNGA*

This section deals with concepts and strategies which I used in implementing the computer-assisted method. I go further to explore how each of these is applied in the context of this thesis. The concepts are: establishing an inventory of notes in the tunes, identifying rhythm motifs, drills on the scale, choosing a tempo, applying the colour code, pulse for the time signature, practice of plucking the instrument, hand and eye co-ordination and making use of the computer playback. The discussion also takes cognisance of the strategies set for the students' participation in groups, pairs and as individuals.

Group work had the most active participation of students in the performance of the *nyunga nyunga* mbira instrument. I noticed that for all participants, performing as a group gave them courage to do better than in pairs or as individuals. From the above observations the performance of members in a group tended to cover for the shortfalls of others, hence they took their lines with confidence. Some would miss out on the correct notation but the level of confidence being high, they continued to perform without fear. The study also noticed that they tended to play with balanced sight-reading of the music (occasional looking at the instrument and the music interchangeably) as opposed to pair and individual performances. Pair and individual tasks stripped them of confidence and they would play with little focus on the instrument and the music. Still, regarding performance, all the variations for the 10 mbira tunes were performed with the use of the scores. In spite of the problems experienced in pair work and individual work, the practice time helped to reduce the tendency to shy away due to lack of confidence. By the end of the study the performers displayed a lot of courage and confidence with each tune and its variations. The only outstanding aspect was that the students were less inclined to improvise due to the use of staff notation. Most students preferred to use the given tune without adding on or deviating from it. Performance in groups tended to keep them within the confines of the transcriptions provided. They managed to sing the songs accompanying the tunes with the exception of 'Chembere dzemusango' which is quite difficult. More time is generally required to work on this tune. Even though it had no variations, it proved to be complex. Performance on this song was just above average and this is because of the use of the computer-assisted method. There were no outstanding performances by the students.

Pair work was characterised by students exhibiting a mixture of skills and personality traits that displayed lack of confidence and shyness. Considering that the performance of the mbira instrument is associated with high-spiritedness, the students would calculate how to pluck the instrument and, as

they did that, they missed their lines. About three pairs defied the odds and performed with high spirits improvisations along the tunes. It was easy to check on the reading of the music on the given scores and it was quite effectively executed. For pair work, students were asked to sing songs of their choice and the majority of the groups and pairs chose 'Kukaiwa', 'Chemutengure', 'Nhemamusasa' and 'Vamudhara'. Impromptu performances on 'Chembere dzemusango' and 'Zimbabwe yakauya nehondo' were done and about four pairs undertook them with confidence. I noticed that with these two tunes, even though students had grasped them, they tended to falter in front of their peers. The reason for using pair work was to prepare them for stage performances of the instrument. Some of them had not developed the confidence to perform on stage. Considering that all of them had displayed a grasp of the skill to perform all the tunes, it was necessary to inculcate the skill to undertake stage performance. Although the mode of teaching did not focus on stage performances, it was vital to expose them to this aspect. About six pairs were evidently shy on stage. However, they took it as just fun.

Ultimately it was important for the participants to undertake individual performances in their mbira instrumental practice. The use of multimedia in providing guidance on how to play the instrument proved to be useful for the participants, especially after observing the completion of a tune. The skill to perform as individuals was well done mostly with tunes that had been completed in the study hence they struggled with new ones. Performing all the variations in one take brought interesting revelations. The participants chose to perform tunes of their interest regardless of complexity. The most popular choices during the class sessions were 'Chemutengure' and 'Kukaiwa', followed by 'Chigwaya', and 'Bungautete'. The rest were attempted after they had been completed by individuals. Although 'Vamudhara' was performed well during class work aided by computer play back, during the individual sessions it was only done well after they finished all the variations. This reveals that acquisition of the skill to play the instrument was a gradual process, although improvements would be noticed every day during the sessions. The computer enabled the repeat play of important rhythms and this allowed the individuals to practise them. The big screen was quite useful as all could read and play along. Even after the removal of the playback, the individuals could still follow the silent movement of the notated tune. The other issue that arose with individual performers is that they requested the tempo to suit their needs. The chosen tempi varied from slow, moderate to fast. However, some tempi would dampen the spirit of the tune. For example, the students who played 'Chemutengure' in a slow tempo made the tune somehow dull and uninteresting. 'Bungautete' sounded very harsh with a fast tempo because it works well with a moderate or slow tempo. Individual performance on 'Vanotambarara' and 'Chembere dzemusango' only happened many hours after the teaching was completed. Because they are more difficult tunes, the participants could not play them

fast but with a moderate tempo. The important point to note here is that all the individuals managed to play with and without the guidance of computer-assistance.

5.6 IMPRESSIONS ABOUT *NYUNGA NYUNGA* MBIRA AFTER THIS PRACTICAL COURSE

The experiences of the participants in the study were different. This section presents and analyses the impressions held about the *nyunga nyunga* mbira in the backdrop of the use of the computer-assisted method. All of the participants held the impression that the computer-assisted method was difficult as they could not see the connections between computers and the indigenous musical instrument. This view is normal as uncertainty surrounds a subject matter that is being done for the first time. The issue of technophobia also comes into play and the only way to offset it is through goodwill and desire to personally get involved in the challenging tasks. In this study I encouraged the participants to work with the computer-assisted method in learning the instrument.

At the inception of the research about 80% of the participants were of the view that I was too ambitious and felt that the course would never amount to anything. Only 20% of them were motivated to participate and see what would become of the whole exercise. It is clear from these statistics that the majority did not readily embrace the teaching of the mbira via computer assistance. As such, a lot of commitment was needed from myself as the researcher/instructor and the students in order to realise the set objectives. It was not easy to sway the participants since they were uncertain of what was going to happen.

The preparation and execution of this method was viewed as rigid as the instructor was obliged to follow specific procedures to teach. This, they felt, would mean that they would not take any short cuts which would lengthen instruction time. However, in the end they realised that it was a worthwhile method of instruction since they could carry out some tasks independently. The majority of the participants also felt that the procedures to follow should be simple to enable one to play the instrument. All participants mentioned that the introductory lessons were not easy to understand because everything was new. There was nothing that was connected to their previous knowledge on either the computer or the mbira instrument. Initially I did not have a clear appreciation of the aptitude and attitudes of the participants. The first few lessons were difficult and a lot of motivation was needed to encourage them to do it.

A view initially shared by 14 of the 16 participants was that modern technology would not work in this instance. I discovered that the above view was because they had never imagined that a computer could be used in teaching indigenous mbira tunes and allow human performance along with the computer playback. Upon noticing how the computer could change dynamics and tempo, it was amazing for the majority of them. This view actually made most of them keen to learn how to transcribe and notate music with Sibelius 7. However, this course would not allow them to do so. This experience was sufficient cause to build confidence among the participants.

About 50% of the participants saw the use of a computer to present materials for instruction as a threat to the indigenous approach to the instruction of the mbira. However, I did not see it that way even though it made sense, because I was there to guide the first-time students. The instructor prepared the materials for teaching and learning and determined the quality and quantity thereof, hence their involvement played a critical role. In this course I was always there with the students to guide them to discovery. As they discovered a few things at a time the instructor also reduced his participation so that they could have a sense of self-realisation. In the end the participants looked at this teaching method as an innovation which embraces the use of modern technology.

An interesting view was that the majority of the class, i.e. 10 participants, mentioned that the 10 tunes were too many and that the instructor was over ambitious. They advocated for the use of less tunes instead. They felt that the six tunes they had done well could have constituted a fair number for the study. The rest of them held that the other 4 tunes were more representative of the Shona traditional mbira tunes and could not be left out. They further argued that the instructor should have used only the last four tunes 'Chembere dzemusango', 'Nhemamusasa', 'Vanotambarara' and 'Zimbabwe yakauya nehondo'. Judging from this, indeed the 4 tunes are complex enough to constitute a reasonable and meaningful engagement for students.

All the participants embraced computer playback as a critical issue for the course, however, the performances were too mechanical. The closest we did was to use the virtual marimba, however, it sounded very woody and too many overtones stuck out of the musical performances. It was after we had used the acoustic piano in Sibelius 7 that they asked for an instrument that was close to being the same as the mbira. There being no samples of mbira instruments, we ended up using marimba and xylophone. This proves that there is need for research into how one can create mbira samples for software development.

Some participants indicated that the course requires patience for one to be able to finish the set mbira curriculum. They all felt that the instructor was patient with them as they learned how to play the instrument. Since the class had fast and slow students, one had to give them individual attention although this was not easy. There was the need for patience on the part of the instructor to keep the participants engaged in the course.

The whole group felt that the course ended at a time when most participants had come to terms with the demands of the computer-assisted method, therefore they wished it could have lasted a little longer. Such an observation is common when students grow into something through achieving set objectives. Even well after the course, some of the participants have continued to ask for advice on how to play other *nyunga nyunga* tunes.

Some participants indicated that given a choice they would have changed the course and included some popular tunes that could be played on the instrument. Most of the students (about 12 of them) would have included some modern contemporary tunes. They further thought the 10 tunes were old and needed to be replaced with new popular music tunes. I decided to leave out the contemporary tunes to avoid copyright issues and abide by the code of ethics as required by UNISA and MSU. I also openly discussed the reasons for choosing the 10 transcriptions, as a way to avoid infringement of copyright issues on my part as researcher. The other four participants did not see it that way – they thought the tunes were acceptable because they genuinely represented the traditional indigenous *nyunga nyunga* mbira music. Regardless of this view, the reasons behind the inclusion of the 10 tunes was based upon the need to afford an experience to the participants.

It was evident that the participants felt that it is not necessary to undertake formal assessments for individual performances. They felt it was a drawback to their performance because it created unnecessary pressure for them. Rather, they suggested that it be done informally. This point is perhaps worthy of exploration in future. Experience in the education field shows that it is possible to engage in informal assessment and still come up with genuine assessment.

The most popular tunes were ‘Chemutengure’ and ‘Kukaiwa’. They were regarded as very common tunes and the participants sang them along. They also sang rearranged lyrics of their own. These were followed by ‘Vamudhara’, ‘Bungautete’ and ‘Chigwaya’. These three tunes are commonly played in schools on marimba and indigenous *ngoma* songs (songs accompanied with African drums). This is where the background knowledge worked in favour of the participants’ endeavour to acquire knowledge.

At the end of the research, all participants mentioned that the experience in the course was good. One of the participants stated that “we have some mbira tunes and we can start from there to build music portfolios.” On a different note however, one of them had this to say, “I discovered that mbira tunes can be transcribed and certainly by the time I finish the degree I will be proficient in transcription.” Another said that, “the use of colour coding was a very good aide to the playing, although sight-reading of mbira tunes is not the best thing to do in learning indigenous music.” However, some of the participants regarded sight-reading as a good starting point. They felt that there was nothing odd in playing mbira with a score on a music stand even though most performers play from memory. This proves that the method was generally accepted among the participants. However, it is a question of choice for the instructor in relation to the students’ needs; the university does not prescribe methods for instruction. What is important is that in the end the preferred methods should be effective. After the course no one is compelled to use this method or even a combination of it with others.

One participant mentioned that, “I benefitted immensely because I can see the connection between the notes, their rhythm and their sound in my mind and I will forever cherish having taken part of this course.” She further said,

I noticed that some tunes cannot be exhausted as they have many variations especially ‘Chemutengure’ and ‘Kukaiwa’, besides the variations we learnt as a class I discovered some playing techniques on my own which are good. With the computer software I can play around with my staff notes in the tune and discover other tunes that are not included in this course.

The above views are indicative of a student who grasped the key concepts of the performance of the mbira via the computer-assisted method. It gives a basis for students to explore the music and the instruments further without any human assistance. Such a point is a positive move to reinforcing the skills amongst first time students of the instrument.

Besides using the computer as an aid to the tuition of the mbira instrument, the mbira was seen to be causing some itching on the thumbs and finger tips, hence some kind of protection is necessary when plucking the instrument, or rather a softer type of metal for the lamellae of the instrument should be used. The point was raised by all the participants. However, what they did not know is that itching normally happens in winter and also during the first few days up to two weeks of playing the instrument. After this time frame the student’s thumbs and fingers would eventually get used to the plucking. Furthermore, plucking of the instrument should be done with the tips of the finger nails and

a little petroleum jelly should be used to keep the lamellae slippery and smooth. The use of a protective material on the thumbs and the index finger would adversely affect the instrument's timbre.

The debate on whether or not the teaching of *nyunga nyunga* mbira is justified is not necessary, especially against the backdrop of an indigenous music curriculum policy in Zimbabwe. The issues of justification of the teaching of mbira are here concerned with the view of the students who received the tuition through CAI.

5.7 EVALUATION OF THE COMPUTER-ASSISTED METHOD

The computer-assisted method proved to be user-friendly as instructions were always accompanied by observable, measurable behavioural articulations. The method makes the participants engage through listening attentively, observing articulation and manipulation of devices and items. I also noticed that as one learns to read the notated music and the rhythm, they interact with the computer and the instruments at the same time. Also, considering that mbira music is most commonly found in compound time, CAI helps to develop aspiring mbira players who have the unique skill to read and play using staff notation. The assistance offered by the computer demonstrates another way to keep students focused and guided in their performance of the indigenous musical instrument. All in all, the method introduces a sense of discipline for the users in a friendly manner.

Since the computer-assisted method is formal and involves thorough planning, the students are able to follow the procedures undertaken. With well-crafted guidelines, it means that the students have to stick strictly to the set instructions in order to succeed. Nevertheless, students with a better understanding of computers and theory of music stand a better chance of grasping the skills through this method faster. Aspiring mbira performers lacking basic knowledge of theory of music and computer skills are at a disadvantage. The basis of Western theory of music also makes it a favourable method for people with a strong bias toward Western music. As a matter of fact, the method is most likely to work with people who have never had any experience with the instrument. It is not easy to teach sight-reading to people who can play by ear without any form of notation. Hence, without any assistance, anyone who can read staff notation can engage in some kind of performance on their own with the aid of a version of Sibelius notation software.

There is no doubt however, that as a new method of instruction to be applied to an indigenous instrument like the *nyunga nyunga* it is interesting and captivating. One of its strengths is that it is comprehensive as it preserves the tunes in interactive audio, midi, graphics, and Sibelius 7 project

file formats, which can be retrieved and used instantly. The method saliently brings control over what the students can do and what they may not be allowed to do in tackling the tunes. Such a method leaves no room for students to divert from the set tasks, hence focus increases as they aim to achieve the set goals.

Although the computer-assisted method in this study was implemented according to the set schedule, it is apparent that more time would be needed to develop confidence among the performers of the instrument. The skill to sight-read is a gradual process, more so because it was presented through a computer. The whole approach needs one to take care of the finer details embedded in it. In this regard, there is no need for the performer to cram the tunes. Such a method requires one to be disciplined to keep the tempo because the tunes follow a notated tune, meaning that it is more accurate than humans who can have lapses of tempo and rhythm. Thus the method helps in keeping a constant view of both the audio and visual aspects of the tunes. It is somewhat artificial for a mbira instrument to be played using virtual sounds since there are no mbira samples to go along with the method. As such, researchers should create tone banks for the acoustic mbira sounds.

The method appeared more palatable to students who had prior ability to read music. However, the orientation of staff notation had some deviations from Western conventions. The use of three fingers with the colour coding helped the students to map out strategies to pluck the instrument. The colour code only becomes less useful after one has grasped the ability to read staff notation.

5.8 CONCLUSION

The discussion in this chapter creates a basis for coming up with standpoints and conclusions for the study. The chapter delved into the information relating to the use of computer-assisted instruction and the *nyunga nyunga* mbira. The information also reflected the experiences and feelings of the students to the activities carried out and the instructor's methodologies. It was noted that the initial exposure to CAI was viewed as being too ambitious, even though in the end the participants developed a liking for it. The chapter also sought to justify why one should instruct students through CAI. The participants gradually accepted the method as user-friendly and quite informative due to instant, interactive feedback and reinforcement of skills acquired. I also discussed the modalities of time allocation and the students' views towards this I pointed out that some students thought time was insufficient because it was getting more and more interesting towards the end. I also discussed the methods and activities that were used to teach the *nyunga nyunga* mbira. For example, group work via guided discovery proved to be effective. Most of the participants were generally not confident

during performances in pairs and as individuals hence more time for practise was allocated as a way to build self-confidence. I also observed that 128 hours allocated to the course was sufficient to justify the teaching of 10 mbira tunes. The discussion took an important turn as the participants were asked to present their impressions on the course and the mbira instrument in view of CAI. The participants' impressions varied, some of them regarding the method as interesting while others advocated that the instrument should be taught exclusively via indigenous methods. Their impressions included the views that the method, the instrument and the activities applied to the study were user-friendly. Regardless of these impressions, the method was perceived as requiring a lot of time – it lacked shortcuts, hence it was rigid. In a bid to evaluate the use of CAI in this course I noticed that the method could actually be more useful for people if it were used to complement other methods in the instruction of the *nyunga nyunga*, rather than being exclusive. The next chapter focuses on answering the research questions and includes a review of the statement of the problem and research questions as proposed in this research.

CHAPTER SIX

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

The final chapter of this thesis is focusing on presenting answers to the research questions, in connection to the statement of the research problem and the hypothetical statement underpinning this study. In view of the findings of the study, the information is presented with a deliberate effort to tackle each of the questions separately. The answers to the questions in this section are primarily based on the material presented in Chapter 5. The questions are largely connected to the computer-assisted method of instruction in teaching the *nyunga nyunga* mbira instrument, based on the experiences of the instructor and the participants in this study. All five research questions articulate the issues envisaged in the problem. At the end of this chapter the statement of the problem is brought under the spotlight and reviewed in sight of the answers provided through the findings of the research.

6.2 WHY TEACH NYUNGA NYUNGA USING COMPUTER-ASSISTED INSTRUCTION?

The *nyunga nyunga* is largely seen as one of the most important indigenous musical instruments in Zimbabwe. Teaching it in schools and institutions of higher learning offers great support in perpetuating the performance legacy of the mbira instrument, especially among people of diverse cultural beliefs. It goes further to engage students and their lecturers in research and development of ideas and concepts around the instrument. In this research, pedagogical ideas of how the instrument should be taught are generated. The *nyunga nyunga* mbira has no traceable connections with any ritual ceremonies in Zimbabwe. Hence the *nyunga nyunga* occupies a solid place within the music education system of Zimbabwe from primary and secondary schools to colleges and universities. The use of CAI in teaching *nyunga nyunga* mbira provides transcribed music, audio files, soft and hard copies of the tunes and preserves the tunes as standard or general midi (protocol that opens and plays back audio of tunes) and XML (file formats that can be played in other notation software other than Sibelius 7) files of the music provide repertoire that is usable with CAI.

The computer-assisted method provides both visual and audio examples and there are cues to guide the techniques using a colour and number system. Considering that there is playback for the students there is a strong base for positive reinforcement of playing technique. The techniques involved in the teaching of the instrument are adaptable for use with other instruments, especially in view of the

ability to read music from left to right on the scores. The use of electronic devices such as microphones and loudspeakers develops a sense of appreciation in using such equipment by the students. Since the instrument has only 15 lamellae, this makes its tuition possible, especially with first time students at university or college. The tunes can be taught according to their levels of complexity and this enables the instructor to offset the tendency to overload the content of material to be covered by the students, as advocated by multimedia instructional design.

Application and use of the computer-assisted method essentially creates a user-friendly context and a possibility for aspiring mbira performers to tackle the instrument even without an instructor nearby. Used with a notation software package, the method uses transcription of mbira tunes that can be learnt through sight-reading, aided by the colour code and playback. Hence it develops the skill of using the computer whilst also practising the performance of the instrument. Using the tuning guide, performers can identify the keys that require tuning on their own instruments with the sound provided through playback of the tuning guide for reference.

Regardless of the need to sight read the mbira tunes, it is also possible for the players to improvise and add a few lines onto the existing tunes. Creativity is enhanced and developed especially in singing along the tunes as the participants play with others in an ensemble. The tempo of the tunes can be adjusted from very slow to moderately fast, depending on the aptitude of the aspiring mbira player. Based on this view, the instrument can be taught according to students' personal aptitudes and skill, thus instilling a sense of fulfilment in the performer and reduce technophobic tendencies.

The fundamental basis for the teaching of the instrument strongly relies on the theory of music, hence the use of computer assistance is effective in introducing the instrument to those that have never played the *nyunga nyunga* before. Theory of music gives a strong footing for performers' general musicianship; hence aspiring performers of the instrument can understand the connections and musical relationships between the sounds of the lamellae. Performers get to know how some tunes relate to one another for example, 'Kukaiwa' and 'Chemutengure' which share the same chords but follow different time signatures. 'Chemutengure' is presented in 12/8 time signature while 'Kukaiwa' is in 6/8. Once students are guided to discover they can explore every tune and computer-assistance is the most ideal resource for this especially in helping them remember.

Although the computer-assisted method is not naturally embedded in indigenous methods of instruction, it can be used as a standalone method or as a complement to the existing methods of instruction. Once exposed to this method, students can choose to use certain selected aspects of the

method to complement the other methods that could be used in playing the *nyunga nyunga* mbira. The use of computers in this method places the mbira instrument in the context of the digital age where modern technology is employed to accomplish tasks.

6.3 HOW EFFICIENT IS COMPUTER-ASSISTED INSTRUCTION IN TEACHING THE NYUNGA NYUNGA MBIRA?

The fact that at the end of this study a group of 16 students are able to play the instrument is proof that the computer-assisted method is effective in view of the set objectives and focus of this research. Students in the instructional context of this study do not have the same academic aptitude, but these individual differences among the students are successfully catered for in CAI. Even though some tunes like ‘Chembere dzemusango’, ‘Vanotambarara’ and ‘Zimbabwe yakauya nehondo’ are quite difficult for the students, this is not the result of using the computer-assisted method, rather these tunes are known to be quite challenging, regardless of the method of instruction. However, the efficacy of computer-assistance is indisputable because it provides cues to the students who may easily forget their lines, the slow and fast students and the sceptical performers. The method is largely effective in the sense that one is capable of reading and understanding the musical language as displayed on the monitor or overhead projector.

Reliance on sight-reading provides schema that aid the memory of the easy and difficult rhythm motifs and the critical sections of all mbira tunes. Instead of trying to cram the tunes, the method promotes the art of reading without which articulation would be impossible when the playback in Sibelius is muted. The ultimate goal of the method is for the performance of the instrument to be undertaken without computer assistance, so that the performers can rely on the transcriptions. To add onto the above point, the mbira performers can also play with clues of the colour code, thus promoting reading of printed music. Thus, with computer assistance there is a glossary of reminders for all the tunes to be learnt and one can choose to use the playback each time they need to be reminded of any of the tunes. However, the efficacy of CAI is not always guaranteed and the instructor and the student play a vital role in coming up with a viable programme. The whole course is a gradual process that requires time and planning to come up with commensurate activities that can develop the skills to play the instrument. Tolerance of the different participants’ paces and needs in their acquisition of skills plays a critical function in offering germane learning experiences and to avoid redundancy.

6.4 MUSICAL OUTCOMES OF COMPUTER-ASSISTANCE IN TEACHING THE MBIRA TO FIRST-TIMERS

Computer-assistance as a method informed this study, with some musical indicators important to mbira performance. The skill to listen and feel the rhythm of a tune before formal instruction gives the performers aural training to be able to recognise pitch. This means that the aspiring performers are able to sing, hum and/or clap to the time and rhythm patterns off the tune. The short preliminary music theory that is offered at the inception of the course renders an opportunity to appreciate and use musical concepts such as rhythm, tempo, time signature and scale as prerequisite requirements to ground the mbira performers into the instrumental practice. Indigenous methods hinge mostly on the ear; in the same way the computer-assisted method also uses the ear, but the latter goes further to include sight-reading. The acquired musical skills are relevant to a variety of musical experiences in performance practice and general musicianship.

Regardless of whether the participants are fast or slow students, they can make use of the basic theory of music in other courses they are studying. Hence, the participants can find the course to be a form of reinforcement as they go through the performance of their tunes on the mbira. It is important to realise that two of the participants' other courses, Fundamental Instrumental Performance Practice MBMT 105 and Theory of Music 1 MBMT 100, overlap with the study and CAI makes it possible for the otherwise abstract concepts of interval, chords and time values to be understood practically by the participants.

The colour code can be applied as a substitute to the use of numbers since the notation of the tunes makes use of three colours (black, green and red). The use of colours instead of numbers represents the thumbs and the index finger that are used to pluck the given tunes. For example, every black coloured note is assigned to the left thumb and the red ones to the right thumb. The use of colour code is done regardless of whether the key is on the upper manual or the lower manual. Musically, this reduces the tendency to want to cram the score thus promoting sight-reading of the music. The reading of tunes with guidance of the colour code helps to resolve the tension when the participants encounter complex rhythms, especially in tackling tunes like 'Chembere dzemusango', 'Zimbabwe yakauya nehondo' and 'Vanotambarara' which tempt them initially try to cram.

I had assumed that playing by sight is always going to be mechanical and somewhat rigid, especially when the students play along with the computer's playback. However, it is remarkable to note that they actually play with feeling in the absence of the computer playback. The ability to read and play

music becomes efficient when performers are relaxed. In essence, computer-assistance allowed the students to undertake practice on their own without the tutor's assistance, and with no pressure since it is not an examination course. It is not easy to perform with confidence, especially on an instrument one is meeting for the first time. Computer playback reinforces their ability to maintain a steady tempo, a critical skill for all music performers.

It is important for the students to interact amongst themselves in groups and pairs. It is observed that the best performances are in group work, followed by pair work and lastly as individuals. Since *nyunga nyunga* mbira is a communal minstrument, group performances play a big role in that they make the instrument's sound louder and it keeps the performers in sync. It does not come as a surprise that more interaction of sound and group members is realised as they perform in ensembles and this simulates the cultural context of the instrument in the class. While the performers interact as a group, the sound of their instruments also interweaves to create a complex sound.

The fact that students come to university to study music and, take up mbira as an instrument for the first time but end up being able to play the mbira is proof that there is personal commitment to learning to play the instrument. With CAI the students have more time to practise as individuals and gain confidence before they meet in class. The method enables the students to acquire skills, play their instruments, allow others to play on their own and ultimately be part of the group without outplaying or being outplayed by other performers. This aspect of musicianship is often missing in music students, yet it is critical if one is to be a performer in music.

In conducting the assessment, one should consider that all of the students are gradually acquiring the skills to play the *nyunga nyunga* hence the process needs ample time to be proficient. The marks attained by students on Tables 4 and 5 below are meant to assist readers in understanding the performers' aptitude. Without assessment it is difficult to establish the efficacy of the method. Rather, an informal assessment should be undertaken in relaxed conditions to ascertain students' performance on the mbira as a continuous activity guided by an assessment checklist for all the 10 tunes. Tables 4 and 5 indicate statistics and averages for all the 16 participants for the 10 tunes.

Table 4: Average performances of students 1 to 8

The tunes	S	T	U	D	E	N	T	S
	1	2	3	4	5	6	7	8
1. Bungautete	70	85	77	66	70	73	76	71
2. VaMudhara	68	86	80	67	68	75	75	75
3. Kukaiwa	66	73	72	60	72	73	70	70
4. Chemutengure	70	75	77	65	75	70	73	72
5. Chigwaya	63	81	70	65	70	73	76	70
6. Guva rangu	65	80	78	60	72	68	67	65
7. Nhemamusasa	65	77	73	57	65	73	62	70
8. Zimbabwe yakauya nehondo	62	65	75	55	60	62	65	69
9. Vanotambarara	63	67	60	54	62	60	62	63
10. Chembere dzemusango	58	60	63	56	58	56	60	64
Final Average	65	75	73	61	69	75	69	69
Grade	B	A	B	C	B	A	B	B

Key: A = 75-100 B = 65-74, C = 60-64

Table 5: Average performances of students 9 to 16

The tunes	S	T	U	D	E	N	T	S
	9	10	11	12	13	14	15	16
1. Bungautete	75	77	75	78	80	75	73	74
2. Vamudhara	71	73	80	76	70	80	70	76
3. Kukaiwa	70	69	86	73	65	78	69	70
4. Chemutengure	68	65	77	75	63	77	70	69
5. Chigwaya	66	69	78	70	71	75	72	72
6. Guva rangu	68	63	76	65	67	70	69	73
7. Nhemamusasa	65	68	73	68	63	74	67	67
8. Zimbabwe yakauya nehondo	63	66	67	65	62	65	63	65
9. Vanotambarara	60	63	65	65	60	62	62	63
10. Chembere dzemusango	60	62	65	66	60	60	59	63
Final average	61	62	67	65	66	72	67	69
Grade	C	C	B	B	B	B	B	B

Key: A = 75-100 B = 65-74, C = 60-64

The information on Tables 4 and 5 conceals the identity of all participants as a way to uphold the ethical considerations agreed upon between the instructor and the participants. The possible mark for a complete assessment for each tune is 100% and all the participants scores are above 50%. This is an indicator that the method produces performers who can now play the *nyunga nyunga* mbira instrument by sight. The information also shows that the distribution of marks is a balanced as three students have marks from 61% to 62%. The majority of the students (11) are above average from 65% to 73%. There are only two participants with 75% and, according to the Midlands State University's grading system, these two are distinctions. In this research the purpose of performance assessment is not primarily focusing on grading student's performance as in an examination because that creates pressure, tension and fear, which results in poor performance. Once the students are anxious, their performance becomes erratic. Overall, these marks reveal that CAI is applicable to the instruction of the indigenous instrument. The last three tunes on tables 4 and 5 are difficult for all the participants. Only student 3 scored 75% while the rest are in the range 54%-69% and attain an average of 62%. This range of marks indicates that indeed the three tunes are difficult. Tunes 1 to 7 have a range of marks from 62%-86% and an average of 74% which is, by the standards at Midlands State University, good grades, just short of one to fall into distinction. The total average reflects the combination of all the tunes including the easy and difficult ones. The trend of marks suggests that the tunes are gradually becoming more difficult. The idea to order the tunes according to their complexity worked in favour of the study. If the complex tunes are taught first, the outcome can be different as there is a possibility of frustration setting in for some participants.

6.5 MERITS AND DEMERITS OF TEACHING THE NYUNGA NYUNGA THROUGH THE CAI

After this short course I managed to gather and transcribe 10 mbira tunes with their variations. The study unveils a method that could be used for teaching many other mbira tunes. The study also establishes a specific, software-based tuning guide. This tuning guide provides users with visual and audio guidelines that can be used to keep the instruments in tune and for this reason preservation and continuity of the instrument, together with its music, is realised.

The study enriches the participating students with skills to play the instrument for the first time ever in the study of music at university level. Although the participating students are not exposed to the skill of transcribing mbira tunes, they can read any transcription of *nyunga nyunga* tunes, as long as it is presented to them using staff notation and colour. It can be argued that this skill is applicable to

all tunes playable on the *nyunga nyunga* mbira. Furthermore, the method can be applied to other musical instruments as long as the given tunes are transcribed into staff notation.

The method can be used by people who can or cannot transcribe mbira music. As long as they can transcribe or outsource the transcriptions of the music, it is possible to learn to play the music. The transcription of the tunes into staff notation avails a possible way to play the *nyunga nyunga* mbira. However, the transcriptions need to be done correctly because inaccurate work becomes a misrepresentation of the indigenous music. Notwithstanding the above view, it should be appreciated that transcribers of mbira tunes are free to rearrange the mbira tunes or change the notation, but these are only possible if the transcriptions remain within the range of keys and the scale of the mbira instrument. Considering that the instrument cannot be transposed, some notes in a tune might be found missing if the tune is out of the range. Even though one can change the tunes it is also possible that such changes can take the tune out of its indigenous context. This point only works if the performers intend to remain in the traditional indigenous context of performing the instrument. Research and innovation allows for performers in or outside the indigenous contexts.

This method can be applied to the tuition of any type of mbira instrument that uses the thumbs and the index finger, because the method for sound production is the same, especially where plucking is done through the thumbs and the index finger. The CAI may be applicable to fit the mbira that is to be studied provided there are some changes and adjustments made through some systematic allocation of the numbers to the lamellae. It is an advantage to take the conceptual framework for this study's findings and apply it to other mbira instruments which have not been included in this study.

The method does not have room for the mbira performers to improvise on the given tune, especially with sight-reading. One has to wait until they are confident to perform before they can improvise. In this study participants were allowed to improvise in accordance with the time signature rhythm and tempo of the given tune. Improvisation comes with time and experience and, as such, in this course it is not possible to execute such a skill because it can stall the research. Also, it is not one of the objectives for this research.

The method requires the use of basic rhythm patterns, hence if there are complex tunes more time is needed to explore and learn the skills to perform the respective tunes. The experience gathered from this course indicates that simple tunes are a form of encouragement because students grasp them easily. The more complex tunes are likely to slow down the acquisition of skills and more time is required to learn to play them.

The method works with computers and cannot be applied in places where both the computer and the music notation software package are not affordable. In the end, the zeal to want to own the above equipment and its subsequent usage depends on the availability of the finance to procure the required resources. The problem of load shedding of electricity can affect the use of this method since computers require power to operate.

The method presents challenges to students with weak understanding of music theory. It should be used for students who have a strong foundation in music theory. Without this fundamental requirement, it is possible that the method cannot work out. It is therefore imperative that the teacher takes students through preliminary courses in computers and music. However, if an aspiring student fails these introductory courses, frustration could set in and this may lead to technophobia.

The application of CAI is not a faultless method. It largely depends on the instructor's skill to prepare, present and be fully grounded in the subject matter. It does not provide for simplified alternatives to terminology and reference to core concepts, hence the language of instruction remains English with no available alternatives in the Shona language. As such, this remains a formal method until research in Zimbabwe can find ways to offer instruction in vernacular languages for the computer.

6.6 COGNITIVE THEORY OF MULTIMEDIA INSTRUCTION IN THE INSTRUCTION OF THE *NYUNGA NYUNGA*

The theory advocates for a multisensory approach. Through engaging in a practical multimedia and interactive teaching of the *nyunga nyunga* students use their senses of sight, touch (feel), hearing, all of which appeal to the total person. It also regulates the amount of subject matter to be taught; many instructors end up overloading their students and that frustrates the process of learning. The rationalisation of subject matter ensures that only the necessary information is taught while the unnecessary information is shelved or left out. The study initially focuses on short simple tunes and introduce their variations after the instructor is satisfied that each tune has been grasped well.

Since there is a multimedia presentation of subject matter to the student, they can choose the aspects that appeal to them. In this research I use the colour code and numbers to guide sight-reading and both of them worked. Some prefer colours, others number and yet others a combination of the two. Furthermore, some students follow the sound and the colour code as their guiding promptings. All these are possible because there are multiple computer-based pieces of information from which the

students can pick and choose. CAI presents graphics, text, sound, music, motion or animated pictures and in this case students can relate to either or all of these multimedia presentations. That is a benefit to the study. However, this does not rule out challenges. If there are adequate personal computers for each student it is possible to cater for individual students' needs. Conversely, a lack of sufficient computers may not allow individualised instruction, the result of which could be a drawback to the learning process. Some students are not able to see, hear and play at the same time as others because some could be developing slowly while others are fast. In some instances, students have prior requisite computer skills, while the rest are new to the concepts. Based on this, individual access to the computer becomes ideal for computer-assisted instruction in a multimedia environment, hence the instructor concentrates on facilitating knowledge acquisition.

This theory enables the implementation of guided discovery on the part of the students and organisation of the subject matter as follows; from known to unknown, simple to complex and tangible to abstract. The multimedia presentation of subject matter guarantees that some learning can take place because the computer-assisted method is systematic, logical and based upon multimedia instruction thus it is organised in a structured manner. Apparently the students have opportunities to interact with the instructor, the computer and their peers. This creates a basis for immediate reinforcement of acquired skills.

6.7 APPLYING COGNITIVE LOAD THEORY IN THE TEACHING OF THE NYUNGA NYUNGA USING CAI

The primary objective of teaching and learning is to facilitate the acquisition of knowledge. However, this is not always an obvious outcome. The instructor has to follow the required steps and procedures for any given method through relevant strategies to support the set objectives. In this study the cognitive load theory governs the exploration of how to teach using computer-assisted instruction, hence several implications of this theory underpin the effort to teach the *nyunga nyunga mbira*.

I really wanted to discover how the method impacts upon the acquisition of skills to play the *nyunga nyunga* musical instrument. Since this study presents a different approach from the common traditional approaches, it is valuable for this study to see how the method can be used within the classroom context. It is now possible to see where the method requires the instructor to scale down or increase the level of difficulty to the academic aptitude of students. While human instructor involvement takes a central role in traditional instruction, with computer-assisted instruction the instructor offers guidance to enable discovery of skills and ensure reinforcement of acquired skills.

While students endeavour to learn through the approach, the instructor presents subject matter in a colourful way, thereby appealing to the senses of sight, feeling, hearing and touch.

The theory spells out how the engagement with CAI removes the domination of human instruction. The requirements of the method include the fact that students are positioned in such a way that they would personally get involved. Through practical and personal involvement, understanding is also increased. The amount of information to be given to the students is governed by their capabilities to handle and grasp the material, hence there is need to control of the cognitive load for the students. Such a way of instruction forces the instructor to be sensitive and conscious of the needs of every student and therefore effectively deliver the subject matter.

Since the study embraces the constructivist approach, the instructor is required to take special consideration of the students' aptitudes and academic dispositions and strive to guide each student to construct their own understanding of skills and concepts. These factors cannot be taken for granted since they are a priority for the theory and for the instructor too. As researcher I opt for this because it enables one to assess the participants before engaging them in the study. After understanding them, it is possible to handle them with the understanding of who they are and of what they are capable of doing.

The computer-assisted method is quite different from indigenous methods, yet it can be used through a do it yourself (DIY) approach to provide tuition of the *nyunga nyunga* mbira. For instructors involved in the different types of mbira, the method can be extended to the teaching of other types of mbira. This argument arises from the fact that all mbira performers, without any known exceptions, use the thumbs and the index finger to pluck their instruments. This method can be used together with other methods to complement the teaching of indigenous mbira or other instruments like the *nyunga nyunga*. The theory brings a valuable aspect to regulate how and when the subject matter can best be presented to the students.

6.8 THE FINDINGS FROM THE RESEARCH

The study reveals that the use of the computer-assisted method produces viable strategies in the teaching of the indigenous *nyunga nyunga* mbira instrument. The students are able to play the instrument for the first time using computer-assisted instruction and this evidence informs future and present modes of instruction. The study demonstrates that it is possible to explore and perform all 10

tunes transcribed for the *nyunga nyunga* mbira through exclusive use of modern technology. There are not any noteworthy indications of technophobia on the part of the participants throughout the study. This is largely because all the participants have some prior experience with computers. Their appreciation of computers is above average and this, coupled with enthusiasm and the desire to learn to play the instrument, enables the students to score above 61% in the performance of the *nyunga nyunga* mbira instrument.

In this research, transcribing mbira tunes is not easy, especially where as a transcriber I have had more than 26 years of involvement in performing mbira music by ear without any transcriptions. Without considering some of the challenges encountered in transcribing music, I regard this method to be tenable with any type of music whether simple or complex. I observe that all the tunes and their variations are short and repetitive and for this reason it is possible to transcribe them. The cyclic nature of the performance of the tunes is a common feature for indigenous Shona music. The variations in the tunes, though short, bring the variety needed in the performance of the *nyunga nyunga* music. Once the variations are played one after the other and joined into a grand tune they result in a rich sound texture. If there are many performers, each one of them takes a variation or two and plays in an ensemble. This also creates a high density of sound from the interweaving melodies from each performer.

Most of the *nyunga nyunga* tunes use compound time, either as duple, triple and quadruple time signature. Such a feel is clearly demonstrated by the playback of the computer making it possible for the students to comprehend the pulse and count of the time line through imitating in tapping, clapping and eventually plucking the instrument. The use of the ear and eyes becomes a very worthwhile and critical component of the study to prepare, shape, and reinforce concept formation among the students. The students are also able to take instruction from the computer and execute the required actions.

The initial allocation of numbers on the lamellae of the mbira actually made it scary for the students to learn to play the instrument. I do not use many numbers, i.e. from 1 to 15, and opt to use fewer, i.e. 1 to 4. I also hold that many numbers encouraged the participants to cram the keys, and this works against the research. On the contrary, numbers 1 to 4 imply that each of the thumbs and the index finger are assigned to plucking a specific set of 4 lamellae. The assigned numbers are played according to the notation of the tune. However, after using the colour code, it also helped to eliminate the potential of confusion in using the numbers. The colours assigned to the thumbs and index finger

are distinctively different and that promotes sight-reading of the music using the left to right orientation.

The skills to play mbira tunes through CAI are presented in a spiral and cumulative order. As the course progresses some of the tunes are easier for the students to tackle as they develop the skill of how to read the notes on lines and spaces of the stave in tackling rhythms and tempo of each tune. They also increase their tempo as they gain confidence from the basic tunes before moving to the more complex variations for each tune. I also need to inform that some tunes are closely related and this creates a fundamental basis for the students to articulate other related tunes. For example, they are able to notice that the difference between ‘Chemutengure’ and ‘Kukaiwa’ tunes is in their time signatures, which are 12/8 and 6/8. This makes it possible for the students to analyse the connections between the tunes and be able to group them according to levels of complexities. It is also noteworthy that ‘Nhemamusasa’ and ‘Zimbabwe yakauya nehondo’ share some similarities in their rhythm and notation; even though the tunes have the same time signature, 6/8, the flow of the melodies differ. Such a discovery creates a strong basis for students to identify the tunes and be able to play them well without confusing them.

A notable observation is that participants with prior skills in playing the guitar and keyboard performed very well in this course. I see a correlation between the ability to play the afore-mentioned musical instruments and the skill to pluck the *nyunga nyunga* mbira. Based on the performance of the instrument in this study, the students who had come with prior skills in other instruments, especially the keyboard, performed well on the mbira. More importantly though, at the end of the study all participants are able to play the instrument through CAI. Even though it is not the main focus of the study to rate the participants’ performance, it is the only authentic way to assess their performance to prove that indeed the skill to play the instrument has been attained through the use and assistance of modern technology.

At this level of learning regardless of the age of participants, motivation is critical because some students can bow out on the basis of having to deal with a new instrument being taught through an unconventional method. Hence motivation is an important part of this research to keep the students together. Motivation comes through providing a curriculum that starts off with teaching simple tunes at the initial stages of the teaching, providing encouraging remarks and developing a rapport with the students. The fact of openness to the participants helps to win their confidence and trust. As the study progresses the tunes become more difficult but they can keep going as the sense of self-actualisation grows immensely among many of them.

6.9 RECOMMENDATIONS FOR DISSEMINATION OF THIS RESEARCH

An article or two could be written on the knowledge and information gathered in this study so that it could be published in order for the academic world to read about this innovation. The libraries at both UNISA and MSU could facilitate receiving both hard and soft copies of the thesis and disseminate it through the open repository and database for dissertations and articles in the academic world.

As a practicing music educator, performer, and researcher I will in my teaching practically, implement what is generated through this research. The use of computer-assistance as experienced in teaching the *nyunga nyunga* instrument in this study requires adequate preparation and availability of resources some of which are expensive. For example, one computer will require an overhead multimedia projector and a pair of, or just one, loudspeaker to propagate the sound from the computer. A notation software is necessary to kick start a project of this magnitude, especially in formal learning with students. All these are not cheap because they are imported either from USA or South Africa. This requires a budget of at least US\$2000-00 to purchase the computer, loudspeakers, notation software with multiple licenses, and a multimedia projector. Against the backdrop of the current economic woes in Zimbabwe, the above budget might be a tall order for a rural school with many children, hence I recommend proper budgetary planning be done before adopting the use of CAI in teaching the *nyunga nyunga mbira*.

There are several issues that need to be taken care of in dealing with the use of CAI. A successful utilisation of CAI is not a given fact; rather one should have proven ability to use the required equipment as a vital prerequisite for all instructors. The instructor should have rehearsed through the process of instruction before taking it to the students. This allows time to inspect the equipment, deal with potential challenges associated with its operation and problems that could disrupt the instruction. Knowing the operational principles of the equipment and the method prior to class helps to increase the confidence of the instructor in handling the subject matter. In addition to the above points, instructors or institutions need to make sure that there is a guaranteed uninterrupted supply of electricity when teaching the instrument.

In this research I recommend that the instructor takes a manageable number of students. Keeping the numbers to a maximum of 15 students is a reasonable number to start with. If the instructor still needs to accommodate more, let them not exceed 20. If they exceed 20, there should always be some kind of team teaching and the class should be divided into two so as to avoid redundancy and free rider students. Unoccupied students suffer because idleness kills their ego. An important recommendation

is that when using CAI make sure that all the students are meaningfully engaged in whatever task they are going to do. If not occupied meaningfully, the students can stray and engage in other unwanted activities that defeat the instruction of the instrument.

Computer-assisted instruction derives its mainstay in the prevalence of computer usage. It is therefore recommended that the instructors do less talking, if any, and offer guidance so that the students can be involved personally, thereby reinforcing the acquisition of knowledge. Additionally, the computer should really assist the teacher by providing the bulk of the information so that the students develop personal initiative. In the end the students will not expect the instructor to come back to them and tell them what to do because the computer will provide the bulk of the instruction necessary for them to work. The communication between the computer and the user can be a source of reinforcement as students find themselves engaged with spontaneous feedback. Students need to see, manipulate, hear, feel and experience the subject matter, especially when using modern technology, hence the research recommends that they be afforded this opportunity at any given chance.

Commonly at many universities, there is no time given to teaching software packages. I would like to suggest that those undertaking teaching via CAI give the students basic lessons on the use of the preferred notation software. I also recommend that music theory be taught as a matter of critical importance because it has a decisive role in the success of the instruction of the instrument. I recommend that instruction be delayed until students have acquired the main concepts of theory of music, especially time, interval, chords, sight-reading, rhythm and scale. The understanding of the above and many other concepts will make the use of CAI in teaching the instrument systematically. In any given situation music theory is critical for this kind of practical teaching.

6.10 RECOMMENDATIONS FOR FURTHER RESEARCH

As a way forward in promoting research and development of the method that is under study in this thesis, I recommend further research. This could see the application of this method in the formal education system in selected institutions like MSU. At Zimbabwean universities the instrument is part of the curriculum, hence it makes sense to try and evaluate CAI. To add onto that, the institutions could take the method as supplementary to the ones already in use.

Since the curriculum for teaching the above musical instrument is applicable to primary, secondary school and colleges it is worthy trying out at these levels whilst making sure the level of tunes does not frustrate the students. With music as a compulsory subject at primary school it would make sense

to do a pilot project with selected schools in Zimbabwe and then make some evaluations at the end. The same can be done with secondary schools that offer music.

In Zimbabwe teacher training colleges offer music for the trainees. The main subject study also has a curriculum for the *nyunga nyunga* mbira and, as such, it is a logical place to conduct seminars and workshops to sell the CAI to music lecturers and their students. The obvious advantage of dealing with student teachers is that some of them will go on to teach using CAI if resources are available. Exposing the student teachers to this technology helps to reduce the tendency toward technophobia. It also prepares them when they eventually enter the world where technology is the order of the day.

It is important to conduct workshops with people with Western music theory orientation and make them aware of the method and how it can be used to instruct an indigenous musical instrument like a *nyunga nyunga* mbira. Before this research was conducted, personal experience in Finland in 2009 showed that music students understand music presented in staff more than some of the indigenous methods, which rely on the ear. A recommendation would be to take the method to such a non-indigenous context and make evaluations thereafter.

Another point for consideration is to make the instrument available for students who have learnt the instrument before and insist on the sight-reading component. The research will evaluate how the students take the method and how the method interacts with their methods or their skill to play the instrument. Some of the potential methods referred to in this case could be the use of the tablature, the Maraire number notation, pulse notation or various other forms of notation. It would be important to analyse how performers embrace or take up the method, especially in view of the fact that some of them already may be proficient in the instrument.

At the time of this research the Department of Music and Musicology had undergone rebranding and changed its nomenclature to The Department of Music Business, Musicology and Technology (MBMT). The implication of such a paradigm shift to an otherwise new programme, one of its kind at MSU and in the sub-region, is that there is a move toward an uptake of modern technology in the curriculum. Even though as a researcher I do not wield the rights to sway the curriculum single handedly, a way forward for this department would be to include the method for tuition in instrumental performance practice of the *nyunga nyunga* mbira.

The above-named department is where I work, and it is important to mention that another type, the *nhare* mbira, is offered as part of the curriculum at MSU in the department MBMT. Since its

introduction the *nhare* mbira has gained popularity over the past six years and many students opt to specialise in it rather than the *nyunga nyunga*. The *nyunga nyunga* mbira has become the entry or introductory instrument, while the *nhare* has become the main instrument for those students who specialise in the mbira instrument. The *nhare* mbira has lamellae ranging from 21 to 27 in number. In light of the performance practice specialisation which begins in second semester of the second year, it is significant for me to collaborate with other members of staff, especially those that are teaching the *nhare* mbira, and find ways to employ the method in teaching that instrument. It could be interesting to discover the efficacy of the method with such an instrument.

6.11 CONCLUSIONS

From the study I can conclude that the use of CAI in teaching the *nyunga nyunga* was effective. The method offers multiple options for the student in practical and holistic systems to develop concept formation and skills acquisition. The holistic presentation of subject matter allows for multiple actions from the computer to take place in a synchronised way. As a matter of fact, computer-assistance affords the students opportunities to remember, simply because the subject matter is exciting and captivating, especially with different options in multimedia presented to them.

It is possible to complement other methods with CAI or rather to complement other traditional methods with computer-assistance in the instruction of the indigenous instruments that may not be associated with modern technology. The main reason for this is that the students become inquisitive and eager to learn new concepts. In this regard motivation for the students becomes critical and pivotal to guarantee actualisation of objectives of playing the instrument.

The research observes that many of the participants have a very strong knowledge base in modern technology and that created a robust basis for using CAI. Since all of them, with an average age of 21, are quite adventurous they can operate computers without fear. As the world is moving toward increased use of modern technology it is important for institutions of higher and tertiary education in Zimbabwe and the world over to invest in the procurement and use of CAI in instrumental performance practice, music theory and research. The students currently enrolling at institutions of higher learning are informed on the use and operational modalities of computers. These students are aware of the global trends and, as such, the instructor cannot take them for granted. Instead, he/she should prepare to handle them adequately.

In this study I can conclude that it is better for the teachers of today to embrace modern technology and save themselves from the embarrassment of meeting students who are way ahead of them in terms of knowledge and experience with computers. This fear is a grave impairment against achieving self-development. At the age of 50, I still discover a lot of information and concepts in this study and it is amazing how some of the challenging experiences helped me to understand some concepts, even though some of them had been known for many years prior to this study.

Basing on the above point I find it imperative to also state that knowledge relating to the use of modern technology remains a dynamic revolution. Hence, as the researcher or instructor I can help the participants by engaging in continual training and refresher courses just to keep abreast with international practices in modern technology. As a matter of importance, in the current times, all service providers of computer software upgrade from time to time. Initially the exposure to notation software began with Sibelius 3 and moved through the upgrades to Sibelius 5. For this research I started with Sibelius 6 and finished the study with Sibelius 7. Although this was possible with funding by UNISA, moving with the upgrades made the research possible. Hence with CAI one should also upgrade their packages and knowledge thereof. Sibelius gets better with each upgrade and this works well for the research.

I should hasten to mention that resources are required to successfully implement CAI. Upgrading systems and one's personal knowledge base do not come cheaply. Even though the prices of computers globally are getting cheaper, in Africa, particularly in Zimbabwe, the prices are still high and prohibitive. For that reason, the use of CAI can be quite expensive, especially if the project to use CAI is starting with the need to cater for a large student population. In this case, a small budget will not work.

Using CAI in teaching musical instruments like the *nyunga nyunga* is undertaken under the assumption that the instructor would be in charge of the situation single-handedly, only to discover that it needs a collaborative approach where the participants engage with ideas to execute certain tasks in a more feasible way. I also learnt from the students that if they are under pressure it is best to delay introduction of new concepts. Instead one should revisit some already known tune and after that let them go while their interest to learn is still high. Hence, openness saves the study from many potential embarrassing moments arising from issues that affect the participants. It is important to avoid involving participants if they have pressing matters to attend to. It is also important to avoid expecting too much from the students. Rather, treating the students according to their special needs and interests is effective in yielding desired teaching and learning outcomes.

Even though the research has objectives to fulfil, a problem to solve and a questions to answer at the end, I can safely conclude that the mbira lessons should be interesting in order for the students to remain motivated to learn. One important discovery during the the study is that there is need to engage in achievable tasks first and delay the difficult ones. This gives students a sense of fulfilment and galvanise them to persevere because there can be something to show for the time they have spent in class. Self-actualisation forms positive reinforcement for them to think that a tune could be learnt in one session and be played well at the end of the session.

I would like to submit that resources available, a college or school can build a special room or venue for the use of CAI in music education. This helps to avoid moving equipment from one place to another and build a sense of appreciation how to set the equipment to be used. However, it is not a must to have a special room for the application of CAI if space is not readily available as mobile equipment can be utilised where the instructor goes to the classes. The instructor just needs to set the equipment in time and engage with the students. After that they can carefully dismantle it at the end, even though this will reduce the time that students need to engage and interact with the subject matter under the instructor's guidance.

A challenge that also comes with the use of CAI is that the medium of instruction is English and one can only use it with people who can understand the language of instruction. By implication, it means the method is quite ideal in formal teaching in schools and colleges. Outside the formal learning context, the application of CAI faces a plethora of problems relating to language issues. All software packages come in English and not Shona where the *nyunga nyunga* belongs, hence the instructor should understand the language and pitch it to the level of the students, otherwise the process will be futile. Translating the instructional materials into the Shona or other vernacular languages can be an alternative. This is regardless of the fact that formal learning in Zimbabwe is undertaken through English. The conclusion here is that CAI befits the formal learning context as it follows the usage of a specific language for communication and instruction. Taking this method and applying it to the indigenous context can cause some problems if the intended beneficiaries are not conversant with the English language.

Teaching the *nyunga nyunga* via CAI helps to build a strong team of participants and this team-spirit still subsists well after the study. The process actually builds a strong sense of belonging to one another. As such, it is necessary to engage in a variety of activities within one session to break the monotonous approach where the instructor is the one in charge giving orders. Quizzes, practical

performances in pairs, group and class work are effective in bringing variety to the lessons. The research also notices that students need to be given responsibilities for which they should be held accountable. For example, finding out how a new tune could be tackled practically. The students could then explain to the class and defend why they decide to tackle the assigned task in the way they do. Considering the basic concepts given to students in the course, many of them had to engage with purpose and gain valuable knowledge in plucking the mbira instrument.

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APPENDICES

Bungautete

Transcribed by R. Muranda

Zimbabwe Folk music

2 3 4 5 6

7 8 9 10 11 12

13 14 15 16 17

18 19 20 21

22 23 24 25

26 27 28 29

30 31 32 33

34 35 36 37

38 39 40 41 42

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Chemhere dzemusango

Transcribed by R Muranda

A.D. Mararire

The musical score is written for two staves in 4/4 time. The melody is primarily composed of eighth and sixteenth notes, with frequent triplets indicated by a '3' over a bracket. The key signature is one flat (Bb). The score is divided into measures by vertical bar lines. Some notes are highlighted in green, and others in red. The piece concludes with a double bar line and repeat dots. Measure numbers 4 and 7 are indicated at the start of their respective staves.

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Chemutengure

Transcribed by R. Muranda

Shona Folk Music

Moderato 2 3 4 5 6

7 8 9 10 11 12

Presto 13 14 15 16 17

18 19 20 21 22

23 24 25 26 27

28 29 30 31 32

33 34 35 36

37 38 39

Copyright © 2014

Chigwaya

Transcribed by R Muranda

Indigenous folk music

2 3 4 5 6 7

8 9 10 11 12 13 14

15 16 17 18 19

20 21 22 23 24

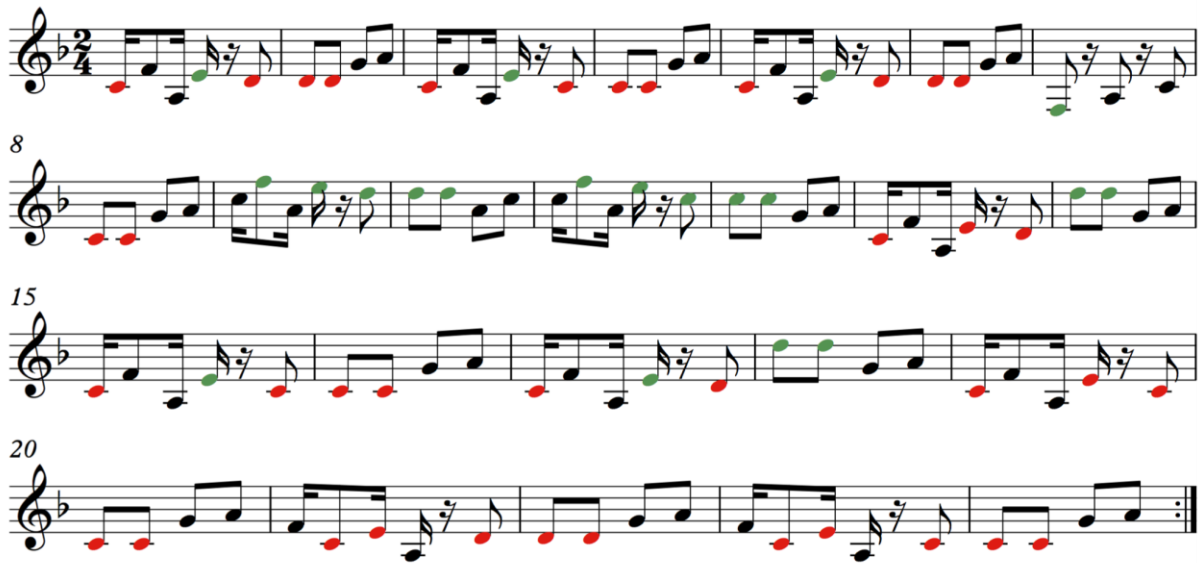
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Guva rangu

Transcribed by R Muranda

Shona Folk song

Fast



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Kukaiwa

Transcribed by R. Muranda

D.A. Mararire

2 3 4 5 6 7

8 9 10 11 12

13 14 15 16 17

18 19 20 21 22

23 24 25 26 27 28

29 30 31 32 33

34 35 36 37 38

39 40 41

42 43 44

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Nhemamusasa

Transcribed by Patson Manyame

Zimbabwe Indigenous

Allegro

The musical score for 'Nhemamusasa' is written in 6/8 time and consists of 32 measures. The tempo is marked 'Allegro'. The notation is presented on eight staves, with measures numbered 1 through 32. Red and green dots are placed below the notes to indicate specific rhythmic patterns or accents. The piece concludes with a double bar line at the end of measure 32.

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Nhemamusasa

Transcribed by Patson Manyame

Zimbabwe Indigenous

Allegro

2 3 4 5 6

7 8 9 10 11

12 13 14 15 16

17 18 19 20 21

22 23 24

25 26 27

28 29 30

31 32

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VaMudhara

Transcribed by R. Muranda

Anonymous

The musical score for 'VaMudhara' is presented in a single staff with a treble clef and a key signature of one flat (B-flat). The time signature is 2/4. The piece consists of 38 measures, numbered 2 through 38. The notation includes quarter notes, eighth notes, and sixteenth notes, with some measures containing beamed sixteenth notes. Red dots are placed below the first note of every measure. Green dots are placed above the second note of measures 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, and 38. The piece concludes with a double bar line at the end of measure 38.

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Vanotambarara

Transcribed by P. Manyame

A.D. Maraire

The musical score is written on a single staff in 6/8 time. It consists of 32 measures, numbered 1 through 32. The notation includes eighth and sixteenth notes, rests, and various accidentals. Red dots are placed below the notes in measures 1-10, 12-14, 16-18, 20-22, 24-26, 28-30, and 32. Green dots are placed above the notes in measures 11, 15, 19, 23, 27, 31, and 32. The score ends with a double bar line in measure 32.

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Zimbabwe yakauya nehondo

Transcribed by Patson Manyame

Anonymous



The musical score is written on a single staff in 6/8 time. It consists of 29 measures, numbered 1 through 29. The melody is composed of eighth and sixteenth notes, with some measures containing rests. The notes are color-coded: red for the first and third notes of each measure, and green for the second and fourth notes. The score is divided into four systems: the first system contains measures 1-5, the second system contains measures 6-10, the third system contains measures 11-14, and the fourth system contains measures 15-18. The fifth system contains measures 19-22, the sixth system contains measures 23-26, and the seventh system contains measures 27-29. The piece concludes with a double bar line at the end of measure 29.

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