



# Preserving the *nyunganyunga* mbira tunes through teaching and learning of performance using Sibelius 7

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## Abstract

The study focused on preserving mbira tunes by using transcription with Sibelius 7. The researcher purposively selected (7 females and 8 males) music students to play the transcribed 'Bungautete', 'Chigwaya', 'Guva rangu' and, 'Nhemamusasa' on the *nyunganyunga* mbira. Action research and the computer-assisted method guided the lessons. The study followed UNESCO's decree on Safeguarding cultural heritage aiming to protect the world's intangible cultural heritage through upholding practices, uses, and expression of knowledge that communities recognise as vital to their culture. The advent of computers in music education offers advantages to music educators and students to use emerging technologies in class. The *nyunganyunga* mbira in recent years gained recognition in primary, secondary and tertiary music education in Zimbabwe and beyond. Materials from the study are useful in teaching the *nyunganyunga* mbira to the current and future generations. The study proffers ways to preserve and present the tunes in print, PDF, audio, MP3, and MIDI formats as instructional materials. The study affords knowledge on how to use the software in teaching the *nyunganyunga* mbira. It also provides material and knowledge useful in schools, colleges and universities in music education. Further studies may be needed to cater for other mbira types.

## Introduction

The researcher used digital resources to preserve *nyunganyunga* mbira music through teaching and performance of the instrument. The motive behind this study was to explore digital tools in preserving mbira tunes to compliment oral tradition used to keep mbira music and songs alive. Sibelius 7 a music notation software is used to transcribe and playback selected *nyunganyunga* mbira tunes to teach music students.

In this study students used Sibelius 7 as a tool for learning mbira. The researcher explored how individuals coped with a new instrument taught using a digital resource. It was critical to observe solo and in ensembles performances of the instrument. It was vital to explore how the method influenced the students' performances in lessons and after their experience with the aid of Sibelius 7.

The study was guided by UNESCO (2020) Convention for the Safeguarding of the Intangible Cultural Heritage (ICH) Article 2, Definition 3 in support of preservation, promotion, enhancement, and transmission to ensure the safeguarding of intangible heritage. The researcher appealed to the



UNESCO (2005) Convention that promotes and upholds tangible and intangible heritage preservation. Further, he used Zimbabwe's 2017 New curriculum review to support the preservation of ICH. The UNESCO (1972) Convention on the Preservation of Natural Heritage also benefits future generations by playing mbira tunes.

An action research study was used in which 15 first-year university music students (7 females and 8 males) participated. The participants consented to their inclusion in the study, and the researcher upheld their anonymity and privacy. He planned the lessons and reflected on the outcomes to strategise for the next lessons to improve instruction and performance of the four *nyunganyunga* tunes, 'Bungautete', 'Chigwaya', 'Guva rangu' and 'Nhemamusasa'. Teaching was conducted over four months to enable the participants to attend to other courses in their study.

Literature is presented to establish the gap and contextualise the focus of the study. Studies show that mbira has been preserved through oral tradition, audio recordings, and audio with motion pictures. There is a gap in the use of notation software such as Sibelius 7, and the study explored this to provide complementary materials for preserving *nyunganyunga* mbira.

The study explains why using Sibelius 7 was chosen instead of other software packages and why it was the preferred digital resource. A discussion of the concept of playback and transcription in the context of Sibelius 7 is presented. Further, the study discusses mbira tunes and the possibilities of using sheet music in Sibelius 7. The researcher describes how MIDI and playback impact the progress of students in the teaching and learning mbira tunes using Sibelius 7. Different formats, including MP3, audio, MIDI, graphics, and PDF, that derive from Sibelius 7 are considered for sharing and distributing mbira tunes. The study discusses recording of mbira tunes. The discussion presents key points that inform the use of Sibelius 7 to preserve mbira tunes, such as readiness prerequisites (equipment and knowledge), teaching approaches, learning activities, and critical measures. The study ends with the key insights in preserving *nyunganyunga* tunes with Sibelius 7.

The study draws from 35 years of experience in primary, secondary and tertiary music education. As a performer of different indigenous Zimbabwean musical instruments, the researcher noticed diverse versions of mbira tunes. A reason behind such diversity is the loss of original Mbira tunes. The different versions are also attributed to people transcribing the tunes into different contexts. While adopting mbira tunes, some changes from the original pieces emerge. Even though changes arise from the espousal of tunes, it is vital to preserve originality to reduce perversions. Sole reliance on memory may distort some mbira tunes (Van Khe, 1977). It should be appreciated that tunes committed to long-term memory can be biased; hence, change is inevitable. Some changes result from innovations to show ownership of performers. In the Western world, performers use sheet music with definite interpretations, expression, style, key, form, dynamics and tempo. They use oral tradition in the Shona, Ndebele, Tonga, Shangani, Venda, and Kalanga contexts. Western notation is mainly found in schools, colleges, and universities (Marozva, 2015). The original *nyunganyunga* (*karimba*) was brought from Chipinge in Manicaland by Jeke Tapera. Its creation at Kwanongoma College of Music entailed a syncretism of local traditional culture. The Western curriculum designers intended to include Shona and Ndebele indigenous music culture in education (Maguraushe, 2018).

### **Literature overview**

Marolt et al (2009) present the concept of EthnoMuse: a multimedia digital library of Slovenian folk music and dance culture. The above research concerned the digitisation of production and post-



production processes relating to collecting, documenting and archiving of folk heritage. They developed multimedia applications for folk songs, music and dance. They also developed image, audio, video, notation, and MIDI formats. Their focus was mainly on multimedia applications and the conceptual design of a flexible data model on which the archive is based. They described the tools developed to support researchers in collecting and archiving folk music. Research has also been carried out on the applications and practices in the domain of music imaging for musical scores (sheet music and music manuscripts), which include digitisation of sheet music, optical music recognition (OMR) and optical music restoration (Jones et al., 2008). With a general background in OMR, EthnoMuse deals with typical obstacles in their field and reports on available commercial OMR software. Besides the main focus on the transformation from images of music scores to symbolic format, their study also dealt with optical music image restoration and the application of music for graphical preservation and potential applications for cross-media integration (Jones et al., 2008).

Kuusankare and Laurson (2006) discuss free music notation programmes such as Lily-Pond and Guido. These are latex-like languages used to describe the contents of a musical score in textual form and not through a point-and-click user interface. The author delved into websites for free and commercial music software such as notation and special-purpose editors. The examples are Gregoire, Django, Goodfeel, Berlioz, Igor, Nightingale and Scope. Not much research has focused on preserving *nyunganyunga* mbira tunes using notation software. Consequently, this study explores an alternative to preserve *nyunganyunga* tunes. It does not replace oral tradition. It is sensible for a society with increased use of digital resources to embrace emerging technologies to benefit future generations.

### **Conceptual framework**

The study embraced the UNESCO (2020) Convention for Safeguarding the Intangible Cultural Heritage (ICH) Article 2, Definition 3 to emphasise preservation, promotion, enhancement, and transmission in safeguarding intangible heritage in formal or non-formal education. Further, the study held the UNESCO (2005) declaration of Mbende traditional music and dance as a key aspect of Zimbabwe's intangible cultural heritage deserving protection. An effort to preserve forms of intangible cultural heritage is necessary. Zimbabwe's government's 2017 curriculum review for primary and secondary schools is an effort towards preserving ICH. The UNESCO (1972) Convention was considered for the preservation of natural heritage for future generations, especially mbira tunes. Positive and negative changes occur due to inevitable forces within and outside cultures. The impetus of digital technology is inevitable regardless of resistance, hence the need to embrace it for continuity purposes. Despite changes, musical practices remain relevant and important. Musical instruments and their music constitute heritage that needs preservation.

### **Methodology**

This research exploited hands-on experiences with music students at the university level (Creswell & Creswell, 2017). The study was conducted at the university, with the researcher serving as a performer and instructor. Seven female and eight male students were purposively and conveniently selected as participants (Cohen et al., 2017). The participants explored the transcribed mbira tunes, taught them, and performed the song. Action research was used by the author to improve the teaching and learning of the mbira. Planned activities were followed by implementation, observations, reflections and evaluation of outcomes, leading to the planning of future lessons (Cohen et al., 2017). The students were instructed, they performed and observed to compile information. The four tunes were taught and played through notation reading by individual participants and as an ensemble for four months.



Activities were diarised, including audio and video recordings. The researcher assured the confidentiality and anonymity of the participants (Hosseini et al., 2020). Participants signed informed consent forms to participate in the study (Davies, 2020).

### **Sibelius 7**

Sibelius 7 is a notation software, and the reason I chose it is because it was the available package at the time of this study. The researcher preferred using it since he had used its earlier versions, which informed the study. He transcribed the selected tunes, although they are not exhaustive in the *nyunganyunga* repertoire. The tunes were new to the participants and were not part of the mainstream mbira classes to explore a method of teaching using Sibelius 7. Sibelius 7 presented today's needed opportunities (Fautley & Savage, 2011). However, music theory was a prerequisite to reading staff notation (Muranda, 2017a). The selected tunes were in key F in the treble staff. Sibelius 7 does not have mbira samples; marimba sounds were used. The *nyunganyunga* tunes followed Abraham Maraire's versions taught in number notation<sup>1</sup>. All the *nyunganyunga* mbira versions in this study are not superior or inferior to the others.

### **Playback and transcription**

The researcher used playback during transcription and in performances with Sibelius 7. Playback of the tunes was important to guide the pitch and time of each tune. Each tune has a time signature and rhythm reflecting its character. Three tunes are in compound time, combining duple and triple times. The tunes 'Bungautete', 'Chigwaya' and 'Nhemamusasa' are in 6/8, except 'Guva rangu' in 2/4. The playback had a triple-time pulse reflected in most *nyunganyunga* tunes.

Sibelius 7 is an artificial intelligence-driven and thus devoid of emotional aptitude. Improvisation and creativity in Sibelius 7 are impossible during the playback of the tunes; performers follow the computer to keep time. Machines keep a constant tempo while performers can slow down, pace up or miss lines of performances. During the introduction, students had difficulties keeping a steady tempo. For new players on the *nyunganyunga* it was realistic to experience snags in maintaining tempo. Afterwards, with persistent exposure to the instrument, the students' playing began to adhere to tempo. It is important to note that students are always invigorated by the computer's playback of all the tunes. Hence, they had to concentrate on finger placement and tempo. On articulating difficult parts, repeated rhythm playing enabled students' ample practice.

The study did not compare computer-assisted playback with students' performances; rather, students drew guidance from Sibelius 7 to support the memory of the tunes. The students worked on performance with the software and adjusted accordingly to read the music. The colour coding (black, green, and red) for finger and thumb placement aided the performance of the transcriptions. Sibelius 7 was useful in teaching and learning the *nyunganyunga* tunes to preserve mbira (Choksy et al., 2000).

Sibelius 7 made mbira performances mechanical. The use of natural dynamics was impossible during playback. Rather, artificial dynamics were applied within the software. However, the crescendo (gradually getting louder) and the *decrescendo* (gradually becoming soft) sounded artificial for mbira performances. Performance directions, expressions and tempo marks were employed after the

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<sup>1</sup> This is not part of the study hence it is not discussed in detail; however, the box notation is still used in schools, colleges and universities in Zimbabwe.



performers learned to read notations and play the mbira. During tutorials and expository sessions, it was vital to use slow speed, consequently, the playing sounded unnatural since mbira performances often get fast gradually as they climax. In the end, the participants' self-initiated dynamics and expressions sounded natural. The above shows the expressive nature of the mbira tunes when the performers' feelings were exhibited intuitively.

### **Bungautete**

'Bungautete' was presented by the researcher in sheet music in printed format, placed on a music stand, posted on the notice board, and filed or sent to other students as hard and soft copies for use, discussions and analysis. Bungautete has 4 variations, each 6 bars long. The 6/8 time signature is a compound duple that divides the beats into two pulsations of three quaver counts. One or more performers play this tune, following bars 1 to 6 as an introduction. Performers can play repeatedly for as long as they wish. The basic tune is played to keep the performance tight as other performers come into the context to play other variations. In live performances, the mbira players start slowly and gradually increase pace as they gather momentum. Bars 7 to 12 are the first variation; bars 13 to 18 are the second variation. The third variation extends from bars 19 to 24. Each variation can be played independently or combined to form a thick sound texture. This is used to teach mbira tunes to aspirant performers. The tune is played in a cycle, with performers taking turns to play each variation and together as a group in a dander (entertainment) set-up. Performers can freely exchange roles at any time in a performance cycle.

*Example 1: 'Bungautete' folk music transcribed by the author*



Variations serve three purposes; to allow different performers to play diverse rhythms of the same tune, to create points of entry into and out of the performance and to enable a settlement of a performance<sup>2</sup>. A settlement marks a climax and to logically end the performance. It does not matter where the cycle of performance begins as long as the tune remains in the acceptable tempo. The tune notation that allows ease of entry, settlement, climax, warm down and ending. It should be noted that

<sup>2</sup> Performers play this part as a variation where they are settled and can sing without changing to any variation.



the introduction and ending are important in formal teaching and learning; they are taught with emphasis. Informal performances are done according to performers' desires with improvisations.

As performers played the mbira instrument, they followed the transcribed tune displayed on paper, computer, tablet and whiteboard. The colours displayed on the notated tune gave cues to the fingers and thumbs assigned to the lamellae. The black notes were allotted to the left thumb, green was for the index finger, and red was for the right thumb. Performers were allowed to improvise; however, the basic tune remained unchanged to keep the flow and the tune in sync with other mbira players. Performers were allowed to exchange roles to let every ensemble member play what they liked. However, in formal classes such as this study, performances could logically build from basic to settlement, then climax and warm down to the end. Even though students were allowed to be creative, the above criteria were meant to provide a fair assessment to all the participants and their ensembles.

### Chigwaya

This tune is Zimbabwean indigenous folk music; some musicians have sung songs with the 'Chigwaya' chord progression. Thomas Mapfumo is one of them. The first three bars are the basic tune and establish the flow of 'Chigwaya'. The basic tune covers bars 1 to 6. The first variation runs from bars 7 to 12. The second variation is from bars 13 to 18, not repeated, bearing in mind that every three bars marks a complete cycle. A performer can settle at this variation (bars 13 to 15), playing it in a cycle. Bars 16 to 18 are repeated as bars 19 to 21. The last three bars, 22 to 24, are the basic tune moving from the climax to the end. The reason for repeating the cycles was to enable performers to adjust to the flow of 'Chigwaya'. Performers can rest at any point and take a variation of their preference. After gaining confidence, the performers improvised some variations not in the score; however, not all improvised. Others kept the flow of the basic tune. At the end, students used the tune to create different song texts from the 'Chigwaya' tune.

*Example 2: 'Chigwaya' Shona folk tune transcribed by author*



### Guva rangu

'Guva rangu' is usually performed in a fast tempo that suits the *Jerusarema* beat on which it is based. The tune was not easy to play at first, the rhythm in quavers and semiquavers was difficult. The first three bars are the basic tune. The basic tune covers bars 1 to 6, a repeat of the first 3 bars. Bars 7 to 12 are the second variation, and bars 13 to 18 are the settlement, a variation that brings all the performances together. The bars 19 to 24 are the variation that signals the end of the performance. All



the 4 variations are closely related in their rhythm structure. A slow tempo was preferred after performers experienced challenges. As the third tune was taught to students, fast speed was applied after the tune had been mastered. After grasping the playing skills and singing, performers danced as they played their instruments. However, the performers could not engage in the *Jerusarema* dance. They did freestyle dances.

Example 3: 'Guva rangu' Shona folk tune transcribed by the author

**Fast**      2      3      4      5      6      7

8      9      10      11      12      13      14

15      16      17      18      19

20      21      22      23      24

### Nhemamusasa

'Nhemamusasa' is one of the oldest prototypes of mbira tunes commonly played on the *nhare* mbira. It is associated with rituals and spirit possession (Berliner, 1993). The Shona-speaking people attest to the above, and traditional mbira players embrace it with sanctity. Including *nyunganyunga* mbira and its tunes in the music education curriculum removes the sacredness of this tune. The number of lamellae on the *nyunganyunga* compared to the *nhare* imposes limited expression of the melodic motifs of 'Nhemamusasa'. The tune has 4 variations, though not all of them; bars 1-4 are the introduction in crotchets, followed by bars 5-8, expressed in quavers. Bars 9–12 are the settlement of the tune, while 13-16 constitute the climax. While some performers played the basic variation, others executed melodic lines and combined them to create a dense sound. Since the tune was difficult, the students started with a slow tempo to motivate them to play with ease. Each variation was looped in Sibelius 7 with a slow tempo of 80 beats per minute and gradually increased the tempo. The basic bars 1-4 variations are anchored to the melodic variations in bars 5-8, 9-12 and 13-16. The fast learners were gradually exposed to the first, second and third melodic variations after grasping playing techniques. 'Nhemamusasa' took longer than the three tunes since it has difficult melodic motifs.



Example 4: *Nhemamusasa* Shona traditional mbira tune transcribed by author

**Allegro**

### MIDI and playback

Transcribed *nyunganyunga* mbira tunes played as Sibelius 7 project files can be exported in various formats, including MIDI. The merit of using MIDI is that all notation software packages are compliant with General MIDI (GM) protocol. During playback of the Sibelius 7 project files, students and instructors could change the playback to another sound closely related to mbira. The software has a tone bank of natural and synthetic sounds. In the study, marimba and vibraphone sounds were used for playback. However, the vibraphone sounded too artificial; hence, it was rarely used in group and individual performances. Exporting Sibelius 7 projects to other software packages requires that files be saved as MIDI, a format for software packages that comply with GM protocol. Depending on the users' intentions, MIDI files can be played back in any virtual media player and shared through Email, WhatsApp, X, and Facebook. MIDI files can be used as ringtones for cell phones or telephone switchboards at institutions. Furthermore, mbira tunes in their MIDI format can be used in audio for gaming and motion pictures.

### Mbira tunes in different formats

Transcriptions of the mbira tunes notation software can be presented in Sibelius 7 project, MIDI, PDF, audio, and graphic formats. The files can be shared with students, performers, and researchers through email and social media. They may be shared across different software formats, such as MIDI or XML. MIDI files can be played on various media players and production software. MIDI files were exported to MuseScore 4 and Cubase 13 from Sibelius 7. The same MIDI files of the *nyunganyunga* tunes were played in iTunes and Windows media players. The MIDI files were played on Android smartphones and tablets to enable the students to practice with minimal instruction and instructor guidance.

An advantage of Sibelius 7 is the capacity to save transcriptions as audio files playable on any media player, such as MIDI files. The merit is that audio files play on different sound systems and can be saved on CDs, flash discs and virtual storage. It can be used as a backtrack in class and be archived in the library for studies. The WAVE files can be converted to MP3 for streaming on the internet globally. In classroom settings, one can teach an appreciation of the rhythm and tempo of the *nyunganyunga* mbira tunes. However, the audio files derived from the notation software package Sibelius 7 are artificial, as users use samples that represent the mbira timbre. The marimba's and vibraphone's overtones and harmonics misrepresent the instrument's timbre.





The printing press ushered in a proliferation of writers; hence, the publication of ideas grew rapidly. At the inception of the printing technology, information was disseminated faster than oral tradition (Dittmar, 2011). The PDF format allows the students to print out the mbira tunes, read and practice in their residence halls. The PDF files were given to the class through Airdrop, Bluetooth, Email, WhatsApp, and Shareit. PDFs are advantageous because they can be used on smartphones, computers, or smart boards. The only setback with PDF is it does not have playback. Instead, it is useful for reading music on the staff. It is also important that PDF files can be compiled into soft books that can be used as teaching material.

The graphic file format was another effective format for preserving *nyunganyunga* tunes. The format was used to convert the scores into pictures that could be printed in black and white or other colours. The graphics make it possible to derive quality prints if one intends to publish books on the tunes. Both PDF and graphic formats are useful in compiling transcriptions accompanying audio files for performers to read and refer to the given audio examples. A notable merit is that audio, graphics, MIDI, MP3, and PDF formats were useful in publishing a book, and users can choose any format. Readers and users of the *nyunganyunga* mbira tunes can analyse and appreciate how the audio matches the notation on the printed scores in PDF and the sound of the audio files concerning the real sound produced by the instrument. Furthermore, in Sibelius 7, one can work from MIDI to audio, audio to MP3, from MIDI to graphics file formats, MIDI file to Sibelius 7 project files and vice versa. One can export MP3, audio, WAVE, graphics, and PDF files from the above. Such versatility makes Sibelius 7 a robust software.

### **Recording mbira tunes**

While audio for notated tunes is derived through exporting audio files, it is possible to record the sound of mbira tunes using a microphone so that it is mixed and mastered. As preservation while playback is taking place, performers can play along and engage in multitrack recording with Western and Indigenous musical instruments. Currently, artists do this to record, mix and master any type of music. This places the mbira tunes into popular music and combines them with electroacoustic instruments such as keyboards and guitars. Even though such a move morphs the traditional context of mbira, it enhances the instrument's presence in different genres. The researcher fused 'Bungautete' with drums, keyboards and guitars. Ordinarily, without microphones and electronic amplification, 'Bungautete' played on the *nyunganyunga* cannot be recorded and mixed with other instruments. The recorded music ultimately resembled digital production more than the indigenous music. It is fascinating to see how different musical instruments worldwide can be played together with the *nyunganyunga* mbira. That shows that musical instruments can be adopted and adapted to different musical styles. The fusion of 'Bungautete' with other musical instruments culminated in a unique performance anchored on electronic amplification and digital processing tools such as artificial reverb, compression, equalisation and panning.

### **Lessons drawn**

A unanimous view is that digital technology was included through the computer-injected interest and energised performance practice of the *nyunganyunga* mbira. The computer facilitating mbira teaching and learning through transcriptions changed traditional lessons into exciting experiences for the performers. The performers exhibited appreciation after the study as they admitted that their predisposition to technophobia, their notion that the instrument was difficult, was unnecessary. Their exploration of mbira with Sibelius 7 proved the participants were techno-savvy.



Sibelius 7 enables users to engage in live music making with computer playback running along their performances at an ideal speed. While the sound played through the software, students analysed and noticed different note pitch levels and repetitive motifs in the tunes. They also identified similarities and deviations in different sections of each tune. It was possible to identify the difficult and easy rhythms in each transcription. The playback of each tune provided a solid and steady beat, and the participants followed through. With guidance from the steady pulse, they engaged in simple movement and dance while playing the instrument.

The ability to read notation kept the students alert as sound and the notation were presented simultaneously. Reading the music as it played back also helped the participants foster their knowledge of music theory, especially the treble staff. The chosen mbira tunes were in key F, making it possible for the students to appreciate the tuning of the mbira, which was grasped through the treble staff as the reference for tuning the instrument.

Using notation software needs planning to ensure equipment works efficiently (Chosky et al, 2000). The software should work efficiently to bolster the playback of the *nyunganyunga* mbira. The students who undertook this study needed a solid knowledge of reading staff notation; hence, they took a foundational music theory course. The computers worked well during the study, which was sufficient motivation to reinforce the performance of the mbira tunes. The four tunes were sufficient since participants' involvement in the study took cognisance of other course requirements and student commitments.

### **Conclusion**

The researcher concludes that using notation software to transcribe mbira tunes provides active preservation of mbira music. The practical experience also gives participants a unique opportunity to develop the skills to play the *nyunganyunga* mbira. It is important to note that instant feedback gave reinforcement of performance skills. This curbed the tendency to make mistakes. The computer offered cues to develop skills before, during and after performance practice. The performers adjusted the performance to comfortable levels based on the software's parameters. Sibelius 7 offers MIDI, PDF and MP3 as appropriate ways to preserve the *nyunganyunga* mbira tunes. The sound from the Sibelius 7 project file playback is sufficient to instruct the *nyunganyunga*. The visual display of the notated tunes on the computer monitor provided sufficient clues to playing the instrument by seeing and hearing the sound. Lastly, the advent of digital technology will trigger many changes at any time (Chosky et al., 2000). Some of the inevitable changes may not revolutionise the *nyunganyunga* per se. However, performers must adjust how they interact with the instrument to preserve and conserve its performance.

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