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Lecturers' adoption of digital technology to promote student engagement in teaching music at a teachers' college in the Manzini region of Eswatini

BY

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A research project submitted in partial fulfilment of the requirements of the Master of Science Education Degree in Curriculum Studies

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DECLARATION OF INDEPENDENT WORK

I, Sithulisiwe Bhebhe, student identity number B226420B Identity and Passport number 08-607724-W-28/FN096217, do hereby declare that this research project entitled: ***Lecturers' adoption of digital technology to promote student engagement in teaching music at a teachers' college in the Manzini region of Eswatini,*** submitted to Bindura University of Science Education for the Master of Science Education Degree in Curriculum Studies, is my independent work; and complies with the Code of Academic Integrity, as well as other relevant policies, procedures, rules and regulations of Master of Science Education Degree in Curriculum Studies; and has not been submitted before to any institution by myself or any other person in fulfilment (or partial fulfilment) of the requirements for the attainment of any qualification.

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DEDICATION

I would like to dedicate this work to my two loving daughters Qhelile Ntombikayise and Qholile Sanda and my niece Munashe. This work is also dedicated to all those who encouraged and helped me in my studies. The study is for all of us.

ABSTRACT

This study sought to explore the lecturers' adoption of technology to promote student engagement in teaching music. The study pursued the establishment of the factors influencing college lecturers' adoption of technology in teaching music, the college lecturers' needs in adopting technology in teaching music and determined the strategies that can be used to address college lecturers' needs in adopting technology in teaching music. This study was underpinned by the Unified theory of acceptance and use of technology (UTAUT) theory.

The conceptualisation of college lecturers' adoption of technology in teaching music was done through the existing literature. A qualitative research approach was used in this study. The case study employed in this study was explained by Yin (1994). The study was driven by interpretive research philosophy. Open-ended questionnaires, open-ended interviews and observations, were used to generate data from purposely selected lecturers who were involved in teaching music. The data was analysed thematically and direct quotations were utilised in data presentation. Ethics in research were also considered. The results of the study revealed that technology adoption in teaching music has been accelerated by the COVID-19 pandemic, with factors such as social norms, ease of managing large classes, and the availability of software and apps. College lecturers need on-campus and off-campus data, smart gadgets, funding, and proper training for effective teaching. Strategies to address the needs include providing necessary tools and wider internet broadband, integrating technology into instruction, and regular workshops and seminars.

The study recommends upgrading campus technology infrastructure, allocating funds to support technology integration in music teaching, providing comprehensive training programs, facilitating the transition from traditional instruction to technology-integrated learning, and leveraging communication channels like WhatsApp for student-teacher interactions. Regular review and feedback mechanisms are also suggested to assess the effectiveness of technology adoption initiatives and continuously improve the integration of digital tools in teaching music.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS AND ABBREVIATIONS

4IR	Fourth Industrial Revolution

COVID-19	Coronavirus Disease of 2019
UTAUT	The Unified theory of acceptance and use of technology

CHAPTER ONE

INTRODUCTION TO THE STUDY

1.0 Introduction

This chapter introduces the study that explores the lecturers' adoption of technology to promote student engagement in teaching music. The introduction, background of the study, purpose of the study, statement of the problem, research objectives and questions, significance of the study, limitations of the study, delimitations of the study, and definition of key terms that were used in the study are going to be outlined. The chapter also gives a summary of the chapter.

1.1 Background of the study

The Fourth Industrial Revolution (4IR) has significantly influenced the adoption of technology to promote student engagement in teaching music in the education system (Johnson, et al., 2019). Cruywagen and Potgieter (2020) highlight that the shift to 4IR has led to a shift in teaching and learning experiences, promoting social and collaborative aspects in the various education systems. Again, Alakrash and Razak (2020) revealed that digital technologies facilitate student interaction, collaboration, and connections among students as well as between students and lecturers, promoting student engagement, creativity, and the study of various musical genres.

Souza (2022) in a study in Brazil, reveals that technology integration in the education system has gained traction and has also enhanced student engagement in music composition and performance. However, further exploration is needed to determine the efficiency of these digital technologies in raising students' interest in music composition and performance. In a study conducted by Liu (2021) in China, the use of technology tools for music teaching was examined among student teachers and the results highlighted the need for a more dynamic and interactive learning environment. In Australia, de Bruin (2021) reveals that music lecturers require support and resources to facilitate student interaction, collaboration, and meaningful connections in using technology to teach music. Therefore, the trend in various countries is that to effectively use digital technologies in music education, there is a need for lecturers to access appropriate technology resources, professional development opportunities, and support to improve their digital literacy and pedagogical skills.

The proper implementation of music education in Sweden according to Garvis, et al. (2017), is hindered by inconsistent funding, which poses a challenge to digital technology and internet provision for students' access to music through digital technologies. A study in Sri Lanka by Edward, et al. (2019), demonstrated the effectiveness of using digital technologies in teaching Oriental Music to senior secondary students, highlighting the need for strategies to overcome uneven funding and scarce resources in education. In Sierra Leone, Fofana (2018) revealed that limited government support and reliance on private institutions pose challenges for lecturers in integrating technology into teaching music.

In Eswatini, Almusaed, et al. (2023) allude to that music education has evolved to include creativity, emotional growth, and cultural understanding. Further, Alvarez Jr (2020) posits that the Human Rights Curriculum in Music, developed in partnership with the Eswatini Institute of Music and Art, aims to promote awareness of human rights in Eswatini. Furthermore, Creech, et al. (2023) reveal that the curriculum in Eswatini combines human rights elements with music to teach practical activities in music.

In Eswatini, where freedom of expression and the right to protest are severely restricted, music is an ideal method to do peaceful expression and empowers engagement in human rights issues (Hwang, 2022). To encourage student participation in writing, performing, and addressing human rights issues through music, there is a need to focus on music curriculum implementation, and lecturers' training needs in the adoption of digital technologies in teaching music. Thus, the focus should be on the effectiveness of training lecturers in Eswatini on the use of digital technologies to enhance student engagement in creating and performing music pieces.

1.2 Purpose of the study

The purpose of the study is to address the needs of college lecturers teaching music in the Manzini region of Eswatini by exploring lecturers’ technology adoption to enhance student engagement. The study aims to improve music education practices by integrating technology and ensuring that students can develop their musical talents effectively.

1.3 Problem statement

College lecturers at a teachers' college in the Manzini region in Eswatini are finding it challenging to adopt technology in the teaching of music (Nkambule, et al., 2022). The policy goal 2.3.2 of the Eswatini technology policy states that technology in all education institutions must be adopted as a tool for integrated learning, management, and administration (Maphosa, 2021). According to Mlangeni (2020), Eswatini is falling behind other countries in adopting technology into the education system and emphasises the need of preparing student teachers for the digital shift and for change management. Further, Olaitan and Mavuso (2022) as well as King and South (2017) reveal that this problem arises from innovations happening in the education systems to integrate the use of technology in music teaching without adequate preparation for the change. Again, Ng and Hartwig (2023) reflect that the lack of innovative approaches to foster student participation and motivation in music activities exacerbates limitations in nurturing students' musical talents and leads to some dropping music education.

The problem that was noted by El-Sabagh (2021) refers to the shortcomings of conventional music education teaching approaches, which frequently fall short of meeting each student's particular requirements, learning preferences, and range of interests. Furthermore, the one-size-fits-all approach of traditional teaching methods may not adequately engage or accommodate students' diverse learning styles as well as interests and may result in fewer opportunities for creativity and self-expression in music, as well as lower motivation and disengagement as revealed by Almusaed, Almssad, Yitmen, and Homod (2023). Furthermore, Walzer (2017) indicates that students' advancement in music education is hampered by a lack of access to necessary resources and technology for the creation of modern music.

Mobile Eswatini (2023) reveals that in Eswatini, limited access to resources and technology necessary for contemporary music creation exists. Further, Ochai and Ottone (2022) note that Mobile technology has played a transformative role, empowering the country's creative industries by providing artists with a platform to showcase their work, musicians with the essential tools for independent music production and distribution, filmmakers with the means to create and share their films, and designers with a global audience for their creations. Furthermore, Marie-Nelly (2023) mentions the need to accelerate digital transformation in

Eswatini as mobile technology continues to advance and provides an opportunity to support college lecturers in the adoption of technology in teaching music.

The educational orientation of lecturers plays a crucial role in enhancing student engagement in music creation and performance. Lei (2023) mentions that the educational training of lecturers influences their practices, impacting their interpretations of the curriculum and subject matter, as well as students' involvement in music improvisation and composition. Further, Anderson (2021) notes that the choices made by lecturers regarding learning tasks, including their structure, content, and significance, directly affect students' experiences in creating and performing music pieces. Therefore, achieving alignment between lecturers' educational orientation and the effective utilisation of digital tools and software becomes essential in addressing the problem of adoption of technology in the teaching of music at a teacher training college in the Manzini region of Eswatini. Thus, this study must explore the strategies that can be used to address college lecturers' needs in the adoption of technology to promote student engagement in teaching music.

1.4 Research questions

1.4.1 Main research question

How are the college lecturers adopting technology to promote student engagement in teaching music?

1.4.2 Sub-research questions

The sub-research questions of the study are:

a) What are the factors influencing college lecturers' adoption of technology in teaching music?

b) What are the college lecturers' needs in adopting technology in teaching music?

c) Which strategies can be used to address college lecturers' needs in adopting technology in teaching music?

Research Objectives

The objectives of the study are to:

1.4.1 Main research objective

- Explore how the college lecturers adopting technology to promote student engagement in teaching music.

1.4.2 Sub-research questions

The sub-research questions of the study are:

a) Establish the factors influencing college lecturers' adoption of technology in teaching music.

b) Establish the college lecturers' needs in adopting technology in teaching music.

c) Determine the strategies that can be used to address college lecturers' needs in adopting technology in teaching music.

1.5 The significance of the study

This study aims to explore the adoption of technology to promote student engagement in teaching music. The findings of this study have implications for various stakeholders involved in the education sector.

The information gathered from this study can be used by educational institutions and policymakers to create professional development initiatives and manage resources efficiently. Recognising the advantages of the adoption of technology to promote student engagement in teaching music would result in customised and interesting learning settings. The study's conclusions can aid in the ongoing development of methods for teaching music.

Students can benefit from technology utilisation in music education as it enhances their creative engagement and improves the overall quality of learning environments. Adopting technology can assist students get a wider range of resources and developing their skills in music composition and performance.

The study's conclusions can guide resource material producers in creating and modifying materials that align with the standards of technology utilisation. This enables the production of relevant and effective resources that support the technology utilisation in teaching music.

Parents play a crucial role in their children's music education. The study's findings can help parents understand the challenges faced by college lecturers in the adoption of technology to promote student engagement in teaching music. This knowledge empowers parents to support their children's learning and engage with their music education experiences more effectively.

The study aligns with the objectives of the Government of Eswatini, particularly in terms of adopting digital technology and promoting the digital transformation of education. The findings support the government's efforts to modernise the educational system and ensure that students have access to cutting-edge and productive learning experiences. Policymakers can use the study's findings to develop frameworks that facilitate and promote the adoption of technology to promote student engagement in teaching music.

Higher education institutions, particularly those in Eswatini's Manzini region, can benefit from the study's findings by gaining insights into the requirements and challenges faced by music lecturers when addressing college lecturers' needs in the adoption of technology to promote student engagement in teaching music. This understanding can inform the development of professional development initiatives that equip college lecturers with the necessary knowledge and skills to enhance student engagement in music composition and performance.

The study's findings can inspire further research and innovation in the field of music education. Collaborations with other stakeholders in the music education sector can foster the effective use of technology in teaching music. The study's results can contribute to the improvement of music education programs, provide opportunities for professional growth, encourage partnerships and collaborations, and promote research and innovation in colleges and universities.

1.7 Assumptions

- Digital technology can increase student participation in music education and learning.
- The teacher's college has enough infrastructure, resources, and support for integrating digital technology into music teaching.
- Lecturers are willing to adopt digital technologies into the teaching of music.
- Adopting digital technology boosts student involvement and participation in music education.

1.8 Delimitations of the study

1.8.1 Geographic Delimitation

The teachers' college that would be studied is in the Manzini region of Eswatini. The college offers music to both secondary and primary teachers' diplomas.

1.8.2 Participant Delimitation

The study is delimited to the lecturers who teach music at the chosen teacher training college in the Manzini region. The research primarily focused on the perspectives, experiences, and challenges of the music lecturers. The viewpoints of lecturers actively involved in teaching music were considered not the views of others such as college administrators or lecturers outside music professionals.

The focus of this study was on the adoption of technology to promote student engagement in teaching music. This study focused on the effects of technology utilisation in the context of music instruction, even though other elements of the curriculum may also have an indirect impact. Although they are not the focus of this study, other elements including curriculum design, instructional techniques, and assessment strategies can be pertinent.

1.8.3 Time Delimitation

The research is done in a limited amount of time, and the conclusions are based on data that is accessible as of May-June 2024, which is the knowledge cut-off date. While technology and educational methods are always changing, the study might not have considered all the most recent advancements and innovations that have occurred during this period.

1.8.4 Methodological Delimitation

The data for this study was gathered through observations, interviews, and observation using a qualitative research methodology. The results can be arbitrary and might not offer a thorough quantitative examination of how technology integration in teaching music contributes to students' involvement in music instruction. The study recognises the limitations of the technique it has selected and makes no claims to offer a comprehensive or final analysis of the subject.

1.9 Limitations of the study

This study could be limited in the sample size because the study only included college lecturers from a single-teacher training college. This is because the thoughts and experiences of a small sample of participants could not adequately represent the range of viewpoints and difficulties that music lecturers face in teacher training colleges. The study's conclusions might not be as applicable as they could be because it was restricted to a particular area and organisation. The distinctive features of the Manzini area and the chosen college might not accurately represent the experiences and circumstances of music educators in other areas or at other kinds of educational establishments.

The study's qualitative design raises the potential for subjectivity and bias in the gathering and processing of data. The researchers' viewpoints and assumptions may affect how the responses and observations from the participants are interpreted and concluded, which could affect how objective the results are. Because the study relies on data that was only accessible as of May-June 2024, it might not take into consideration recent advancements in technology, modifications to educational curricula, or adjustments to laws that may have an impact on technology integration in teaching music. The study's reach could be hampered by a lack of money, time, or technological infrastructure. These restrictions might affect the scope and depth of data gathering and analysis, which could influence how thorough the study's conclusions are.

The research may not have taken into consideration all external elements, such as socioeconomic background, cultural influences, or individual learning styles, which may have an impact on lecturers’ adoption of technology to promote student engagement in teaching music. The study's techniques for gathering data include open-ended interviews, observation and open-ended questionnaires which depend on participants' experiences, recollections, and willingness to divulge information. This raises the possibility of response bias or inaccurate data, which could influence the findings' validity and reliability. The study should follow moral principles and safeguard participants' anonymity and privacy. But ethical issues could restrict the breadth or depth of the study which includes getting informed consent or guaranteeing anonymity.

1.10 Definition of key variables

1.10.1 Adoption of technology

The process by which individuals or organisations choose to use new technology (Kumar, etal, 2023).

1.10.2 Factors

The elements that contribute to or hinder the integration and utilization of digital tools, platforms, and pedagogical approaches by instructors in higher education settings (Castro, 2019).

1.10.3 Student Engagement

Student engagement in music education involves active participation and interest in creating and performing music pieces. Technology enhances engagement by providing interactive and immersive learning experiences tailored to individual student's interests and abilities (Liu, 2021).

1.11 Chapters outline

The study is comprised of five chapters.

1.11.1 Chapter one – Introduction to the study

This chapter presents the introduction and outline of the research study.

1.11.2 Chapter two – Review of related literature

The discussion of the theoretical framework was done in this chapter. The Unified theory of acceptance and use of technology (UTAUT) theory was discussed, demonstrating how it serves as the study's theoretical foundation and literature related to the study was reviewed.

1.11.3 Chapter three - Research methodology

The chapter focused on the research design processes and procedures of the study. In this chapter, I explained and justify the research paradigm, research approach, research design and research strategy. I presented the population and sampling techniques, data collection instruments and trustworthiness measures.

1.11.4 Chapter four - Data presentation, Analysis and Discussion

I presented and analysed data as well as ethical issues. Data was thematically analysed and presented through direct quotations in this qualitative study.

1.11.5 Chapter five - Summary, conclusions, and recommendations

I summarised the study's findings, concluded the data, and made some recommendations in this final chapter of the thesis.

1.12 Chapter Summary

This chapter presented the overview of the study which encompasses the Background of the study, purpose of the study, objectives of the study, research questions, the significance of the study, delimitations of the study, limitations and definitions of key variables. The problem and the significance of this study were also described. The study's objectives, which are linked to the research questions, were presented. The next chapter presents the theoretical framework as well as review literature related to the study.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 INTRODUCTION

The use of technology in music education has drawn a lot of attention lately to increase student participation in composition and performance. Technology provides lecturers with exceptional chances to advance their pedagogical and technological expertise. It is vital to comprehend the distinct needs of lecturers while implementing teaching music. This chapter reviews the literature on the lecturers' needs in integrating technology to promote student engagement in teaching music. The chapter also reviews the literature on how technology can meet these needs, as well as lecturers' opinions about resources for music creation and performance being equitable and accessible. Finally, literature on how to help lecturers utilise technology to promote student engagement in teaching music was also reviewed.

2.1 The Unified theory of acceptance and use of technology (UTAUT)

A theoretical framework directs a study by drawing on pre-existing theories and concepts and serves as a foundation for research (Moorhouse & Wong, 2022). It offers a thorough justification and guidance for the study, strengthening comprehension of the topic being studied (Omirin & Falola, 2011). Integrating technology into the teaching of music, according to Sahni (2019) improves student engagement and learning results. Notably, a theoretical framework can be useful in this context to comprehend the underlying theories and concepts of technology integration into the teaching of music as well as to offer direction on how to successfully incorporate technology into music pedagogical practices.

Some theories and models explain student engagement, instructional design, technology integration, and successful pedagogical practices which should be considered when developing a theoretical framework for technology acceptance and utilisation (Hervé, 2013). According to Ravitch and Matthew (2017), the framework should be easy to use, have explanatory power, and be in line with the phenomenon under study. Today, digital literacy has become crucial, and mobile technology has even made its way to economically disadvantaged areas (Montoya, 2020).

Nonetheless, there is still a skills gap among lecturers, who do not have the technological know-how to integrate technology into the teaching of music (Davis, 2021). The theoretical framework used in this study is crucial in guiding this study on lecturers' acceptance and utilisation of technology to promote student engagement in teaching music in a teacher training college.

The Unified theory of acceptance and use of technology (UTAUT) guided this study. The theoretical framework offers a concise explanation of the theoretical assumptions in technology acceptance and use (Southern California Library, 2021). The theoretical framework can direct the selection of suitable research approaches (Kivunja, 2018). The Unified Theory of Acceptance and Use of Technology (UTAUT) can provide valuable insights into exploring lecturers' acceptance and utilisation of technology to promote student engagement in teaching music (Williams, et.al, 2015).

The UTAUT framework is useful for comprehending the intricate interactions among variables that affect people's adoption of technology (Venkatesh, et.al, 2016). Again, Barrane, et.al, (2018) mentions that the UTAUT still influences the creation of plans and programmes meant to encourage the uptake and application of technology in a variety of settings to attain the intended behaviour as shown in the diagram 2.1.

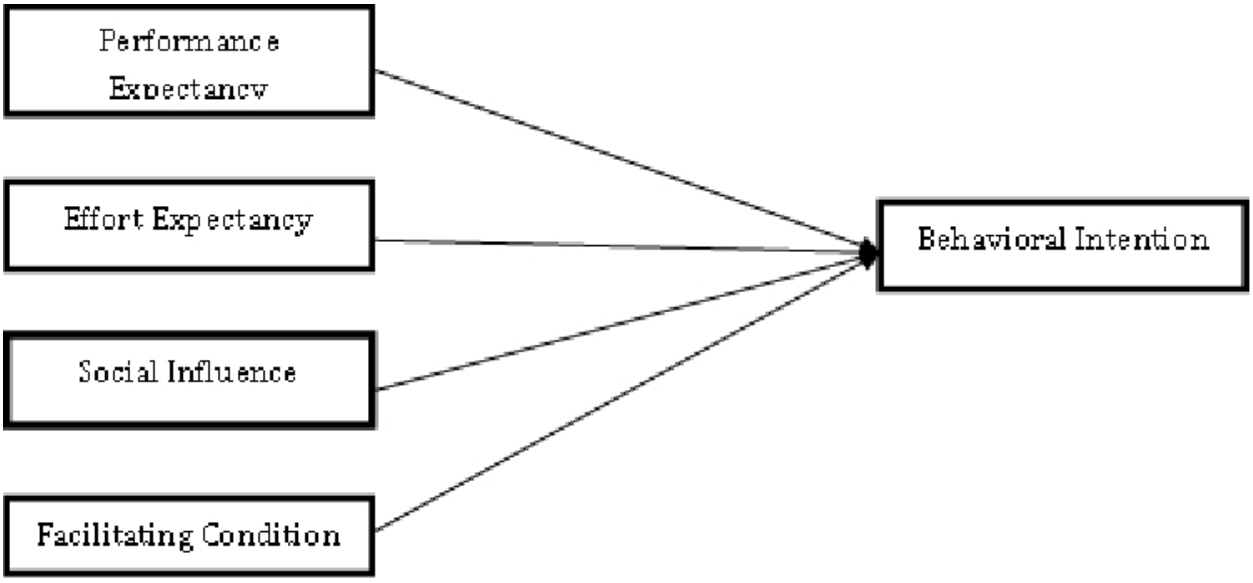

Figure 2.1 Variables affecting adoption of technology (Venkatesh, et.al, 2016).

Further, Shah, et.al, (2021) reveal that the UTAUT model offers a comprehensive framework for understanding the factors that influence lecturers' acceptance and adoption of technology in this context are performance expectancy, facilitating conditions, social influence and effort expectancy.

2.1.1 Performance Expectancy

One of the key factors identified within the Unified Theory of Acceptance and Use of Technology is Performance expectancy (UTAUT) which influences individuals' intention to use technology (Ayaz & Yanartaş, 2020). Madzamba and Matorevhu (2023) reveal that performance expectancy refers to the degree to which individuals believe that using technology enhances their job performance or makes tasks easier and more effective. In the context of lecturers' acceptance and utilisation of technology to promote student engagement in teaching music, Crawford (2017) alludes to that, lecturers' beliefs about how technology can enhance their performance as music lecturers and improve student engagement are crucial.

In creative Music-Making, Ng, et.al, (2022) reveal that lecturers may perceive technology as a powerful tool for facilitating creative music-making among their students. Nart (2016) believes that digital tools and software can provide students with expanded opportunities to explore different musical styles, experiment with various musical instruments and sounds, and compose original music. Olvera-Fernández, et.al, (2023) reveal that lecturers' perception of technology as a catalyst for creativity and innovation can drive their intention to integrate technology in teaching music.

It is also expected that lecturers recognise that technology can provide new learning opportunities that go beyond traditional music instruction (Dorfman, 2022). Technology according to Ng, et.al, (2022) can enable students to access a wide range of musical resources, engage with virtual instruments, collaborate with peers in real time, and explore music from different cultures and periods. Edward, et.al, (2018) lecturers who perceive technology to broaden students' musical horizons and offer diverse learning experiences are more likely to accept technology use in teaching music.

Technology can facilitate student collaboration and communication in music education (Cruywagen, 2015). Further Cruywagen and Potgieter (2020) allude to the fact that lecturers may

believe that technology tools, such as online platforms or digital audio workstations, can enhance students' ability to collaborate on music projects, share ideas, and provide feedback to their peers. Furthermore, Johnson (2017) has the perception that technology can support meaningful student interaction and foster a sense of community in the music classroom. Thus, lecturers' performance expectancy is influenced by their own beliefs and experiences, as well as external factors such as professional development opportunities and exposure to successful technology integration practices (Bowman, et.al, 2022).

Further, Henrie, Halverson and Graham (2015) reveal that providing lecturers with concrete examples, case studies, and evidence of how technology can positively impact student engagement and their teaching effectiveness can further strengthen their performance expectancy and motivation to integrate technology in teaching music.

In considering performance expectancy within the UTAUT framework, lecturers and researchers can gain insights into the specific beliefs and perceptions that influence lecturers' intention to use technology in teaching music (Zhang, et.al, 2021). Again, Kennedy (2016) reveals that this understanding can inform the development of targeted strategies, support systems, and professional development initiatives that address lecturers' performance expectations and promote the effective integration of technology in music instruction.

2.1.2 Effort Expectancy

Another important factor within the Unified Theory of Acceptance and Use of Technology (UTAUT) that influences individuals' intention to use technology is effort expectancy (Rahi, et.al, 2018). Again, Ayaz and Yanartaş, (2020) explain that effort expectancy refers to the perceived ease of use and the comfort level individuals have with technology. In the context of integrating technology in teaching music, Merrick and Joseph (2023) reveal that lecturers' confidence in their ability to navigate and utilise digital tools for music creation and performance is crucial. The specific aspects related to effort expectancy in the context of integrating technology in teaching music are ease of use, comfort level, and technical support.

Lecturers' willingness to integrate technology in teaching music may be influenced by how simple they believe digital tools and software to be to use (Yu, Dai & Wang, 2023). Further, Demissie, et.al, (2022) reveal that lecturers are more likely to integrate technology into their

lessons if they believe it to be intuitive, easy to use, and uncomplicated. However, Hennessy, et.al, (2015) lecturers, on the other hand, could be reluctant to employ technology if they believe it to be convoluted, time-consuming, or challenging to use. Also, Nilson (2016) notes that offering lecturers resources and training that improves their comprehension of how to use technology in music education can have a favourable impact on how much work they put in.

Digital literacy according to Min and Yu (2023) is a key determinant of lecturers' readiness to use technology in teaching music. Further, Yelubayeva, et.al (2023) reveal that while some lecturers may have little experience with digital tools or feel less at ease with them, others may feel more competent and self-assured while utilising them. Furthermore, Walzer (2023) alludes to that educating lecturers about their current skill levels and offering chances for customised professional development might help them feel more at ease and confident while using technology for teaching music.

Antonietti, et.al (2022) reveals that the expectation of effort among lecturers is also significantly influenced by the availability of technical support. Ojugo, et.al (2023) note that lecturers' confidence in integrating technology in teaching music might be bolstered by knowing that help is accessible in case they face technical difficulties. Also, Johnson, et.al (2016) explain that lecturers can bring their issues to the attention of school administrators and district technical support mechanisms, including help desks, online forums, or IT staff, to receive prompt assistance as needed.

Lecturers can boost students' effort expectancy by enhancing their technological skills and confidence (Isik, 2023). This, in turn, boosts student engagement and learning outcomes. Again, Liu (2024) reveals that factors like technology complexity, user-friendly interfaces, and alignment with music education goals can also influence lecturers' effort expectancy. Thus, tailoring professional development to individual needs can further enhance this process.

2.1.3 Social Influence

Another significant factor within the Unified Theory of Acceptance and Use of Technology (UTAUT) that affects individuals' intention to use technology is social influence (Marikyan & Papagiannidis (2021). Again, Jang, Moon, Jung, Cho and Bonn (2024) reveal that social influence encompasses the influence of social norms, subjective norms, and social pressures on

technology acceptance. In the context of music education, Alhammadi, et.al (2023) note that social influence plays a crucial role in shaping lecturers' attitudes and intentions toward technology acceptance. Some aspects related to social influence in the context of teaching music include social norms, subjective norms and social pressures.

Merrick and Joseph (2023) reveal that lecturers' perceptions of the prevailing social norms regarding technology use in music education can impact their acceptance and adoption of technology. If lecturers perceive that their colleagues, administrators, and the broader educational community value and support the integration of technology in teaching music Hopcan, et.al (2023) note that if there is a perception of resistance or scepticism towards technology use, lecturers may be less inclined to adopt it. Creating a culture that values and promotes the use of technology in teaching music

Jermsittiparsert, et.al (2023) note that subjective norms refer to individuals' perceptions of the expectations and opinions of important others regarding technology use. Kushnir (2023). Nzayisenga, et.al (2023). Lecturers' beliefs about what their colleagues, administrators, students, and parents expect from them in terms of technology integration can influence their acceptance of technology use in teaching music. Songkram, et.al (2023). Teo and Zhou (2014). Supportive and positive subjective norms that encourage and endorse the use of technology in teaching music can influence lecturers' intentions and motivate them to integrate technology in teaching music.

Sharma, et.al (2023) mention that social pressures, such as organisational policies, mandates, or incentives, can influence lecturers' technology adoption decisions. Zhang (2023). When educational institutions or districts promote and provide incentives for the integration of technology in music education, lecturers may feel compelled to integrate technology in teaching music to align with the expectations and requirements. Deacon, et.al (2023). Conversely, if there are no clear policies or incentives, lecturers may perceive less pressure to adopt technology. Alam and Mohanty (2023). Establishing clear guidelines, policies, and supportive measures can create positive social pressures that encourage lecturers to embrace technology integration in teaching music.

UTAUT promotes technology integration in music education by creating an encouraging environment (Maurlen & Pranoto (2023). Aithal and Maiya (2023). This includes fostering a culture that values technology, promoting collaboration, and showcasing successful technology integration in teaching music. Again, Carter, et.al (2023) reveal that addressing resistance and providing professional development opportunities can build confidence and foster a sense of community. This approach enhances student engagement and achievement.

2.1.4 Facilitating Conditions

Facilitating Conditions is an important factor within the Unified Theory of Acceptance and Use of Technology (UTAUT) that influences individuals' intention to use technology (Wang, et.al, 2023). Further, Lousã and Lousã (2023) facilitating conditions refers to the availability of resources, technical support, and training necessary for individuals to effectively use technology. According to Crawford (2017) in the context of technology integration in teaching music, facilitating conditions are crucial to support lecturers in integrating technology effectively.

Peng, et.al (2023) are of the view that having a robust technological infrastructure is essential for successful technology integration. Further, Wang (2023) reveals that this includes access to reliable internet connectivity, appropriate hardware, such as computers, tablets, or musical instruments with digital capabilities and relevant software or applications. Zhang (2023) points out that adequate access to resources ensures that lecturers can effectively implement technology integration in teaching music and utilise technology tools for teaching and learning.

Dahri, et.al (2024) reveal that the availability of technical support is vital for lecturers when encountering technical issues or challenges. Taghizadeh and Ejtehadi (2023) reveal that having access to IT personnel, help desks, or online support forums can provide lecturers with the necessary assistance and troubleshooting to overcome any barriers they may face. Merrick and Joseph (2023) explain that technical support helps alleviate concerns and increases lecturers' confidence in using technology, enabling them to effectively integrate technology in teaching music.

Alkaabi (2023) mentions that continuous professional development opportunities are crucial for lecturers to enhance their technological skills and pedagogical knowledge. Further, de Bruin and Merrick (2023) reveal that training programs, workshops, conferences, or online courses can

provide lecturers with the knowledge and skills necessary to effectively integrate technology into their music instruction. Again, Junarti, et.al (2023) as well as Sahni (2019) reveal that ongoing professional development ensures that lecturers stay updated with emerging technologies, best practices, and innovative approaches that can enhance student engagement and learning outcomes.

Zaugg, Graham, Lim and Wang (2021) note that creating a supportive network is essential for lecturers to integrate technology in teaching music. Khasawneh, et.al (2023) reveal that a supportive network includes establishing communities of practice, mentorship programs, or collaborative platforms where lecturers can share experiences, exchange ideas, and support each other. Garg, et.al (2024). A supportive network fosters a sense of belonging, provides opportunities for peer learning, and encourages lecturers to explore and implement technology-enhanced teaching practices in music.

The UTAUT framework is a valuable tool for promoting technology integration in teaching music (Lobo, 2023). Ahmad, et.al (2023) reveal that the UTAUT framework outlines the importance of facilitating conditions, such as access to resources, technological support, and professional development opportunities, to support lecturers in accepting technology integration in teaching music. Alshahrani (2023) mentions that regular assessment of these conditions can identify gaps and improve the effectiveness of integrating technology in teaching music. The model also considers individual characteristics and contextual factors, guiding the development of targeted interventions and support systems.

2.2 Technology integration in teaching music

Technology integration in teaching music is becoming more and more common, completely changing how students compose, learn, and interact with music (Webster & Williams 2018). Again, Liu (2024) notes that through an analysis of the advantages, obstacles, and optimal methodologies associated with technology utilisation in music, lecturers can fully utilise technology to augment the teaching of music and enable students to be creative in their music activities. Further, Rajaram (2023) reveals that utilising technology enhances student engagement, creativity, and learning outcomes. Again, Carter, et.al (2024) reveal that technology offers interactive and immersive learning experiences, allowing students to explore music

creation, performance, and analysis through digital tools and platforms. Furthermore, Lancaster (2022) notes that the utilisation of technology in teaching music leads to increased student motivation, active participation, and a sense of ownership over the learning process. However, lecturers may face challenges related to technical skills, access to resources, and time constraints. Comprehensive professional development programs are needed to equip lecturers with the necessary technological and pedagogical knowledge to successfully integrate technology in the teaching of music.

There are several ways in which technology can improve teaching and learning experiences. Yuan (2024) notes that there is a need for more access to online databases, digital sheet music, recordings, tutorials, and other musical materials to improve teaching and learning. Further, Okoro, et.al (2024) reveal that with access to technology, students can study and explore on their own, broaden their musical horizons, and get familiar with a variety of musical genres and cultural traditions.

According to Turchet, et.al (2018), technology makes it easier for students to study actively and collaboratively, which is beneficial for the teaching of music. Students can participate in practical music-making activities through interactive software, virtual instruments, and music production tools, which promote creativity, experimentation, and self-expression. Turchet, et.al (2018) note that remote collaboration is made possible by online platforms and video conferencing tools, which link students with professionals and peers worldwide.

Technology makes it possible to provide personalised and individualised instruction in the field of music. (Crawford, 2017). With the help of adaptable exercises and focused feedback, intelligent tutoring and adaptive learning systems may customise training to meet the needs of each learner. Further, Carter, et.al (2024) reveal that in fostering engagement and success, this individualisation supports each student's distinct learning preferences, aptitudes, and interests. In music instruction, Liu (2024) notes that technology offers the potential for quick and thorough feedback. Students' performances can be analysed by digital technologies, which can then provide immediate feedback on technique, rhythm, and intonation. Students can accelerate their skill development by self-evaluating and making necessary improvements with the help of this feedback. Additionally, digital platforms make efficient and thorough assessment possible, allowing lecturers to monitor students' progress and offer constructive criticism.

In music education, according to Webster and Williams (2018), technology provides tools for composition and creative expression. Students have access to tools for creating, arranging, and producing their music, including digital audio workstations, notation software, and smartphone apps. Gazzano (2024) alludes to that participation in the full music-making process, creativity, critical thinking, and problem-solving abilities are fostered. Students can participate in opportunities for authenticity. Further, Kumar and Nanda (2024) reveal that technology allows students to connect with other artists, receive comments, and share their performances with a worldwide audience through social media and online platforms. Students can experience immersive performances by being transported to historical locations or music halls using virtual reality and augmented reality technologies.

According to Frid (2019), technology can help make music education more accessible and inclusive. With the use of assistive technologies, such as screen readers and adaptable instruments, students with disabilities can have an active role in creating music. Ramos and Oliveira (2024) explain that digital tools with transcription, translation, and captioning capabilities let a variety of learners interact with music. The literature does, however, also recognise the difficulties in integrating technology, such as the requirement for lecturers to receive proper training and support, the risk that technology would become a distraction, and worries about equitable access to technology for all student populations.

2.3 The significance of technology utilisation in teaching music

Utilising technology in teaching music according to Sahni (2019) is vital for improving student engagement, creativity, and learning outcomes in teaching music are substantial. According to Carter, et.al (2024) technology offers enhanced involvement of students through interactive learning opportunities offer can greatly increase student involvement in teaching music. Further, Hugill (2018) reveals that through the integration of digital tools, multimedia materials, and online platforms, students can engage with music in a variety of ways, including composition, performance, analysis, and group projects. Furthermore, Carter, et.al (2024) allude to the fact that technology-mediated learning experiences that are interactive can hold students' interest, encourage their involvement, and give them a sense of agency and ownership over their musical journey.

Tailored Education Programmes Personalised learning experiences that are catered to each student's requirements and interests are made possible through technology utilisation (Dakhi, et.al 2020). Further, Bizami, et.al (2023) reveal that online resources and technological tools provide adaptable features and resources that can be tailored to suit various learning preferences and styles. Also, Correia and Simões-Marques (2023) reveal that students can access a range of tools catered to their individual learning goals and tastes, study music at their speed, and get quick feedback. Furthermore, Qisen, et.al (2023) reveal that in music education, this personalisation can improve students' sense of independence, self-direction, and intrinsic drive.

There is increased originality according to Hlatshwayo (2023) when utilising technology in teaching music, students have access to digital resources and technologies that can encourage and support their musical creativity. Bizami, et.al (2023) note that virtual instruments, notation software, and digital audio workstations are just a few examples of the technological tools that open countless options for musical expression and exploration. In addition, McArton (2023) notes that to create original music, students can remix tracks, explore other genres and soundscapes, and arrange already-written pieces. Furthermore, McArton (2023) reveals that students' creative horizons are broadened by the incorporation of technology into music instruction, which enables them to discover new musical expression channels and cultivate their distinctive artistic voices.

Technology utilisation, according to Chen, et al. (2022) encourage working together and communicating. Again, Ashraf, et.al (2021) reveal that students who use technology in their learning are more likely to collaborate and communicate with one another both in person and online. With the help of technology, Webster & Williams (2018) notes that students may interact and work together with classmates across time and location barriers. Turchet, et.al (2018) note that students can work on collaborative projects, perform in public, get criticism, and have insightful conversations about music. In addition, Thornhill-Miller, et.al (2023) note that in developing students' musical abilities, collaborative learning environments foster critical interpersonal and social competencies including empathy, communication, and teamwork.

Crawford (2017) mentions that technology integration aids lecturers to have more access to a greater variety of resources and knowledge to promote student engagement in teaching music. Further, Johnson (2023) notes that students get access to an extensive library of musical

compositions, performances, tutorials, and educational resources via online platforms and digital libraries. Also, Moroz and Vear (2023) reveal that students have access to excellent recordings, musical notations, background information, and critiques of many musical styles and traditions. Moreover, Yu (2023) postulates that virtual master classes, online mentoring, and cooperative projects enable students to engage with professional musicians, composers, and music lecturers from across the globe through technology. Furthermore, Chawke (2023) reveals that students' perspectives are expanded, their musical knowledge is enhanced, and a greater understanding of music is fostered by having access to resources and expertise.

In teaching music integrating technology in teaching music provides a transformative learning environment that improves learning results, student engagement, and creativity (Dakhi, et.al, 2020). Again, Turchet, et.al (2018) note that music lecturers can create dynamic, personalised, and collaborative learning experiences that ignite students' passion for music, support their musical development, and equip them to take an active role in the music landscape of the 4th Industrial Revolution and beyond by strategically and purposefully integrating technology.

2.3.3 The opportunities and challenges of utilising technology in teaching music

While integrating technology into the teaching of music has many potential advantages, there are drawbacks as well. The possible advantages include the use of mixed techniques for teaching and learning, increased resource access, innovation and teamwork and flexibility in terms of time and location.

2.3.3.1 Possible opportunities for using technology in teaching music

Using technology according to Sahni (2019) allows for mixed techniques that are used in music education and student engagement is increased. Carter, Harrington and Ahrendt (2024) note that by offering individualised and interactive learning experiences, technology has the potential to raise student engagement levels. Bizami, et.al (2023) mention that technology tools, internet platforms, and multimedia materials may draw students in, encourage their involvement, and give them a sense of control over their musical education.

Students using technology have access to a variety of musical materials outside of the regular classroom. Turchet, et.al (2018) reveal that digital libraries, virtual collaborations, and online

platforms provide access to a wide range of musical genres, performances, compositions, and specialist knowledge that might not always be easily found in a local environment.

Technology utilisation according to Thornhill-Miller, et.al (2023) encourages innovation and teamwork in music activities. Further, Dakhi, et.al (2020) reveal that students can use digital tools and resources that promote creativity and teamwork through technology utilisation. Furthermore, Turchet, et.al (2018) reveal that with the use of virtual instruments, notation software, and digital audio workstations, students can write, arrange, produce, and share their music.

Utilising technology encourages peer collaboration in online platforms, which facilitates remote composition, performance, and feedback sharing (Porter & Grippa, 2020). Again, Boelens, et.al (2018) mention that in enabling lecturers to customise learning experiences to meet the requirements and learning preferences of each student, technology enhances differentiated instruction. To foster a more diverse and productive learning environment, Ali (2023) reveals that technology solutions can offer resources that accommodate a range of learning preferences, adaptable features, and personalised feedback.

When utilising technology in teaching music, Cardoso, et.al (2023) reveal that there is flexibility in terms of both time and space. Again, Korson (2023) mentions that flexibility in terms of time and location is provided by technology utilisation. Baidoo-Anu and Ansah (2023) reveal that online assignments, practice tools, and learning materials are available for students to use whenever it's convenient for them. Beirnes and Randles (2023) note that due to technology adoption and utilisation there could be different schedules and learning styles, making it easier to teach a larger group of students.

There is technical infrastructure and resources specific for technology utilisation in music education (Hlazunova, 2023). Again, Crawford (2017) emphasises that adequate technological infrastructure, such as dependable internet access, suitable hardware, and software resources, is necessary for technology utilisation in teaching music. Patterson (2023) also explains that all students must have access to the required technology, and districts and schools must make sure that technical help is available to handle any problems that may come up. Dakhi, et.al (2020) reveal that for proper technology utilisation in teaching music, lecturers should receive

professional development and training. Further, Webster and Williams (2018) explain that to successfully incorporate technology into music education, lecturers need to undergo professional development and training. Again, Bizami, Tasir and Kew (2023) reveal that lecturers may need more time, resources, and assistance to become proficient with digital technology in teaching music. Okoro, et.al (2024) mention that it might be difficult to strike a balance between traditional training and technology. Thus, to retain the integrity of the music-making process and take advantage of technology integration in teaching music, lecturers must decide when and how to use technology in various musical situations.

Dakhi, et.al (2020) allude to the fact that in digital technology learning environments, assessing and evaluating student learning can be challenging. It could be necessary to modify conventional evaluation techniques to allow for performance recordings, group projects, and digital submissions. Lecturers must make sure that assessment procedures are in line with the learning goals and accurately gauge the progress and accomplishments of their students in music.

There should be accessibility to digital tools in utilising technology in teaching music as Webster and Williams (2018) note that disparities in access to resources and technology in educational institutions. However, Dakhi, et.al (2020) also note that it may be difficult for students from underprivileged homes or with little access to technology outside of the classroom to participate in virtual learning environments. It is essential to guarantee fair access to technology and support to both lecturers and students. Despite the many advantages to utilising technology in teaching music, resolving issues to do with limited digital technology tools, internet connectivity technical infrastructure, giving lecturers chances for professional development, and taking equity in access into consideration is vital.

2.3.3.2. The challenges of technology utilisation in teaching music

Music lecturers may run across several obstacles and difficulties when utilising technology in the classroom. Cao (2024) reveals that one major obstacle facing music lecturers is the lack of training and technical skills necessary to successfully incorporate technology into their lesson plans. Again, Nart (2016) notes that many lecturers lack prior training or knowledge of the online resources, software, and digital tools frequently utilised in technology environments. Cao

(2024) also reveals that professional development and support are necessary because gaining technical skills and confidence in using these tools can be a barrier.

Major (2013) mentions that in schools or districts with little money or infrastructure, music lecturers may face major challenges in getting the tools and technology they need. Further, Nart (2016) notes that lecturers may find it more difficult to use technology if they do not have access to computers, software, digital tools, or dependable internet connectivity. Disparities in student engagement and learning experiences can also result from unequal access. Due to their busy schedules, numerous lessons, rehearsals, and performance engagements, music lecturers sometimes struggle with time limits. Planning, creating online resources, and giving personalised feedback take more effort when integrating hybrid approaches. Lecturers could find it difficult to find the time needed to adopt technology in teaching music successfully.

Resistance to change can be a major obstacle to the adoption of technology in teaching music. Lecturers may be reluctant to adopt new technologies or instructional strategies since they are used to using old teaching approaches (Bokiev, et.al, 2018). It can be necessary to create a supportive school climate, offer professional development opportunities, and utilise technology to cultivate a positive attitude toward change. Music lecturers may have difficulties when it comes to evaluating and assessing student work in virtual learning environments (Cruywagen & Potgieter, 2020). It can be necessary to modify conventional evaluation techniques for use in online settings, such as written tests or in-person performances. It can be difficult to evaluate students' musical abilities, originality, and comprehension in digital formats without giving it much thought.

Not all students have their individual needs met by utilising technology in their learning as some students can find it difficult to learn on their own or could need more help and direction (Cruywagen & Potgieter, 2020). In virtual learning environments, it might be difficult to provide fair access, accommodate different learning styles, and modify instruction to encourage individual student involvement. Music lecturers may find it difficult to access opportunities for professional development that are unique to adopting technology in learning music (Bokiev, et.al, 2018). Limitations in accessing pertinent training, workshops, and resources can impede lecturers' capacity to improve their proficiency in integrating technology.

A comprehensive strategy that incorporates chances for professional growth and Webster and Williams (2018) note that technology and resource access, time management techniques, and support networks are needed to address these obstacles and problems. It is imperative that educational institutions, including schools and districts, offer continuous support, sufficient resources, and a nurturing atmosphere to enable music lecturers to surmount these obstacles and effectively integrate technology into music instruction.

2.4 Student Engagement in Teaching Music

In music education, Mikalayeva (2016) reveals that student involvement is critical because it affects students' motivation, skill development, and overall musical development. Again, Sahni (2019) reveals that lecturers may design meaningful and interesting learning experiences that enable students to take an active role in their musical journey by knowing the factors that influence student engagement. Further, Mantie, et.al (2021) allude that active participation in music-making activities fosters a sense of ownership, enjoyment, and personal fulfilment in students. The focus of this section is on how important it is to inspire students, help them develop their skills, and encourage their general musical development.

2.4.1 Skills obtained through student engagement in teaching music

To promote motivation, skill development, and overall musical growth, student engagement in music education is essential (Mikalayeva, 2016). According to Crawford (2017), encouraging positive learning experiences and outcomes in music education requires a high level of student participation. Further, Mikalayeva (2016) notes that interest and motivation exist for students to participate in music education. Again, Green (2017) reveals that higher levels of enthusiasm and interest in learning are exhibited by students who are actively involved in music instruction. Furthermore, Silverman (2021) indicates that students feel a sense of satisfaction and self-fulfillment when they actively participate in music-making activities, such as composing, improvising, or performing. Also, Czerwiński, et.al (2023) reveal that higher effort, perseverance, and a stronger dedication to learning music are the results of this internal drive.

Student engagement in music education is characterised by a sense of ownership (Sahni, 2019). Further, Czerwiński, et.al (2023) reveal that active learners experience a feeling of control over their musical education and take ownership of establishing objectives, making decisions, and

keeping track of their advancement. Krause and Davidson (2018) note that students who feel that they have a say in their music can take an active role in it, which increases their dedication to and investment in their further development. Also, De Bruin (2021) reveals that student engagement in music instruction is characterised by an emotional connection. Furthermore, Krause and Davidson (2018) mention that active learners frequently form a deep emotional bond with music and their entire musical experience is enhanced by the variety of emotions they go through when playing or listening to music.

Student engagement in music education involves skill development and showed improved skill development across a range of musical areas (Cao, 2024). Again, Shourkaei, et.al (2024) point out that active practice results in constructive criticism and students who are involved in music education include musical identity and well-being. Students who are actively involved in their studies frequently form a strong sense of musical identity, which benefits their general well-being. Krause and Davidson (2018) note that music becomes an essential component of their sense of self as a tool for social interaction, self-expression, and personal development since positive feelings, boosted self-esteem, and a sense of connection within the music community are all experienced by engaged students.

Student engagement in music instruction can be transferred to other contexts and active learners of music frequently gain skills that are applicable outside of the classroom (Cao, 2024). Further, Thornhill-Miller, et.al (2023) reveal that teamwork, communication, creativity, problem-solving, and critical thinking are some of these abilities. Participating actively in musical activities helps to develop these abilities, which have applications in both academic and non-musical settings.

The body of research emphasises the significance of student participation in music education for overall musical development, skill enhancement, and motivation (Mikalayeva, 2016). Students who are actively involved in their education are more likely to discover the joy of music, grow to love learning for the rest of their lives, and become more proficient musicians. Lecturers ought to try to establish stimulating learning environments that encourage students' emotional connection to music, encourage active engagement, and nurture a sense of ownership.

2.4.2 Models of student engagement in the context of music education

Several models have been put out in the context of music education to explain and comprehend student engagement (Crawford, 2017). These models offer frameworks for looking at the various aspects and elements that go into making students interested in music. Amato-Henderson and Sticklen (2022) reveal that there are three components of student engagement in music cognitive, affective, and behavioural are all included in the comprehensive model known as the MEI, which was created by McPherson and Davidson (2006). Further, Van Der Schyff, et.al (2018) note that the active thinking and processing of musical information by students is referred to as the cognitive dimension and students' emotional responses to music, such as their motivation, interest, and enjoyment, are the emphasis of the affective dimension. Thus, the involvement and active participation of students in music-making activities is related to the behavioural dimension.

Upadhyay, et.al (2017) allude that there is the Music Engagement Model (MEM) which was put forth by Sloboda, Davidson, Howe, and Moore in 1996, places a strong emphasis on the contribution that both environmental and individual elements make to student involvement. The Music Engagement Model implies that contextual elements like the standard of education, social interaction, and the accessibility of chances and resources, in addition to individual qualities like motivation, self-efficacy, and musical aptitude, all have an impact on engagement (Mikalayeva, 2016).

Groarke and Hogan (2020) describe the Engagement in the Music Listening Scale (EMLS) model by Creech, et.al (2023) which was developed with a specific focus on student engagement in music-listening activities. Groarke (2017) reveals that the engagement in Music Listening Scale (EMLS) model looks at participation from three angles, for example, behavioural physical movement, active listening techniques, effective for example, emotional response, enjoyment, and cognitive like focused attention, and mental effort.

According to Comeau, et.al (2019), the Motivational Model of Music Learning (MMML) introduced by Bonneville-Roussy, et.al (2011) highlights the importance of motivation in student engagement. According to Asmus (2021) in this Motivational Model of Music Learning theory, three motivational variables affect students' involvement with music, identifiable regulation,

such as personal importance and value, rewards, and recognition, as well as intrinsic motivation, like interest and enjoyment. Thus, the theory emphasises how crucial it is to develop an intrinsic drive to encourage consistent musical involvement.

These models offer insightful frameworks for comprehending the complex aspects of student involvement in music education (Barkley & Major, 2020). Again, Lawson and Lawson (2013) theories draw attention to the human and environmental elements that affect student involvement in addition to the cognitive, affective, and behavioural components of engagement. Therefore, lecturers need to create learning settings and instructional practices that encourage student participation and improve their musical experiences by taking these models into account.

2.4.3 The factors that influence student engagement

Student engagement in music education is influenced by several factors, such as curriculum design, teaching tactics, and the use of technology (Webster & Williams, 2018). Woody (2024) reveals that student participation in music education is greatly influenced by the instructional tactics used. According to Carter, et.al (2024), active learning techniques that motivate students to participate fully in music-making activities are among the effective tactics that consist of inquiry-based learning, project-based learning, and cooperative learning. Thus, giving students the chance to compose, improvise, perform, and think back on their musical experiences encourages ownership and engagement with the material.

Curriculum design according to Carter, et.al (2024) affects how involved students are in music instruction, a thoughtfully created music programme can raise student interest. Notably, Ng, et.al (2022) reveal that engagement can be increased by a curriculum that strikes a balance between creative musical experiences like composition and improvisation and fundamental musical abilities like technique, theory, and ear training. Including a range of musical genres, styles, and cultural viewpoints in the curriculum can further boost students' enthusiasm and interest (Carter, et.al, 2024). Curriculum flexibility promotes deeper engagement by enabling students to pursue their unique musical interests and objectives. Additionally, Carter, et.al (2024) mention that the integration of technology affects students' involvement in music education. Woody (2024) alludes to that technology has a big part to play in encouraging student participation in music

instruction. Further, Nart (2016) and Hugill (2018) reveal that online resources, software programs, and digital tools can offer individualised and interactive learning experiences.

With the help of technology, Webster and Williams (2018) note that students may work remotely with peers, access a vast array of musical resources, and get quick feedback on their performances. Students can explore and express their creativity with the help of recording tools, music production software, and virtual instruments. Further, Webster and Williams (2018) explain that to preserve the integrity of the music-making process, however, a balance between technology and conventional methods must be struck. Woody (2024) reveals that student participation in music instruction is influenced by the teacher-student relationship and building strong bonds between lecturers and students is essential to encouraging student participation in music education. When lecturers create a caring and encouraging atmosphere, students feel appreciated and are inspired to actively engage in music-related activities. Lecturers who are passionate and enthusiastic about music inspire their students and foster a great learning environment. Developing a relationship with students, offering helpful criticism, and highlighting their accomplishments all help them feel included and engaged.

Including musical experiences that are both diverse and pertinent to a student's culture in the curriculum might help increase student involvement and it fosters a sense of inclusivity and relevance when lecturers acknowledge and value the musical backgrounds, interests, and cultural perspectives of their students (Barton & Riddle, 2022). Further, Barrett (2023) explains that giving students the chance to listen to music from other genres and cultures encourages curiosity, expands their musical horizons, and strengthens their bond with the subject matter. Furthermore, Kubiszyn and Borich (2024) mention that student involvement may be impacted by how assessments are administered, and feedback is given, and students are more likely to participate actively and invest in their musical development when assessments are relevant to them and match learning objectives. Thus, giving students timely, helpful feedback that emphasises their strengths and areas for development encourages them to be motivated and involved. Students who are encouraged to reflect and evaluate themselves are better able to take charge of their education.

2.4.4 The impact of technology integration on student engagement

The effects of integrating technology into music education have shown that it improves performance outcomes, collaborative learning, student engagement, and musical originality. The following are some important conclusions from these studies (Turchet, et.al, (2018). Student engagement is the outcome of the effect of technology integration on student engagement (Sahni, 2019). Research indicates that the incorporation of technology in music teaching can improve student involvement. Further, Okoro, et.al (2024). Again, Woody (2024) reveals that students that utilise music technology in the classroom showed higher levels of enthusiasm, attention, and active participation than those receiving traditional education. Students' attention is captured and their excitement for learning music is fostered by the interactive and hands-on learning experiences that technology offers.

The effect of technological integration on student participation leads to musical creativity. Bizami, et.al (2023) reveal that students can foster their musical creativity with the help of technological tools and platforms. According to a 2016 study by Harrison and Barrett, students' compositions showed more inventiveness when technology was incorporated, especially when digital audio workstations and composition software were used. With the use of technology, students can explore their musical ideas, experiment with various sounds, and alter musical elements, which helps them express themselves creatively when they make music.

Collaborative learning is the outcome of how technology integration affects student involvement (Turchet, et.al, 2018). In music education, integrating technology makes collaborative learning experiences easier. Students can communicate virtually, discuss musical ideas, and create music as a group through online platforms, virtual instruments, and digital audio workstations. According to a 2013 study by Gresalfi and Cobb, technology-enabled collaborative music composition projects improved students' teamwork, communication, and shared creative ownership.

The effect of technology integration on student engagement is provided by performance outcomes (Sahni, 2019). Integration of technology has been demonstrated to improve student performance in music. According to research by Baker and Boulton (2018), students' performance accuracy, rhythmic precision, and overall musical expressiveness all improved

when they employed technology in their music practice. Turchet, et.al (2018) note that technology gives students the means to practice, receive feedback, and evaluate themselves, which helps them become more proficient musicians and improve their performance abilities.

Students' engagement with technology is impacted by inclusivity and accessibility. The incorporation of technology in music education has promise for fostering inclusivity and accessibility. Assistive technologies, such as screen readers, adaptable instruments, and other input devices, can help students with physical restrictions or disabilities participate more actively in music-making. Additionally, technology offers transcription, translation, and captioning capabilities that improve diverse learners' access to music content.

While there are many advantages to technology integration, it is crucial to remember that its effective application depends on teacher support and training, sufficient access to digital resources, and careful integration into the curriculum. Furthermore, research is still being conducted in these areas, and more studies are required to completely comprehend the long-term effects of technology integration on the academic performance of music education students.

In this 21st century, Dakhi, et.al (2020) reveal that adopting technology in the education system has drawn a lot of attention. According to Sahni (2019) technology-enhanced learning experiences, boost student engagement and encourage meaningful musical learning. This section examines how technology enhances students' involvement in music education, emphasising both the advantages and difficulties of putting them into practice. To maximise student involvement and learning outcomes, it also addresses how technology fosters student engagement and provides important ways for integrating technology into music.

2.5 Instructional strategies for successful technology integration in music

Technology tools, supportive learning settings, and good teaching practices are all necessary for successful technology adoption in teaching music. In utilising technology, students have access to learning resources like reading lists and videos outside of the classroom, freeing up class time for interactive music-making, group projects, and individualised instruction (Carter, et.al, 2024). Tsugawa. (2023) explains that both synchronous and asynchronous learning activities are possible in technology-enhanced learning environments. Real-time interactions occur during synchronous activities, which include online classes, virtual rehearsals, and music ensemble

performances. Self-paced learning, watching lectures that have already been recorded, taking part in online forums, and turning in assignments are examples of asynchronous activities.

Online learning platforms provide a central location for students to access course materials, turn in assignments, participate in conversations, and get feedback (Turchet, et .al, 2018). Again, Sharifov and Mustafa (2020) learning management systems (LMS), such as Moodle, Canvas, or Google Classroom, are widely utilised for communication facilitation, content organisation and delivery, and student progress monitoring.

Moroz and Vear (2023) allude that digital audio workstations, or DAWs, are indispensable instruments for technology-enhanced learning in teaching music. Digital audio workstations (DAWs) such as Ableton Live, Logic Pro, or GarageBand allow students to record, edit, and produce music. With virtual instruments and MIDI controllers, students can compose, arrange, practice performance skills, and work with classmates on group projects. Clauhs (2020) mentions that students can write, edit, and exchange musical scores digitally with notation software like Sibelius, Finale, or MuseScore. Students can analyse scores, transcribe music, and notate their works. Since notation software and DAWs frequently work together, students can hear their works played back and make any required edits.

2.5.1 Technology utilisation students on student engagement

Technology utilisation allows students to have greater access to a greater variety of sounds and instruments (Acquilino & Scavone, 2022). Again, Belingheri, et al. (2023) reveals that playing notes through plugins or stand-alone software, students can use virtual synthesisers, guitars, drums, pianos, and symphonic instruments. Technology adoption also allows students to experiment with sound design, explore a variety of musical genres, and practice playing various musical instruments with virtual instruments. Turchet, et.al (2018) reveal that online collaborative tools help students to collaborate, and work together remotely on music projects, record and mix performances, or play in an ensemble in real-time with tools like Soundtrap, BandLab, and JamKazam. Estriegana, Teixeira, Robina-Ramirez, Medina-Merodio and Otón (2024) note that peer assessment and feedback are a common feature in technology adoption in teaching music. Through online forums or video exchanges, students can give helpful criticism

of each other's compositions, performances, or improvisations. This encourages the growth of a caring learning community, active listening abilities in students, and student participation.

According to Cuervo, et.al (2023), effective integrated music education guarantees that all students have equal access to technological tools and resources, and this covers factors including device accessibility, internet connectivity, and students with varying skill levels. An effective technology-enhanced learning environment must offer alternatives, take individual needs into account, and encourage diversity. Krause and Davidson (2018) reveal that support for lecturers and opportunities for professional growth is essential to the effectiveness of mixed music education. Effective adoption is facilitated by chances for ongoing professional development, education on technology integration, and assistance from instructional technology professionals. Thus, lecturers should provide a safe and stimulating learning environment for their students by offering advice, criticism, and individualised teaching. Crawford (2017) reveals that efficient teaching approaches in music education integrate strategic teaching methods, appropriate technology, and nurturing classroom settings. Further, (Sahni, 2019) confirms that the adoption of technology is beneficial because it encourages virtual instruction to improve student engagement, personalise learning, and encourage musical creativity and teamwork.

2.5.2 Student engagement in enhancing musical creativity

The benefits regarding student engagement through technology adoption in teaching music, include higher motivation, active participation, personalised learning experiences, and improved musical inventiveness. It has been discovered that using technology in teaching music increases students' motivation and interest in the subject. Learning can be made more interesting and pleasurable for students by integrating technology, interactive online resources, and multimedia features (Carter, et.al, 2024). Thus, students can take charge of their education, set goals, and follow their musical interests through the flexibility and autonomy provided by technology-enhanced learning environments. This increases motivation and gives them a sense of control over their educational path.

Adopting technology promotes student engagement in teaching music education (Crawford, 2017). Through virtual group performances, collaborative projects, and online discussion boards, students may actively interact with one another, exchange ideas, and get feedback. Students can

actively produce, compose, and experiment with music through the usage of digital technologies like digital audio workstations and notation software, which promotes a hands-on approach to learning.

Furthermore, Carter, et.al (2024) reveal that adopting technology in teaching music allows for customised learning experiences. Depending on their requirements and interests, students are free to advance at their speed, go over previously covered content, and access more resources. Adaptive learning elements are offered by online platforms and resources, which enable students to obtain customised feedback and suggestions based on their learning objectives and skill level. This personalisation according to Sahni (2019) fosters a sense of individualised care and increases student engagement.

According to Jiang and Wu (2023), students now have more options for expressing themselves creatively because of integrating technology in teaching music through digital audio workstations, composition software, and virtual instruments. Turchet, et.al (2018) students can collaborate on musical projects using online collaboration platforms, which encourages improvisation, creativity, and group music-making. Students' musical horizons can be expanded, and their creativity stimulated by being exposed to a greater variety of musical genres, styles, and cultural expressions. Jiang and Wu (2023) indicate that student involvement is positively impacted by adopting technology in teaching music. These methods, which combine online and in-person instruction with technology, promote higher levels of motivation, active engagement, individualised learning, and improved musical creativity. These results support students' development, enjoyment, and success in music instruction by creating a more vibrant and interesting learning environment for them.

2.6 Lecturers' Needs and Professional Development

This section examines the needs and professional development of lecturers who teach music. The section also explores the difficulties that lecturers could run into in the adoption of technology in teaching music. Hugill (2018) notes that for lecturers to employ digital tools and online platforms in music instruction, they must develop technology integration skills. Turchet, et.al 2018) reveals that when it comes to using digital audio workstations, notation software, virtual instruments, and online collaboration tools, lecturers require assistance and instruction.

Professional development initiatives aimed at enhancing lecturers' technological proficiency have a favourable effect on their self-assurance and capacity to incorporate technology into their instruction. Further, Dakhi, et.al, (2020) mention that lecturers must possess a solid foundation in both pedagogical knowledge and instructional design principles to integrate technology into teaching music effectively. To create multimedia resources, scaffold learning experiences, and create interesting online activities that encourage active student interaction, lecturers require assistance. Furthermore, Crawford (2017) reveals that music lecturers have found benefits from professional development programs that offer direction on technology-enhancing teaching. Thus, in the context of technology integration in teaching music, lecturers must reconsider how they evaluate students and give them insightful feedback in virtual settings.

Professional development programs that include peer assistance and collaborative learning are successful in meeting the demands of music lecturers (Turchet, et.al, 2018). Facilitating experiences, exchanging ideas, and learning from one another's triumphs and setbacks can augment the professional development and self-assurance of lecturers in adopting technology in teaching music. Further, Turchet, et.al (2018) explain that lecturers' adoption of technology in teaching music can benefit from the continuous support and resources offered by collaborative platforms and communities of practice. Again, Powell and Bodur (2019) reveal that programmes for professional development should be customised to meet the unique needs of lecturers, offer practical experience, and present chances for introspection and criticism. Music lecturers can benefit from ongoing professional development and support through long-term support initiatives, mentorship programmes, and networking and resource access.

Minhas, White, Daleure, et.al (2021) note that for technology to be successfully integrated into music education, there must be institutional support. Further, Koatz, et.al (2024) reveal that institutional support includes time set aside for professional development, access to technology resources, and administrative assistance. Recognising the special requirements of music lecturers, schools and districts should set up the infrastructure, resources, and policies required to support their professional growth in the context of technology integration into teaching music.

2.6.1 Professional Development Models

Various professional development methods and tactics according to Minhas, et.al (2021), assist lecturers in gaining the pedagogical and technological expertise required for successful technology integration into teaching in the classroom. This type of professional development centres on giving lecturers guidance and assistance while they carry out their everyday teaching duties. With this method, lecturers can gain new abilities and techniques while using them right away in the classroom. Cowart (2023) notes that programmes for coaching and mentoring, group lesson planning, and peer observation and feedback are a few examples. It has been discovered that job-embedded professional development works well in enhancing lecturers' pedagogical and technological expertise and encouraging long-term implementation.

These cooperative networks allow lecturers to share ideas, pool their knowledge, and participate in continuing professional development. These communities might emerge online, in school districts, or on school premises. Lecturers can gain access to a plethora of collective information, receive support, and have reflective conversations by taking part in communities of practice. Communities of practice have been found to improve lecturers' confidence in using technology in their teaching. Turchet, et.al (2018) Collaborative learning techniques encourage lecturers to communicate with one another and work together, sharing ideas, knowledge, and resources. Study groups, professional learning communities, cooperative projects, and other formats are examples of collaborative learning. Again, Cao (2024) mentions that lecturers can gain new skills, share knowledge, and assist one another in successfully integrating technology and pedagogy by cooperating.

Furthermore, Schwichow, et.al (2016) allude to that lecturers can receive direct instruction and hands-on practice with technological tools and teaching practices at hands-on workshops and training sessions. Instructional coaches, technology professionals, or outside experts can lead these workshops. Basche, et.al (2021) discovered that lecturers' technical confidence and skills can be improved through practical workshops that offer opportunities for practice, modelling, and step-by-step assistance.

Lecturers can obtain technological and pedagogical expertise with flexibility and accessibility through online professional development. Opportunities for self-paced learning, interactive

debates, and cross-border collaboration are offered through online courses, webinars, and virtual conferences (Carter, et.al, 2024). Online professional development offers a variety of themes and materials connected to technology integration into the education system, thereby catering to the individual requirements and interests of lecturers. Two key elements of successful professional growth are encouraging reflective practice and offering helpful criticism. Opportunities that allow lecturers to assess how they use technology, think about how they might enhance their pedagogical strategies, and reflect on their teaching methods are beneficial. Cowart (2023) reveals that peer, instructional leader, or technology coach feedback can assist lecturers in pinpointing areas that require development and offer direction for bettering their teaching.

Lecturers must get continual assistance and sustained professional development to advance their pedagogical and technological expertise. Follow-up meetings, coaching, mentoring, and access to resources and communities of practice are a few examples of long-term support. Giving lecturers ongoing support over a long period enables them to overcome obstacles, hone their craft, and keep up with new developments in pedagogy and technology. Turchet, et.al (2018) a variety of techniques combined in effective professional development models and tactics to help lecturers, such as job-embedded support, online resources, collaborative learning, practical training, reflective practice, and long-term support. Providing opportunities for continuous learning and collaboration, as well as tailoring professional development to meet the unique needs of lecturers, is essential to enabling them to gain the pedagogical and technological know-how required for successful technology integration into the classroom.

2.7 Research gap(s)

While the findings provide insights into the present teaching methods used by the college's music teachers, there are some gaps in the existing research that require more investigation. One significant gap is the effect of professional development initiatives on lecturer confidence in adopting technology. There is a need for a study that looks at the specific training and support mechanisms offered to lecturers to help them adopt technology in teaching music. Research is needed to understand how targeted professional development programmes customised to the needs of music lecturers might influence their confidence and, eventually, lead to increased student learning and performance.

Furthermore, there is a gap in fully addressing the specific demands of the varied student populations in the music programme. According to the findings, the lecturers want all students, regardless of their subject of study, to have a "general understanding of music theory". However, more study is needed to investigate the specific issues and implications when working with special needs students or those from culturally diverse backgrounds. Understanding these distinctions can help generate more inclusive and successful teaching practices that address the student body's different learning styles and backgrounds.

Addressing these research gaps may provide useful insights into improving the overall quality and responsiveness of the college's music education programme. Future research on the impact of professional development programmes and the requirements of varied student groups can help to inform the creation of more tailored, evidence-based methods for music instruction that better serve the entire student population.

2.8 Chapter Summary

The literature review highlights the importance of support for music lecturers in integrating technology in teaching music. Lecturers need to develop technological skills, pedagogical knowledge, and instructional design principles to create engaging online activities. Assessment strategies should be adapted for online formats, and collaboration, peer learning, and communities of practice are crucial for professional growth. However, there are gaps in research, such as the impact of professional development approaches on lecturers' confidence and student outcomes. Further research should explore the specific needs of diverse student populations and the challenges of working with special needs or culturally diverse students. The next chapter presents the research methodology of this study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

The literature related to the study was reviewed in the preceding chapter. This chapter presents the research methodology. The chapter outlines the interpretative philosophical paradigm that would be applied in the study, the qualitative research approach, the research design, the target population, and the sample procedures that were employed. The chapter also highlighted the pilot study, ethical considerations, and data analysis as well as providing a chapter summary.

3.1 Research design

A research paradigm is described by Avenier and Thomas (2015), as a collection of presumptions or convictions on essential elements of reality that give rise to a specific worldview. According to Choongwa (2018), a research paradigm is a collection of presumptions or fundamental ideas that describe how researchers see the world or the subjects they wish to study. Again, Parker-Jenkins (2018) suggests that a research paradigm is a perspective on studying phenomena, a worldview, an understanding of what constitutes legitimate scientific knowledge or methodology, an accepted model, or a pattern. Research paradigms are significant because they give researchers beliefs and guidelines for how to study a phenomenon and how to comprehend and analyse the study's data. According to Rehman and Alharthi (2016), a research paradigm is a philosophical framework that provides a set of ideas and understandings that underpin the theories and practices of research. It serves as the foundation for research. The research paradigm is a representation of the researcher's worldview, world definition, and world-working methodology. Thus, Kivunja and Kuyini (2017) note that a paradigm has a significant impact on each choice made during the research process.

The research paradigm, according to Maree (2015), tackles significant basic presumptions made on faith, such as views regarding the nature of reality (ontology), the relationship between the knower and the known (epistemology), and presumptions regarding methodology. Different theories regarding reality, its existence, and what can be learned about it are held by researchers.

Furthermore, Creswell (2018) makes the point that research paradigms reflect our worldviews and guide our behaviours; hence, it is impossible to conduct inquiries without considering these paradigms. Therefore, Maree (2015) alludes to that research paradigms act as the organising principles or lens through which reality is seen.

The nature of reality views is referred to as ontological. Different theories regarding reality, its existence, and what can be learned about it are held by researchers. According to Cohen, at al. (2011), epistemology is the area of philosophy that examines the nature of knowledge, the methods used to acquire and verify it, and the communication of knowledge to other people. The study and critical evaluation of data-generating methods are referred to as methodology. According to Subbarayudu, et al. (2024), methods are certain ways of gathering and evaluating data, like open-ended interviews, observation and questionnaires. This study exploring college lecturers' needs in adopting technology to promote student engagement in creating and performing music pieces and it fits within the interpretive research paradigm.

3.1.1 The paradigm of interpretivism

The study explored college lecturers' need to adopt technology to promote student engagement in creating and performing music pieces using an interpretive paradigm. Based on the premise that social reality is moulded by human experiences and social situations rather than being singular or objective, interpretive research paradigms are best understood in the context of their socio-historical setting (Blaikie, 2017). Interpretive research aims to comprehend people's interpretations of social phenomena rather than finding a universal context or valuing knowledge that is free of bias. It follows that different people view these socially constructed realities from various perspectives if they are believed to exist. According to Rehman and Alharthi (2016), the interpretative paradigm is predicated on the idea that reality is subjectively formed by individual perceptions, making predictions impossible. In the interpretivism paradigm, there is an emphasis on the social construction of meaning.

The interpretive paradigm, as defined by Draper and Smith (2014), is a methodology that seeks to understand the motivations and significance underlying people's experiences and behaviours. Additionally, an interpretive paradigm is a perspective on social science that serves as a lens through which to analyse research methodology (Parker-Jenkins, 2018). Furthermore, the

interpretive research paradigm which is predicated on the idea that people can create knowledge from their own experiences and understandings was applied in the current study. The researcher analysed these to learn more about the experiences of the lecturers in promoting student engagement in creating and performing music pieces using technology. Based on the lecturers' expertise, disposition, and abilities, the researcher explored their needs in using technology.

Instead of viewing reality as something that can be measured, interpretivism research adopts a relativist ontology in which the same phenomenon may have several interpretations. Cresswell (2018) asserts that, rather than attempting to generalise the foundation of knowledge for the entire population, interpretivism allows researchers to get a deeper and stronger grasp of the phenomena and their complexity in their context. The interpretive paradigm frequently forms and supports many interpretations of an individual's worldview to find research solutions. According to the same perspective, Hammersley (2013) proposed that interpretivist researchers should attempt to comprehend the diverse ways of seeing and experiencing the world through different contexts and cultures and try to avoid bias in studying the events and people with their interpretations. This is because human relationships are prone to multiple interpretations.

Sprake and Palmer (2022) claims that another benefit of the interpretive research paradigm is that it heavily relies on naturalistic methods like observations and interviews. Within the phenomenon, research is conducted in a natural environment. This enables the researcher to delve deeper into an interviewee's thoughts, values, biases, perceptions, attitudes, sentiments, and perspectives. The study was carried out in an institutional setting, considering the natural context for both the lecturers' teaching and the students' learning to achieve its purpose.

3.1.2 Research approach

A research approach is a process that progresses from general hypotheses to a specific method of gathering, analysing, and interpreting data (Cresswell, 2018). For this study, a qualitative research approach was used. Rather than establishing cause and effect, a qualitative method offers an understanding of a situation or occurrence that tells the story (Toliver, 2021). Additionally, Maree (2012) asserts that the researcher does not try to modify the phenomenon of interest and that the goal of this approach is to comprehend the existing events from the participants' perspective. Patton and Cochran (2012) state that this kind of research satisfies the

following three requirements for qualitative design: comprehending participant viewpoints; investigating the interpretations that participants make of occurrences; and closely observing a process. When using a qualitative research approach, information is gathered from people who are actively involved in the context of the study's everyday surroundings.

A qualitative research approach according to Maree (2015) and Hammersley (2013), a qualitative research approach emphasises the importance of subjectivity in the research process, employs flexible and relatively unstructured data, studies several naturally occurring cases in detail, and employs verbal rather than statistical forms of approach. Moreover, the primary objective of a qualitative method study is to investigate and comprehend the central phenomena, which is the idea or procedure that is studied (Maree, 2015). Furthermore, according to Ndoziya (2014), a qualitative approach's strength lies in its ability to provide a comprehensive, nuanced, and detailed understanding of meanings, actions, non-observable phenomena, attitudes, intentions, and behaviours, all of which are well-served by naturalistic inquiry. Therefore, the goal of selecting this method is to explore college lecturers' needs in adopting technology to promote student engagement in creating and performing music pieces.

Furthermore, the goal of a qualitative research approach is to comprehend a phenomenon. Its basis is the idea that there are various ways to perceive reality and that the subject and the researcher can jointly construct reality. Understanding a phenomenon in a real-world situation is the focus of the qualitative research approach, which is founded on a naturalistic approach, according to Marre (2015). According to Silverman and Patterson (2021), individuals or social community groups are the primary sources of data provided by qualitative research methods, as they are collected in their natural habitat. Lecturers' need for the use of technology to enhance their teaching skills and to promote student engagement in creating and performing music pieces is the phenomenon under study.

According to Maree (2017) reveals that qualitative research methods give meaning to data analysis instead of using statistical forms. The created facts from natural settings that are expressed linguistically rather than statistically are a major component of the qualitative research approach, which increases the richness of the data (Creswell, 2018; Maree, 2015). As per Okeke and Van Wyk (2016), the primary objective of adopting a qualitative method is to facilitate an enhanced comprehension of oneself by fostering an awareness of human circumstances,

behaviours, and the motivations behind them. Researchers can interact with individuals in their real environments by using a mostly qualitative approach (Creswell, 2018).

Additionally, as Creswell (2018) pointed out, a qualitative approach enables researchers to "dig" deeply into participant experiences to analyse, comprehend, and characterise behaviour related to occurrences. This demonstrates the ability of a researcher to offer a personal analysis of a certain phenomenon. Researchers might share personal meaning from the findings by interpreting participants' activities using a qualitative technique (Khan, 2014).). The researcher used a qualitative approach in this study to explore college lecturers' needs in adopting technology to promote student engagement in creating and performing music pieces. This approach was also chosen because it can offer a thorough review of lecturers' needs in using technology. A comprehensive and detailed understanding of the research phenomenon can be obtained by the researcher using a qualitative research approach. Therefore, it is believed that the qualitative research approach in this study offered insights to collect viewpoints from participants regarding college lecturers' needs to adopt technology to promote student engagement in creating and performing music pieces.

Although the qualitative approach has its advantages, it also has some significant drawbacks. Kyngäs, et.al. (2020) assert that it is challenging to assess the researcher's neutrality when analysing the results in this approach. The researchers are only engaged in the field when they are conversing with study participants to gather data. The researcher employed three data generation techniques, face-to-face interviews, questionnaires, observations and made sure they are reliable. According to Cresswell (2018), when researchers present the results of their studies, they often employ unclear terminology. In this study, I took the interpretations directly from the participants' verbatim accounts to prevent this.

3.1.3 Research Strategy

According to Rule and John (2011), a research design is a fundamental plan that directs the data-collecting and analysis stages of a research study. It also offers a framework that outlines the kinds of information that must be gathered, where to find them, and how to do so. However, according to Maree (2015), a research design is a method or plan that the researcher uses to gather, examine, and evaluate data to respond to the research questions. These are choices that a

researcher makes when organising the study. The structure for data collection and analysis is provided by research design (McCombes, 2022). According to Al Husaeni, et al. (2024) a study's research design describes the fundamental strategy used by researchers to address their research issues. The researcher must choose the best design to accomplish the study's goals to fulfil the study's objectives. A case study research design was used for the study.

A case study as reflected by Yin (1994) is an in-depth examination of a contemporary phenomenon in the context of real-world events. Adoption of technology in teaching music is a current phenomenon in the current 21st century. Further, Yin (1994) explains a case study research design is a method that allows the researcher to use a range of data sources to study a phenomenon in its natural environment. A case study is one instance of a constrained system, according to Yin (1994). Furthermore, a case study is described by Robinskaja (2021) as a comprehensive examination from several angles of the intricacy and distinctiveness of a certain initiative, policy, organisation, programme, or system in real life. A case study makes use of a variety of sources, enabling the understanding and revelation of many perspectives on the event. This demonstrates how different data production techniques can be used to obtain a comprehensive picture of the phenomenon under study, which is highly beneficial for research purposes.

The Manzini region of Eswatini served as the case to be studied. According to Rashid et al. (2019) theory case studies guarantee a thorough exploration of the subject matter, revealing every aspect of the phenomenon being studied. Additionally, case studies enable participants to open up to the researcher and share their experiences as well as their opinions on the phenomenon being studied. A close collaboration between the researcher and the participants helps the researcher gain a deeper understanding of the phenomenon being studied (Lim, 2024).

Additionally, case studies, according to Subbarayudu et al. (2024), provide the researcher with the chance to utilise a range of data sources. In gathering data, the researcher has the chance to visit the participants' context (Lobe, et al. 2020). To gather information for this study, the researcher visited the college lecturers and interviewed them in their natural settings. Yin (1994) asserts that case studies enable the exploration of phenomena with an undetermined consequence. In agreement, Tomaszewski, et al. (2020). noted that it is challenging to anticipate or forecast the results of a case study. In case studies, researchers' first responsibility is to gather

comprehensive data from participants' experiences, opinions, and viewpoints before drawing any conclusions. Gathering participants' views is the main goal of case studies to provide new theories, interpretations, conclusions, and recommendations

Notwithstanding the benefits, case studies may be viewed as weak since they are usually limited to a single organisation, which makes it challenging to generalise the results because it is challenging to locate comparable cases with comparable data that can be statistically meaningfully analysed. Case studies concentrate on a single instance rather than the total population. Therefore, it is not possible to generalise the generated findings to other scenarios. This research only focused at an institute in the Manzini region where students are taught music. While case study results are not always generalisable, this study's findings can be extended to other comparable circumstances. The exploratory case study was used by the researcher because they thought the findings could apply to other comparable circumstances.

3.3.2 The Case

The location of the study is known as the study area. The Manzini region of Eswatini was the site of this investigation. The Manzini region is in the middle of the Eswatini Kingdom. The Manzini region was chosen because it was handy for the researcher who happens to be from the same region.

3.4 Population and Sample

A research population, according to Cresswell (2018), is typically a group of people or things that serve as the primary subject of the scientific investigation. The act of choosing several participants for a study so that they are representative of the broader group from which they were drawn is known as sampling (Mesa, 2016). This section discusses the population and sampling techniques.

3.4.1 Population

Population, according to Stratton (2024) is the entire group from whom the participant sample will be selected. In a similar vein, Uleanya and Yu (2023) describes a population as a group of individuals with comparable traits who, in the researcher's opinion, possess the data that the researcher is seeking. This indicates that everyone the researcher believes to have the data they

are seeking. As a result, the population can be analysed as a collection of individuals or objects that the researcher wants to look at for the study. A research population, according to Bertram, et al. (2024), is the totality of all the items, subjects, or participants that meet a particular set of requirements that the researcher wants to sample. The study's target demographic was five (5) college lecturers teaching music at a teacher training college in the Manzini region of Eswatini.

3.4.2 Sampling techniques

Sampling techniques, according to Bertram, et al. (2024), involve choosing which participants to be involved in the study. Sampling, according to Hannaway, et al. (2019), Creswell (2018), Cohen et al. (2011), and Maree (2015) is the method a researcher uses to choose a specific subset of the entire population to gather data. According to Sharma (2017), sampling is a method a researcher uses to methodically select a small number of items that are representative of all the items in a given population, with the sample chosen acting as a source of data. To adequately address the research issues, the participants with the richest data would be chosen for the sample (Maree, 2015). The five (5) College lecturers teaching music were purposely chosen to participate in this study. The college lecturers sampled in this study were those teaching music as they were considered information rich.

3.5 Data collection instruments

The data collection instruments employed in this study were face-to-face interviews, observation and an open-ended questionnaire.

3.5.1 Face-to-face interviews

Interviews are a type of data collection technique that makes use of first-hand human voice interactions, according to Choongwa (2018). According to Cohen, et al. (2011), an interview is described as a discussion that is conducted with the specific aim of gathering information. It is intended to get accurate and trustworthy information using the interviewee's answers to a prearranged series of questions. It is possible to record or quote comments directly during an interview (Wingate and Bourdage, 2024). Through body language during interviews, the researcher can learn about participants' perceptions and behaviours. Interviews facilitate the expression of participants' thoughts, emotions, convictions, perceptions, dispositions, and first-

hand encounters related to the phenomenon being studied (Cohen, et al., 2011). It is possible to probe deeper into the participants' answers to learn more. Following up on questions during an interview is feasible because the researcher is on hand to address any unclear remarks or urgent concerns. According to Rutakumwa, et al. (2020), the researcher should provide a setting that is most comfortable for the participant when using an interview as a research tool, especially for face-to-face interviews. The setting should also be free of excessive background noise to minimise interruptions and facilitate data recording.

In addition to using open-ended questions, researchers must learn how to probe for additional information from participants regarding the topics under discussion. Dejonckheere and Vaughn (2019) define probing as the process of obtaining additional information regarding the topics that the interviewee and the interviewer are discussing during the interview. When a person gives succinct answers to questions, the researcher can employ probing techniques to delve deeper and promote a thorough conversation. Face-to-face interviews were employed in this study. According to Cresswell (2018), face-to-face interviews with open-ended questions allow participants to freely express their opinions while also allowing the interviewer to guide the exercise and make it easier for the researcher to examine the data. Interviews make it possible to clarify concerns and queries because a wide range of information is needed, including the needs of lecturers regarding the adoption of technology to promote student engagement in creating and performing music pieces.

3.5.2 Open-ended questionnaire

An open-ended questionnaire in qualitative research asks participants to freely express themselves on a certain issue (Galang, et al. 2022). A well-designed questionnaire includes question items pertinent to the phenomenon of the study, when collecting data through a questionnaire, researchers utilise an instrument that comprises questions and prompts to elicit replies from study participants. In this study, an open-ended questionnaire was utilised to collect data from literate, information-rich study participants who are teaching music in an institute of education in the Manzini region.

3.5.3 Observation

Naturalistic environments are conducive to qualitative observation (Cherry, 2023). According to George (2023) using participant observation, a researcher can observe participant behaviours, interactions, and practices by immersing oneself in a certain social situation or group. Any study undertaking that aims to comprehend the experiences of people or groups in a certain social setting can benefit greatly from using this approach. With this approach, I can gain an understanding of a phenomenon by immersing myself in the community or social structure under study while remaining outside of the observed actions. In this study, I observed the lecturers from Eswatini teacher training college in their workplace. Further, George (2023) reveals that the first step in developing an observational study is to precisely define what will be observed was taken into consideration. I observed the participants in action and documented their natural behaviours. Including observation in this study provided a first-hand perspective of the use of technology in music education. The researcher created a comprehensive picture of how lecturers adopted technology into the teaching of music by combining observation with interviews.

In this study, I observed the physical environment, particularly the music resources available at the teacher training college in Eswatini. Through the observation process, I established how whether student teachers were engaged through technology in the teaching of music. I adopted a simple observation method to collect data from lecturers and observed how the participants reacted to interview questions. The observations were recorded timely in the researcher’s journal and the observations were transcribed for presentation. The observation schedule is in Appendix 3.

3.5.3 Data Triangulation

A triangulated approach was used to study lecturers' adoption of digital technology in teaching music at a teachers' college in Eswatini. Data triangulation is the process of gathering data at different times or from multiple sources (Flick, 2018). The data for this study was collected from purposely selected lecturers because they taught music. In qualitative research, using various data collection methods can also be considered triangulation. This study employed different data collection techniques, including open-ended interviews, observation and open-ended questionnaires and observations. Each data production approach has advantages and

disadvantages; combining those makes the three methods complement one another, which helped with data triangulation. I asked the college lecturers to fill in a questionnaire; after analysing the responses from the questionnaire I visited the lecturers to conduct interviews to probe for in-depth information and seek clarification on the information that might not have been well responded to in the questionnaire. Observations, interviews, and questionnaires were used to gather data in this study on lecturers' technology adoption in teaching music. The aim is to identify patterns, discover new insights and advance an understanding of technology integration in music education.

3.6 Data gathering process

Visits to the college where the data was gathered were made by the researcher after an appointment. The first visit's goals were to meet with participants and invite them to participate in the study, as well as to get permission from the principal to conduct the study in their institution. The participants were allowed to provide their consent to participate in the study after the researcher explained the study to them. The purpose of the second visit was to distribute the open-ended questionnaire, then to conduct open-ended interviews and lastly to do some observations on how music teaching is done. Before the interview started, the researcher asked for the participants' consent to record the interviews on tape. Four (4) out of five (5) college lecturers teaching music consented to participate in the study. The location of the four (4) interviews was the participants' places of employment to ensure the lecturers' comfort and freedom. Cresswell (2018) concurs that conducting interviews enables the researcher to gain insight into the lives of their participants.

3.7 The researcher acts as an instrument

In qualitative research, the researcher takes a more active role in data collection and processing. The participants' rights need to be respected. I did this by informing them that the study was solely for academic purposes and that their participation was completely voluntary. I interacted effectively with the participants to guarantee a seamless flow of information. According to Nyumba, et.al. (2018), a relationship between participants and researchers is required for a smooth flow of communication.

There may be bias in utilising the researcher as an instrument (Jamieson, et al., 2023). Vinnicombe and Mavin (2023) argue that bias can undermine the entire study process and dilute the findings. Again, Zhang, et al. (2022) demonstrate that an interviewer's attitudes and beliefs might be causes of bias in a research investigation. I prevented bias by not making prior assumptions before beginning the investigation. Bias can also occur when participants misunderstand the question or when the researcher misinterprets what the interviewee is saying, causing a breakdown in communication (Jamieson, et al., 2023). I ascertained that there are no communication breakdowns during our probe. I requested clarification and more detailed responses in areas where I was not sure. To prevent prejudice, I ensured that all interviews are audio captured with the participants' agreement. The verbatim transcriptions of the audio-recorded interviews were double-checked by both the participants and the supervisor. The audio recordings were kept in a secure location for as long as necessary for future reference.

3.8 Pilot Study

A pilot study is a small study conducted before a bigger project to evaluate components of the research design and make any necessary adjustments before proceeding with the design (Aaltio, 2023). Pilot studies can be used to test and study the researcher's ideas or methodology (Pearson, et.al. 2020). The pilot study was designed to test some aspects of the research design. Following the pilot study, I added, edited replaced specific questions on the research instruments.

A pilot study is undertaken before the research to check that the instruments are controllable (Malmqvist et al., 2019). Furthermore, Milbury, et.al. (2018) argue that pilot studies in qualitative research are essential for responding to the circumstances on the ground. Conducting a pilot study may alleviate issues associated with chilly, unreflective immersion in the field without prior exposure (Ng, et al., 2014). Furthermore, Dönmez, et.al. (2023) show that performing a study without any type of pre-exposure can leave the researcher confused about where and how to collect excellent data. I piloted my study at a college in the Shiselweni region to ensure the usability of the research instruments.

3.8.1 Results of the pilot study

A pilot study was conducted with two lecturers teaching music in a teacher training college in the Shiselweni region of |Eswatini. The chosen participants for the pilot study were a similar sample

to the participants that took in the study the difference was in their location. During the study's pilot study phase, there was a modification of the research instruments. Part C of the questionnaire on College Lecturers' needs was placed as part B, Student engagement in the open-ended questionnaire as it was best to solicit information from lecturers about lecturers first before soliciting information from lecturers on student engagement.

There was also a modification to Question 6 on the open-ended interview which read “What impact do ICTs (technology) have on student engagement in creating and performing music pieces? Could you share any specific examples of anecdotes?” to “Explain how you have used technology to engage students in teaching music.” Again, the participants found it easier to use the word “technology” instead of “ICTs.” I discovered that there was a very thin line between an open-ended interview and an open-ended questionnaire. To get rich information, I added observations (see Appendix 3).

3.9 Data Analysis

The data transcribed from open-ended questionnaires, open-ended interviews and observations were analysed (Taylor, 2014). Data analysis involves breaking down data into little, manageable parts and analysing it to determine what is relevant and should be reported on. These reactions are commonly referred to as themes (Shneerson & Gale, 2015). In this study, data were analysed using thematic analysis. Figure 3.1 displays the data analysis stages used for qualitative data analysis in this study.

Figure 3.1: Stages of data analysis: adapted from Terry, et.al. (2017)

Researchers use qualitative data analysis to reveal the study's most essential conclusions (Alase, 2017). In this study, qualitative data analysis assisted the researcher in highlighting critical topics relevant to the current study on technology integration into teacher education. Data was analysed step by step using the phases outlined by Terry, et.al. (2017).

3.9.1 Read the data intensively

Following data arrangement and transcription, researchers must become acquainted with the information acquired by reviewing the data extensively (Alam, 2021). In this initial stage of analysis, I carefully read the data and took note of the concepts and experiences mentioned by participants in open-ended interviews and open-ended questionnaires.

3.9.2 Developing the Coding Framework

When creating the coding frame, data should be read several times to get a sense of what it includes (Clarke & Braun, 2013). In this study, the coding framework was considered as the second level. The coding frame in this study was constructed by annotating the transcript, which is the process of labelling the relevant important terms, phrases, sentences, or section codes. Annotating data is a technique for assisting in the development of a code frame for structuring data sets for distribution (Wang, et.al. 2018). These codes should assist me in identifying significant qualitative data types and trends that are tagged. I utilised labels to highlight concepts, data disparities, other people's perspectives, processes, and other important information.

3.9.3 Coding of data

The third stage is data coding, which entails conceptualising qualitative data and arranging and categorising it into key themes to publish content (Lucas & Vicente, 2023). During the first review of the transcripts, available themes should appear. I used different colours to highlight data in those early codes. This technique involved categorising the data sets generated during annotation into categories and subcategories.

3.9.4 Analysing the Coded Data

The coded data was be examined in the fourth stage. This stage allows for the grouping and labelling of data, followed by the description of their relationships. I reviewed the codes as proposed by Tang et al. (2023), organise them into themes, and discover recurring subjects, language, perspectives, and beliefs in the process.

3.9.5 Presenting the Results

The results are provided at the fifth stage. Themes must be presented in logical order (Holzmann & Gregori, 2023). This was done by examining the segments and determining whether there is a hierarchy among the categories one by one (McDonald-Kerr & Boyce, 2023) to summarise the findings. In presenting data, I considered the reader, the study's purpose, and what information should be presented.

3.10 Measures of Trustworthiness

In qualitative research, trustworthiness measures are essential. O'Connor and Joffe (2020) define trustworthiness as promoting rigour, openness, and professional ethics. Transferability, credibility, dependability, and confirmability are the four characteristics that comprise trustworthiness. These are covered in the next section.

3.10.1 Transferable

Transferability refers to how well the study's findings may be applied to another circumstance with different participants (Smekalova, et al. 2023). The findings of this study may not be applicable in other contexts; but may be applied to similar situations. Thick descriptions of data were given to ensure transferability.

3.10.2 Credibility

Credibility refers to whether the research findings are correct interpretations of the participants' original viewpoints and are based on credible and reasonable information gathered from the participants' original data (Shufutinsky, 2020). The interviews were audio recorded, and the recordings were played back and forth during data processing to ensure accurate transcription of

the results. Data transcriptions were supplied to participants so that they could validate that the written information accurately represents their contributions to the study.

3.10.3 Dependency

Participants' evaluations of the results, as well as the study's interpretation and recommendations, guaranteed that they accurately reflect the data collected from study participants (Howe, 2022). The member check is an important practice that any qualitative researcher should follow because it is at the heart of credibility (O'Brien & Pizmony-Levy, 2016). To avoid bias, I incorporated participants' perspectives into the data analysis and interpretation. Following the completion of the interpretation, I asked the participants to view the results and confirm whether they reflected their ideas or not.

3.10.4 Confirmability

Confirmability is concerned with ensuring that data has been accurately interpreted, with no figments of the researcher's mind, but simply what has been extracted from the data (Nowell, et al. 2017). To eliminate biases, I ensured that all interpretations are based on data gathered throughout the data generation process. The results were presented utilising the participants' perspectives and experiences.

3.11 Ethical considerations

Data collection is the process of acquiring and assessing specific information to answer relevant questions, analyse results, and learn everything there is to know about a subject (Alam, 2021). According to Colorafi and Evans (2016), qualitative researchers use several approaches to generate and collect data for their studies, such as interviews, observations, and document analysis. I acquired research ethics approval from both Bindura State University to collect data. From the institution under study, I explained the study's purpose and objectives, and the participants received written requests to participate in the study.

I introduced myself to the participants and explained the study's title, purpose, participation, and withdrawal rights, as well as ethical issues including confidentiality and anonymity. Participants were also allowed to ask questions about the study and their roles throughout the interviews and focus group sessions. After reading and explaining the informed consent papers, participants

were given the choice of filling them out and signing them. According to Mertens and Wiener (2018) appointments should be scheduled one week before data collection. According to Tessier (2012), capturing information enables the researcher to review and replay the content to better understand the information. Following transcription, the interviews and focus group discussions were recorded and saved on a password-protected laptop.

When research processes involve persons, ethical considerations are crucial in educational research (Asghari & Tehrani, 2020). From a moral stance, Ebubedike, et.al. (2023) illustrate that ethics are concerned with beliefs about what is right and bad when engaging with participants. To protect the participants' rights and dignity, it is critical to adhere to ethical standards. Full openness, free participation, and informed consent are all examples of ethics. I followed ethical protocol by requesting approval from my institution, and the institution where the research was be conducted. Following permission, the consultation process with possible participants commenced. Participants were assured of the confidentiality and security of the information they provided, as well as their rights to voluntary participation and withdrawal at any stage of the study procedure, according to explanations and consent forms for those who participated in the study.

3.11.1 Informed Consent

Informed consent is the process of alerting potential research participants about the significance of a study and what their participation would involve (Manti & Licari, 2018). Participants in this study were asked to give their unconditional agreement to participate. Before submitting open-ended questionnaires to the lecturers who participated in this study, I provided them with an informed permission form, which they returned to me, indicating their willingness to engage in the study.

3.11.2 Anonymity

Anonymity is a state in which researchers do not know the identities of individual participants (Panadero & Alqassab, 2019). Anonymous researchers do not gather any identifiers, such as names, addresses, or phone numbers that might be used to link responses to a specific individual, meaning that the researcher is also unaware of the respondent's identity (Thackray & Staley, 2017). In this study, I collected data through open-ended questionnaires and participants were

asked not to state their names, in open-ended interviews participants' names were not mentioned. Although complete anonymity may not be attainable in an interview the conversation was kept confidential.

3.11.3 Confidentiality

Confidentiality refers to a circumstance in which a researcher is aware of a research participant's identity but makes efforts to keep that information from being divulged to others. Participants in studies involving human participants or the collection of other personally identifiable data must sign a consent agreement, which ensures that researchers are aware of their identity (Panadero & Alqassab, 2019). In such instances, keeping anonymity is crucial for protecting privacy. Audio recordings from open-ended interviews as well as completed open-ended questionnaires were kept on my computer, which is password-protected to guarantee that only I can access the materials.

3.12 Summary of Chapter

The research methodology for the study was described in this chapter. A thorough explanation of the research paradigm, research approach, and study design was given as well as in-depth discussions of sampling and sample techniques. Additionally, three techniques for gathering data include open-ended interviews and open-ended questionnaires. Thematic analysis was used to analyse data. The focus of the discussion revolved around transferability, believability, conformability, and dependability about the study's trustworthiness issues. This chapter went into additional detail about the study's ethical guidelines. The results of the study were presented, analysed and discussed in the next chapter.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.0 INTRODUCTION

This study sought to establish lecturers' adoption of technology to promote student engagement in teaching music at a teachers' college in the Manzini region of Eswatini. In the previous chapter, I presented and discussed the research methodology of the study as well as the data generation procedures implemented in this study. In this chapter, I present data generated from one-on-one open-ended interviews with lecturers and open-ended questionnaires. The data presented aims to respond to the research questions outlined in chapter one. The main research question is: How are the college lecturers adopting technology to promote student engagement in teaching music? The sub-research questions are: What are the factors influencing college lecturers' adoption of technology in teaching music? What are the college lecturers' needs in adopting technology in teaching music? Which strategies can be used to address college lecturers' needs in adopting technology in teaching music?

I interpreted data from the open-ended interviews and open-ended questionnaires using thematic content analysis (Tang et al., 2023). The analysis was based on themes that were developed from the data generated by the participants. The process of establishing and assigning codes to categorise data extracts is known as qualitative data coding (Díaz, et al., 2023). Coding data also enabled me to note similar ideas and group them to create themes. Creating themes enabled me to compare the views of the study's participants.

Data collected were presented, analysed and interpreted using qualitative approaches as outlined in chapter three of this study. The themes that emerged from the generated data were as follows: Acceptance of technology in the teaching of music College lecturers' needs in using technology to teach music, Use of technology on student engagement Strategies to Address College Lecturers' Needs. Data gathered was transcribed as per the individuals who participated in the study. The transcriptions were allocated numbers. Lecturer 2 or Lecturer 3 Table 4.1 summarises the themes and sub-themes that emerged from the study.

Table 4.1 Summary of themes and sub-themes that emerged from data generation

Research Question	**Themes**	**Sub-themes**
How are the college lecturers adopting technology to promote student engagement in teaching music?	4.2.1 Technology adoption in the teaching of music	4.2.1.1 Components of music taught 4.2.1.2 The current approach to the teaching of music 4.2.2.3 Lesson preparation 4.2.2.4 Ease in lesson delivery 4.2.2.5 Use of digital technology on student engagement 4.2.2.6 Digital technologies currently available for teaching music
What are the factors influencing college lecturers' adoption of technology in teaching music?	4.2.2 Factors leading to the adoption of technology	4.2.2.1 COVID-19 pandemic sped the adoption of technology 4.2.2.2 Perceived ease of use 4.2.2.3 The availability of Learning Management Systems (LMSs) and Applications (APPs)
What are the college lecturers' needs in adopting technology in teaching music?	4.2.3 College Lecturers' Needs in using technology	4.2.3.1 Need for a wider internet bandwidth, 4.2.3.2 Need for data provision 4.2.3.3 Need for smart gadgets, music instruments and software 4.2.3.4. Need for funding specifically for music 4.2.2.5 Need for proper training

Which strategies can be used to address college lecturers' needs in adopting technology in teaching music?	4.2.4 Strategies to Address College Lecturers' Needs	4.2.4.1 Training lecturers in proper technology adoption into music teaching 4.2.4.2 Migrating from traditional methods to the adoption of technology 4.2.4.3 Provision of workshops

4.2 College lecturers' adoption of technology in teaching music

The results in this study were presented under the themes and the sub-themes that emerged in the study. Direct quotations from the participants were also used in presenting data.

4.2.1 Technology adoption in the teaching of music

The study sought to explore college lecturers' adoption of technology to promote student engagement in teaching music? The participants were asked how they have adopted technology in teaching music. The participants started off by explaining the components of music they teach.

4.2.1.1 Components of music taught

The participants revealed that music has two components, that is, theory and practical and emphasised how important it is to teach both practical skills and music theory. Lecturer 1 stated, *"I'm currently teaching music theory and practical."* Apart from the theoretical and technical facets of music education, participants emphasised the significance of their curriculum's emphasis on choral singing. The participants also mentioned that there is an emphasis on the voice used as an instrument in practical work. This was mentioned by Lecturer 3 who pointed out that, *"The voice is our focal point in the teaching of practical music."* Similarly, Lecturer 2 stated that,

...we usually perform choral music as part of our practical work, as the voice is the primary instrument we use in our practical classes.

The study revealed that students are engaged individually as well as in groups in teaching music as they are allowed to come up with their compositions that they present as individuals or in their assigned groups. Furthermore, Lecturer 4 cements this by revealing that *"...students are encouraged to be able to sing their compositions, individually and as a group."*

The results of the study reveal that there are two components in teaching music which are theory and practical. The participants place high importance on giving students a comprehensive education in music that includes both theoretical foundations and practical training, with an emphasis on developing students' voice-based choral singing skills. Further, the participants emphasised that, instead of mostly depending on other instruments, the voice is used as the principal instrument in their practical music classes. Their emphasis on choral music as a fundamental component of their music education programmes is reflected in the responses.

4.2.1.2 The current approach to the teaching of music

The participants were also probed into explaining the current approach to teaching music they use in teaching music. The study participants revealed that lecturers mainly used a variety of approaches to teach music like a combination of lectures, group work and tutorials. The participants also revealed that they use both traditional and modern technology-inclined approaches to teach music. Lecturer number 2 revealed that, *"During the lockdown we were using online learning mainly to explain theory concepts through our Learning Management System (LMS), now that the students are on campus we meet them in the lecture rooms physically."* It also emerged from the study that technology was used to project PowerPoint presentations to students in class. During my visit to the teacher training college, the students were on campus and I observed one of the lecturers connecting a projector and laptop for the physical lecture in one of the lecture rooms.

Further, Lecturer 4 revealed that *"I use mixed methods and any of these lecture, question and answer, group discussion and group work."* Similarly, Lecturer 3, explained that *"We teach college students using lecture methods and tutorials, coupled with exercises and problems that students are given to solve as part of practice."* Probed further, Lecturer 3 revealed that *"I do lectures online, especially theory concepts but most of the practical we do is physical in lecture rooms."*

It emerged from the study that lecturers use methods such as lectures and group discussions to teach music. Singing in groups and solos is the approach for the practical component, which aims to provide students with a general understanding of music and guarantee that every student acquires this fundamental music practical knowledge. Lecturer 1 stated that *"We mainly use the*

lecture method and group discussions". On the same note, Lecturer 4 expounded on the fact that they teach

> *.... big numbers which make it difficult to help individual students who have difficulty grasping taught concepts or skills. This affects face-to-face teaching but with the use of technology through WhatsApp groups, we have admins who assist in managing the groups and ensure students get all communications and submit challenges.*

During tutorial sessions, lecturers offer comments and solutions to the work sent to the students through WhatsApp groups and respond to student challenges submitted in WhatsApp groups. According to Lecturer 3, *"In some of the tutorials, we use one or two periods per week to practically go through the work they have been given and attend to difficulties expressed by students, sometimes we record and send answers to students' questions on WhatsApp."*

The lecturers justified their approach by stating that, notwithstanding the differences in the students' singing skills, the main goal is to guarantee that students acquire a strong understanding of music theory. According to Lecturer 1, *"...we want students to have a general understanding of the theory of music so that they could be able to teach the music subject when they get to school after graduating."* Again, Lecturer 4 explained that *"I would, for example, give a lecture and demonstrate how to cite read music to students and then give them practical individual or group work on cite reading which they research and present through their LMS or WhatsApp."* Furthermore, the study revealed that technology can significantly improve teaching and learning by keeping lecturers and students abreast of current information through internet searches. Lecturer 2 reveals that *"Technology can only enhance teaching and learning. It would also help educators and learners to be up to date."*

It emerged from this sub-theme that college lecturers use both traditional and modern technology inclined approaches to teach music. The results show that the college employs a multifaceted approach to give students a well-rounded music education, combining theoretical training through lectures and tutorials with practical work that involves singing. Learning Management Systems to submit given assignments while WhatsApp was highlighted as their most used communication tool.

4.2.2.3 Lesson preparation

It emerged from the study that the participants are using digital technology such as laptops and smartphones to prepare for the music lessons. In my visit to the college, I observed one lecturer downloading into their laptop, music pieces from YouTube that students would listen to and identify the music instruments used in the song. The songs were sent to the students through WhatsApp before the lesson for further discussion during the lesson. Lecturer 1 revealed that,

> *... in some instances, we are using digital tools like smartphones where we download music pieces and send them to the students who download music pieces or performances to listen in preparation for what would be done that week.*

Again Lecturer 4 reveals that,

> *...the laptop is a handy digital tool to download music pieces to take to class for the students to listen to and it makes it easy for the students to download pieces and listen to them to make prior preparations for their lessons.*

4.2.2.4 Ease in lesson delivery

Further, the participants revealed that the use of digital technology makes the teaching of music easier. Again, there is a music software that converts notes to sound for students to emulate the sound during choir practice. Lecturer 3 revealed that *"I was given a software called Sibelius by a colleague which allows one to easily input the music notes and then it converts the notes into an audio, but it has expired, and the college can't buy one for me and I have no music software now."* Furthermore, Lecturer 3 explains that the use of the music software, *"... allows students to listen to their lines, for correct pitch and duration for the teaching of choral work to become easier."* These views are in line with the performance expectancy from the UTAUT theory as explained by Madzamba and Matorevhu (2023) who reveal that performance expectancy refers to the degree to which individuals believe that using technology will enhance their job performance or make tasks easier and more effective. Thus, utilising technology in the teaching of music improves lecturers' performance and makes tasks simpler.

The study revealed that in the teaching of music theory digital technology is used to explain concepts to groups of students through WhatsApp voice notes. Lecturer 1 revealed that *".... we*

also use voice notes to explain concepts when teaching theory in music." On the same note, lecturer 2 revealed that *"...in illustrating concepts in theory we use voice notes, clap and sing notes to demonstrate the effect of the concepts in music."* Further, lecturer 2 went on to explain that *"In the WhatsApp groups students are grouped into fifties (50) and then the lecturer makes a voice note explaining a certain concept in the theory of music. Students can also send reactions after the voice notes."*

4.2.2.5 Use of digital technology on student engagement

The lecturers were asked to explain how they use technology to engage students in the teaching of music. The participants regard using WhatsApp groups as engaging students through digital technology in the teaching of music. It emerged from the study that audio and videos are sent to the students through WhatsApp. The MOODLE LMS was also used to send especially written information to the students and they could submit written assignments through MOODLE. Lecturer 2 revealed that *"We send links to valid information students need through MOODLE and communicate mainly through the students' WhatsApp groups."* Further, lecturer 3 revealed that *"We interact with students via their WhatsApp groups, but I share my slides with the students through the MOODLE LMS."* Furthermore, lecturer 2 explained that:

> *The lecturer can post whatever audio with instructions of performance they want them to do on MOODLE. The lecturer can also post on the WhatsApp group videos that they can watch and listen to and then when it is during the quiet time, they sing along with the video and that gives them an understanding of notes and sounds.*

Engaging students through MOODLE and WhatsApp groups allows lecturers to post audio and video as well as instructions for performance during their own time, they sing along to the videos. This helps students understand music sounds.

However, the participants revealed that using WhatsApp for teaching music theory was a challenge as students had difficulties understanding music theory since music concepts require written explanations, especially for visual learners. Lecturer 1 mentioned that *"Some students struggle to understand concepts when you explain anything through a voice note as opposed to writing a problem and working it out on a board."* Further, the participants mentioned that using

videos for demonstrations in music theory was a challenge as videos consume more data which they are not provided for by the college. Lecturer 3 revealed that

...music explanations should be made through demonstrations in writing; however, demonstrations use a significant amount of internet data, which the college does not give to its students. We also do not have the appropriate digital tools like a tablet with a pen to properly do the demonstrations and send them to the students.

Again, lecturer 1 reveals that *"...when you convert the explanations to a video where you do demonstrations it takes much of their internet data from the students."* On the same note, Lecturer 4 reveals that *"...there is a need for proper music software that will allow lecturers to teach music accordingly, we struggle to have students understand concepts through WhatsApp voice notes."* This is contrary to the effort expectancy feature in the UTAUT theory. Ayaz and Yanartaş, (2020) reveal that effort expectancy refers to the perceived ease of use and the comfort level individuals have with technology. Results in this study reveal that lecturers utilise technology to group students into manageable groups they could teach. However, a wider internet broadband and appropriate music software could make the explanations and demonstrations of different concepts clearer.

4.2.2.6 Digital technologies currently available for teaching music

The study sought to determine the digital technologies available for teaching music. It emerged from the study that lecturers have projectors, laptops and speakers. During my visit to the institution, I realised that each lecturer also had a desktop. Lecturer 3 revealed that, *"We do have laptops. As lecturers we were provided with laptops by the college, we also have a projector which we project during lessons."* Similarly, lecturer 2 revealed that *"The College gave us laptops to use as lecturers."* On the same note, Lecturer 1 added *"I have my speakers which I use to aid my teaching."* However, Lecturer 2 mentioned that *"As far as theory is concerned, we have little, for example, we have no music software which could have helped teach music."* Lecturer 2 pointed out that,

> *…we use our phones to connect with students on WhatsApp and students buy their smartphones and laptops. The college does not provide laptops, but there is a computer lab used in turns by students all over the college.*

Thus, the College provides laptops, projectors and desktops while lecturers supplement the college by bringing in their speakers for sound projection. However, there is a lack of music software, which could be beneficial in theory

Again, the results of the study reveal that the college uses technology in teaching music for downloading performances and converting notes into audio through their smart mobile devices. Voice notes help explain music theory concepts, but some students were struggling with voice notes from WhatsApp groups as they came without demonstrations on solving music problems. The study revealed that the use of videos for explaining music concepts took much from students' internet data. There was also an indication that though the digital tools are there but, they are not appropriate for making concept illustrations that would be understood by the students.

4.2.2 Factors leading to the adoption of technology

The study sought to establish the factors influencing college lecturers' adoption of technology in teaching music. Lecturers were asked to reveal the factors that led them to the adoption of technology in the teaching of music.

4.2.2.1 COVID-19 pandemic sped the adoption of technology

The participants revealed that the existence of the COVID-19 pandemic sped the adoption of technology use in teaching music. According to Lecturer 2, *"During the COVID-19 pandemic, we had no option but to adopt technology where we were forced by the WHO regulation to keep a social distance."* Lecturer 4 also shared the same sentiments, *"After we closed the college due to the COVID-19 pandemic technology adoption was inevitable as we had to teach online."* Further, Lecturer 4 explained that *"...during COVID-19 pandemic times when face-to-face learning and assessment were impossible, students were asked to record and send their practical work."* This is aligned with the UTAUT theory Social Influence feature. The Social Influence feature explained by Merrick and Joseph (2023) alludes to that lecturers' perceptions of the prevailing social norms regarding technology use in music education can impact their adoption of technology. Thus, the COVID-19 pandemic social distancing conditions were a factor that compelled lecturers' adoption of technology as most education institutions resorted to teaching online.

4.2.2.2 Perceived ease of use

Another factor that influenced the adoption of technology in teaching music was that technology makes it easy to manage large classes and reach out to every student. It emerged in this study

that lecturers teach large numbers of students in the college as every student is expected to do music and technology makes it easy for information to reach out to every student. Lecturer 1 stated *"We are currently teaching huge numbers of students. Having a group of about 50 students in each WhatsApp group allows us to attend to students' challenges in smaller groups."* Similarly, Lecturer 4 expounded on the fact that they teach *"...the big numbers of students in music we manage them by grouping the students on the LMS and WhatsApp groups…"* This is in line with the Unified Theory of Acceptance and Use of Technology (UTAUT) component, Effort Expectancy which purports that the perceived ease of use and the comfort level individuals have with technology makes it comfortable to adopt technologies.

4.2.2.3 The availability of Learning Management Systems (LMSs) and Applications (APPs)

The availability of LMS like MOODLE and Apps like WhatsApp, which every student could download and use on their phone to connect with colleagues as well as their lecturers was also one of the factors that led to the adoption of technology in teaching music. During my visit to the teacher training college, I realised that lecturers are using the MOODLE LMS to send and receive assignments from students. Lecturer 2 went on to explain that *"We make use of WhatsApp groups…"* Further, Lecturer 1 explains that there are *"…gadgets that allow them to log into the Learning Management System and access information."* Furthermore, Lecturer 2 edifies that lecturers can *"…explain theory concepts through our Learning Management System."* Thus, the COVID-19 pandemic, the availability of digital tools and LMS and the ease that comes with technology in managing large groups of students are factors that influenced lecturers to adopt technology in teaching music.

4.2.3 College lecturers' needs in using technology to teaching music

What are the college lecturers' needs in adopting technology in teaching music?

The study sought to determine the college lecturers' needs in the adoption of technology in teaching music. Data in this theme was presented under the sub-themes: need for wider internet bandwidth, need for data provision and need for smart gadgets.

4.2.3.1 Need for a wider internet bandwidth

The participants expressed that they need a wider internet bandwidth as the current internet is limited to the extent that when all students log in for a lesson the system gets overloaded and

slows down or stops working such that they cannot work. Lecturer 2 stated *"Okay, we need a working internet, data is a challenge, our internet in the college is very slow, and it is as good as it is not there for lessons."* Similarly, lecturer 2 expressed that *"...the college's broadband is limited, and the challenge is that once the students log in to our current internet system at college, the whole system slows down or it doesn't accept all of them."* Again, Lecturer 3 revealed that *"...the internet is slow, and it becomes even worse when other classes or when other courses are in session. Then the whole thing becomes unworkable."*

Further, the participants revealed that the unavailability of music software in the college hinders the proper use of digital technology. Lecturer 4 explained that *"...using technology in teaching music is also not possible due to the software needed, as well as Wi-Fi challenges."* Thus, the main challenge in college is limited broadband and slow system performance, making it difficult to effectively utilise technology in teaching music and when multiple users log in simultaneously for a lesson, the system becomes too slow to execute any tasks. The participants expressed the need to be supported with music software to make teaching easier.

4.2.3.2 Need for data provision

The participants expressed the need to have on and off-campus data. The lecturers revealed that the college does not provide the lecturers as well as the students with off-campus data to enable them to teach and learn through digital technology at their own convenient time. Lecturer 3 suggested that *"...the college could provide data to the lecturers and students as well to ensure that they connect even when they are off campus."* Further, the participants in this study revealed that even the on-campus data could be availed to alleviate the slow internet connections. Lecturer 2 mentions that *"...when we are in college, data could also be available to both the lecturers and the students because currently the system is very slow, it is hard for us to teach using digital technology."* Thus, data should be provided for both lecturers and students both on and off campus to enable the integration of technology in the teaching of music

4.2.3.3 Need for smart gadgets, music instruments and software

There was a need for lecturers to be supported with smart gadgets that would allow them to install music software to help in writing, reading, downloading and singing to the desired sound. It also emerged from the study that the lecturers also need music software. Lecturer 3 revealed

that the software *"Sibelius"* they got from a friend has expired. Lecturer 4 revealed that *"...the college provided us with a laptop but with no software that we use to access the internet."* Further lecturer 2 in a questionnaire mentioned that *"We need smart gadgets like tablets with a pen that will allow us to demonstrate music solutions and students too need smart gadgets for them to be connected with us during lectures."* Similarly, lecturer 1 explained that *"Students also need to be supported with smart gadgets as some have difficulties affording gadgets that allow them to log into the Learning Management System and access information."* Again, lecturer 3 stated that *"…it is also necessary to support students with smart devices for them to connect to the internet and access information."*

Besides the need for smart gadgets, there was also a need for musical instruments for each student to be able to listen and produce sounds from a musical instrument of their choice. During my visit to the college, I observed that there was only one piano which was in the lecturer's office and students had no contact with the instrument. Lecturer 4 also mentions that there is a challenge of *"...unavailability of musical instruments…,"* Furthermore, lecturers revealed that they have never used technology in assessing students. All assessments they have been doing are individual based because not all students can access the internet due to limited internet connectivity and some lack smart gadgets. Again Lecturer 4 revealed that *"…assessment is done through tests, assignments and practical. Now, utilising technology for assessments has not been possible for all students as some may have no data nor smart gadgets."* Further, the lecturers revealed that they used the voice as well as a voice in the teaching of music at the college as there were limited musical instruments. Lecturer 3 pointed out that, *"The only audio component available to us for teaching music theory is voice notes."* Lecturer 2 revealed that,

> *We are forced to use face-to-face classes as the nature of the subject music requires verbal explanations to be coupled with the lecturers' demonstrations on the chalkboard since there are no appropriate digital technologies and music instruments to allow for demonstrations.*

The participants revealed that not all students enrolled in the college have digital tools to be engaged in learning through digital technology. It also emerged from the study that the technical nature of music theory requires students to see and follow steps and stages in solving music problems, rather than just hearing voice notes. Lecturer 4 reveals that they are forced to use face-

to-face because *"...not all students can afford smartphones and data to make teaching and learning through digital technology a possibility for every student, phones, letters and iPads."* Lecturer 1 mentioned that,

> *…. the theory of music is technical. It's like mathematics. For example, when the lecturer is teaching intervals, they need to be able to see and follow the intervals instead of hearing it from a voice note.*

Thus, the limited music instruments, software and digital technologies are a hindrance to proper technology integration into the teaching of music. The technical nature of music theory requires students to see and follow steps and stages in solving music problems, rather than just hearing voice notes. Both lecturers and students need to be provided with smart gadgets, musical instruments and music software.

4.2.3.4. Need for funding specifically for music

The participants in the study revealed that there was a need for the Ministry to provide funding specifically for music. Further, it emerged from the study that limited funding leads to limited musical instruments and slow connections to digital technology for use in teaching music in the college. Lecturer 4 revealed that

> *Since music has been made part of the core subjects in the school system, it would be proper for the government through the Ministry of Education to allocate separate funding for the subject even at the college level to ensure that resources available for proper teaching of music.*

Again, lecturer 3 mentioned that *"It is due to limited funding of the subject that there is no proper equipment, music instruments digital technology tools and internet connectivity for proper implementation of music in the college.*" Thus, it is vital to properly fund the different subjects including music in the curriculum, especially those that require equipment and infrastructure.

4.2.3.5 Need for proper training

The study's participants expressed the need for proper training of lecturers in utilising technology in teaching music. Lecturer 1 expressed that *"…there is a gap in which we were trained as during those times there was no internet, no software and no smart gadgets, we learn as we try to teach."* On another note, Lecturer 3 revealed that:

> *What is important is that whenever there is a workshop, lecturers should have the needed resources so that they have an opportunity to put into practice what they have learned during the workshop. If the resources come a month or two after the workshop, we would have forgotten what we have learned.*

Lecturer 2 pointed out that *"What matters is that lecturers should always have the tools necessary for workshops so that they apply what they have learned in an interactive setting."* Further, Lecturer 4 mentions that *"...training in online teaching and use of technology in teaching would be vital."* Thus, the training of lecturers for technology adoption into the teaching of music needs to be well planned and digital technologies should be provided in due time to ensure proper acceptance and utilisation of technology in the teaching of music.

4.2.4 Strategies to Address College Lecturers' Needs

The study also explored the strategies that can be used to address college lecturers' needs in accepting technology in teaching music. The sub-themes under this theme were: one strategy to address college lecturers' needs, migrating from traditional methods to accepting technology, and the need for resources during workshops.

4.2.4.1 Training lecturers in proper technology adoption into music teaching

The lecturers pointed out that one strategy to address college lecturers' needs is through training. It emerged from the study that the training lecturers went through an initial training in their careers that did not integrate technology, hence, they need to be equipped with technology integration skills that they are expected to use in the teaching of music. Lecturer 3 revealed that,

> *There was no technology used during our initial training, hence it is a challenge to teach students how to use technology as I am also learning how to use*

technology in the process. However, lessons flow after students have been allowed to listen to audio or music sounds before the lesson.

Similarly, Lecturer 1 explained that *"There was nothing like technology when we trained, the lecturer was always in front of us teaching, but the use of technology, especially WhatsApp, makes communication easier and faster."* Further, Lecturer 4 revealed that *"I do need training on integrating technology in teaching music as I have seen that using technology to teach makes it easier to teach as I could even teach from home during my own time."* This is in line with the UTAUT component mentioned by Ayaz and Yanartaş (2020) as performance expectancy which denotes the degree to which individuals believe that using technology enhances their job performance or makes tasks easier and more effective as teaching using technology can easily be done through WhatsApp and from off-campus and at any time of the day. Thus, there is a need to train lecturers on the use of technology in teaching music to make their tasks easier and effective.

4.2.4.2 Migrating from traditional methods to the adoption of technology

Another strategy that the lecturers revealed to ensure the adoption of technologies into the teaching of music is a migration from face-to-face instruction to technology integration. During my visit to the college, I observed full lecture rooms with lecturers teaching Music face-to-face. The participants also revealed that digital technology tools as well as software should be available to lecturers and students in the college to ensure proper migration from traditional methods to the adoption of technology. Further, the participants revealed that it is not easy to migrate, and the resources are not available to allow lecturers to adopt technology into their teaching Lecturer 2 explains that *"We could migrate to using technology if digital technology resources were made available for lecturers and students."* Similarly, Lecturer 1 points out that, *"Both lecturers and students should have access to digital technology tools and software to ensure proper migration from traditional methods of teaching to the adoption of technology into the teaching of music."*

The participants went on to reveal that the available digital tool they used to record videos was a phone. In using a phone, the participants mentioned that the recorded videos become easy to send to the students. Lecturer 4 revealed that *"Phones can be used to record videos of students doing practical and then be sent the same." has been done for recording teacher practice*

lessons." Again, Lecturer 2 mentioned that *".... cell phones are the handiest digital tool we use to record and send the recorded videos or voice notes to the students.*" Therefore, migration from face-to-face instruction to technology integration can be made possible by the provision of proper technology resources for different activities done in music including software.

4.2.4.3 Provision of workshops

According to the participants, workshops ought to be held periodically because digital technology is constantly evolving. This was revealed by Lecturer 1 who pointed out that, *"Workshops should be done regularly because technology is constantly changing."* Similarly, Lecturer 3 revealed that *"Training workshops ought to be held more often to ensure that we stay up to date with the ever-evolving technological environment."* Therefore, the participants emphasised the importance of the provision of workshops to be regular in the ever-evolving technological landscape.

4.3 Discussion of findings

The purpose of the study was to address the needs of college lecturers teaching music in the Manzini region of Eswatini by exploring the effective use of technology to enhance student engagement in creating and performing music pieces. In this section, the research findings are discussed in the light of themes emanating from the data. The discussion focuses on findings generated from the qualitative data obtained from open-ended interviews, open-ended questionnaires and observations. The discussion of results is done against the literature related to the study, to identify where the findings of this study concur or differ with current studies or have added new dimensions to the subject of technology adoption in teaching music.

4.3.1 Teaching music theory and practical

The results of the study revealed that music education curricula should emphasise both the theoretical and practical components of the discipline. This is in line with views from Creech et al. (2023) as well as Powell and Bodur (2019) who highlighted the importance of teaching not only music theory but also practical music skills, recognising the complementary nature of these two essential components in music. Furthermore, the participants emphasised the significance of the human voice as a primary instrument in practical music lessons. This aligns with Nart's

(2016) suggestion that digital tools and software can provide students with expanded opportunities to explore diverse musical styles and experiment with various sound sources, including the voice.

The participants also stated that they taught music theory through physical lectures and technology. Turchet et al. (2018) provide support for this method, arguing that in addition to face-to-face interactions in the lecturer rooms, technology can help students engage in more collaborative and active learning, which is advantageous for teaching music. Thus, technology adoption is crucial in the teaching of music theory and practical.

4.3.2 Using technology to teach music theory and practical

The findings of this study reveal that technology adoption in the teaching of music provides supportive learning environments. Lecturers highlight the diverse approaches used in teaching music where they combine traditional teaching techniques as well as technology to provide students with a well-rounded music teaching. In a similar vein, Crawford (2017) highlights how crucial it is to integrate thoughtful instructional strategies, suitable technology, and supportive learning environments to guarantee successful music education.

The study found that adopting technology in teaching music makes the lecturers' job performance and tasks more effective. Lecturers engaged students both individually and in groups, through technology, with opportunities for them to compose, record and present their original music. The results of the study also revealed that technology assists lecturers in managing students in MOODLE and WhatsApp groups. This student-centred approach resonates with the Unified Theory of Acceptance and Use of Technology (UTAUT), which identifies performance expectancy as a key factor influencing individuals' intention to use technology. Ayaz et al. (2023) further elucidate that performance expectancy refers to the degree to which individuals believe that using technology enhances their job performance or make tasks more effective.

This study's findings reveal that technology adoption promotes lecturers' performance and student-centred approaches in the teaching of music. Lecturers successfully manage higher class sizes by utilising technology. On the same note, Sahni (2019) emphasises how the use of technology in music education may support online learning, enhance student engagement,

personalise instruction, and foster collaboration and creative expression in music. The lecturers indicated that they send through WhatsApp, voice notes with singing exercises in the practical parts in music, which included solo and group singing. Cruywagen and Potgieter (2020) stress that technology fosters the social and collaborative elements of the various educational systems; this learning method is essential to giving students a thorough understanding of music. Therefore, technology is utilised in student-centred approaches in the teaching of music, and this improves student learning and enhances lecturers' performance.

4.3.3 COVID-19 expediting technology adoption

The study's findings show that during the COVID-19 pandemic, lecturers had no choice but to adopt technology to teach music because WHO regulations encouraged people to maintain a social distance. This finding is in line with views from Williams et al. (2015) who reveals that the Unified Theory of Acceptance and Use of Technology (UTAUT) can provide valuable insights into exploring lecturers' acceptance and utilisation of technology to promote student engagement in teaching music. Due to the COVID-19 pandemic, lecturers resorted to accepting the use of technology by lecturing online through MOODLE and WhatsApp. This is consistent with Southern California Library's (2021) view that the transition to accepting and using technology was guided by the Unified Theory of Acceptance and Use of Technology (UTAUT), a theoretical framework that provides a concise explanation of the theoretical assumptions underlying technology acceptance and use.

4.3.4 Alignment to the 4IR contributing to technology adoption

The results of the study further reveal that besides the COVID-19 pandemic, the 4IR accelerated the adoption of technology in teaching music. This is reflected in the views from Cruywagen and Potgieter (2020) as well as (Johnson, et al., 2019) who reveal that the Fourth Industrial Revolution (4IR) has significantly influenced the adoption of technology to promote student engagement in teaching music and has necessitated the shift in teaching and learning experiences, promoting social and collaborative aspects in the various education facets including the teaching of music. This result is also in line with views from Jang et.al (2024) reveal that social influence encompasses the influence of social pressures on technology acceptance to technology adoption is influenced by performance expectancy, which is a crucial component of

the UTAUT. The ease with which technology can be used to reach every student and manage huge courses was another aspect that contributed to the adoption of technology in teaching music. Similarly, Ayaz and Yanartaş, (2020) explain that effort expectancy refers to the perceived ease of use and the comfort level individuals have with technology.

4.3.4 Large classes moving technology adoption

This study revealed that lecturers manage a class with large numbers of students since all students are required to take music classes and technology facilitates the simple dissemination of knowledge to all students. In line with this view, Ayaz and Yanartaş (2020) reveal that the intention to use technology is influenced by effort expectancy, a component from the UTAUT, which is defined as the degree of perceived ease of use and comfort persons have with technology. Beirnes and Randles (2023) note that adopting technology facilitates different schedules and learning styles that make teaching music easier even to a larger group of students with different learning styles. Thus, technology adoption allows lecturers to easily reach out to students with different learning styles in large classes that could not be easily managed physically.

4.3.5 Availability of digital technology

The study revealed that the college provided lecturers with desktops and laptops. The availability of digital technology tools such as laptops, desktops and personal smartphones that lecturers could use to communicate with their students as well as student-to-student communication in WhatsApp groups, contributed to technology adoption. Similarly, Lousã and Lousã (2023) reveal that facilitating conditions to the adoption of technology is the availability of resources for individuals to effectively use technology. On the same note, Bizami et al. (2023) point out that digital audio workstations, notation software, and virtual instruments are just a few examples of the technical tools that provide multiple possibilities for the adoption of technology in teaching music.

4.3.6 Availability of Internet

The availability of the internet also influenced technology adoption in teaching music. While at the institution, the researcher observed one lecturer downloading songs from YouTube onto their

laptops, which the students would then play and identify by name the instruments used in each song. On the same note, Barrett (2023) mentions that providing students with exposure to music originating from other genres and cultures fosters inquisitiveness, broadens their musical perspectives, and fortifies their connection to the subject matter.

Though the internet is available, the findings of this study indicate that there is low internet bandwidth students are not able to utilise technology to participate in music education that includes both theoretical underpinnings and practical, with a focus on strengthening students' voice-based choral singing abilities. This finding is contrary to the views from Bougrine and Lubart (2023) that technology enhances collaborative learning environments, interpersonal skills, and teamwork while focusing on voice-based choral singing abilities.

The study's findings show that the college lecturers have adopted technology in teaching music through downloading performances and turning notes into audio on mobile devices though there is a low broadband to allow every student to log into their LMS and learn at their convenience time. This finding is consistent with Montoya's (2020) findings, which reflect that mobile internet has even reached economically poor places.

4.3.7 Technology Improves Performance

The results of the study point to that teaching music is made simpler by the adoption of technology. This is in line with the view from Madzamba and Matorevhu (2023) who explain that performance expectancy as reflected from the UTAUT, is a measure of how much people think utilising technology improves their work performance or makes tasks easier and more efficient, is a key component in the adoption of technology in music education. Thus, the existence of the COVID-19 pandemic sped technology adoption as well as the perceived ease of use through technology, availability of digital tools and the internet to download from YouTube.

The study found that in the teaching of music theory, digital technology is employed to explain concepts to groups of students through WhatsApp groups in voice notes. Similarly, Hugill (2018) demonstrates that by combining digital tools, multimedia materials, and online platforms, students can engage with music in a variety of ways, including creation, performance, analysis, and group projects.

However, the findings of the study revealed that utilising WhatsApp to teach music theory was problematic because students struggled to understand music theory, which requires written explanations, particularly for visual learners. This finding is consistent with Zhang (2023), who states that proper access to resources guarantees that lecturers may effectively integrate technology into teaching music and use technological tools for both explaining and demonstrating concepts. In contrast, Webster and Williams (2018) suggest that technology enables composition and creative expression and no mention of theory in music is mentioned.

The results of the study also reveal that students can create, arrange, and produce their own music using resources such as digital audio workstations, notation software, and smartphones. The findings of this study also show that lecturers use technology to place students into manageable groups that they can teach. Similarly, Beirnes and Randles (2023) explain that technology acceptance and utilisation, as well as diverse schedules and learning styles, make teaching music easier, even for a bigger group of students.

The findings of the study show both the obstacles and opportunities connected with using digital technology to teach music theory. While digital tools and platforms can improve engagement and cooperation, teaching music theory, particularly to visual learners, presents distinct problems. Therefore, a balanced strategy that includes both digital and conventional teaching methods may be the most effective way to serve music students.

4.3.8 Needs for technology adoption

The study's findings indicate that more internet speed and proper music software are required for music education. In music theory classes, digital technology is used to clarify concepts to groups of students using WhatsApp voice notes. However, a faster internet connection and suitable music software could improve the clarity of lectures and demonstrations of many ideas. In contrast, Webster and Williams (2018) suggest that technology enables composition and creative expression. Students can create, arrange, and produce their music using resources such as digital audio workstations, notation software, and smartphones.

The study's findings also show that the college employs technology to teach music by downloading performances and turning notes into audio using smart mobile devices. Smartphones are the conveniently available digital tools that instructors utilise, so music was

taught via WhatsApp. Webster and Williams (2018) add to this by arguing that technology, especially cell phones, offers tools for composition and creative expression but the voice from an individual and the voice from a smartphone have a difference of an octave.

Voice notes help convey music theory principles, but some students struggle using WhatsApp group voice notes because they lack demonstrations of how to solve music problems especially where equations are involved. Furthermore, the study revealed that the use of videos to explain music concepts consumed a significant amount of students' internet data, and participants expressed a need for a larger internet bandwidth, as the current internet is so limited that when students log in for a lesson, it becomes overloaded and slows down or stops working, preventing them from working efficiently. Contrary to this situation, Turchet et al. (2018) note that students and lecturers could work through remote collaboration through video conferencing tools, which link students with professionals and peers worldwide.

The participants also stated that the lack of music software in the college impedes the proper use of digital technologies. There was also a requirement to provide lecturers with smart devices that allowed them to install music software to aid in writing, reading, downloading, and singing to the chosen sound. This view is in line with Yu et al. (2023) who believe that lecturers' willingness to adopt technology in teaching music may be influenced by how simple they believe digital tools and software to be to use. Furthermore, the study highlighted the importance of musical instruments, with each student being able to listen and make sounds from their preferred musical instrument. Contrary to this view Nart (2016) believes that digital tools and software can provide students with expanded opportunities to explore different musical styles, experiment with various musical instruments and sounds, and compose original music.

A holistic approach to technology adoption in which the institution offers the necessary infrastructure, financing, and assistance to both lecturers and students to effectively adopt technology into the teaching and learning of music theory is needed. Similarly, Peng et al. (2023) express the view that having a robust technological infrastructure is essential for successful technology integration. This would allow students to fully participate in and profit from technological advances in the field of music instruction. Further, lecturers underlined the need for the college to offer them and the students access to outside-of-campus data so that they could teach and learn using digital technologies at their convenience. Similarly, Wang (2023) is

concerned about having access to reliable internet connectivity, appropriate hardware, such as computers, tablets, or musical instruments with digital capabilities and relevant software or applications for proper technology adoption.

Similarly, the participants believe that using WhatsApp groups engages students in teaching music as they utilise digital technologies to listen, record and present what they have been assigned to do. On the same note, Johnson et al. (2019) reveal that the Fourth Industrial Revolution (4IR) has had a substantial impact on the use of technology to increase student involvement in music education. Engaging students with WhatsApp groups enables instructors to offer audio and video instructions for performance on their own time, allowing students to sing along with the videos and better grasp music sounds.

4.3.9 Access to Technology Resources

The study found that lecturers have access to digital resources like projectors, laptops, and speakers but no functional music software currently. In contrast to this view, Harrington and Ahrendt (2024) reveal that technology provides dynamic and immersive learning experiences by allowing students to experiment with music creation, performance, and analysis using digital tools and platforms. Again, Oliveira (2024) reveals that digital technologies that support transcription, translation, and captioning allow a wide range of learners to interact with music. However, the restricted availability of music instruments, software, and digital technologies in the studied college, impedes proper technology adoption into the teaching of music.

This study revealed that there is a need to supply smart gadgets to both lecturers and students so that they can connect and interact during the teaching and learning process to enhance performance and make tasks easier. These findings are in line with Liu (2023) who found that in the use of digital technologies in teaching music there is a need for a more dynamic and interactive learning environment to promote student engagement. This view is in line with the perceptions from Madzamba and Matorevhu (2023) that performance expectancy in UTAUT refers to the degree to which individuals believe that using technology enhances their job performance or makes tasks easier and more effective. Thus, to improve performance and simplify tasks, smart devices allowing lecturers and students to connect and engage during the teaching and learning process are necessary.

4.3.10 Financial allocation for music resources

The study revealed that in Eswatini, there was a need for finances to be allocated to the music course to enable the buying of musical instruments for use in music lessons. Similar to this finding Fofana (2018) revealed that lecturers in Sierra Leone face difficulty integrating technology into music education due to low government assistance and reliance on private schools. Again, Mobile Eswatini (2023) demonstrates that Eswatini has limited access to the tools and technology required for modern music development.

Another technique suggested by the lecturers for guaranteeing the adoption of technologies in music education is to ensure a transition from face-to-face instruction to technology integration. Sharing the same view, Okoro, Ayo-Farai, Maduka, Okongwu, and Sodamade (2024) reveal that moving from traditional instruction to technology adoption should be gradual as it may be problematic. Further, Cao (2024) demonstrates that professional development and support are required because acquiring technical skills and confidence in adopting technologies can be challenging.

4.3.11 Planned training sessions

The preparation of lecturers for integrating technology into music education must be carefully planned to ensure regular workshops that would give the lecturers the needed knowledge in the ever-changing digital technology world. Similarly, Bruin and Merrick (2023) reveal that training programmes, workshops, conferences, and online courses can give lecturers with the information and skills they need to effectively integrate technology into music instruction. According to Lei (2023), lecturers' educational training influences their practices, including their interpretations of the curriculum and subject matter, as well as student participation in music improvisation and creation.

The study's findings indicate that lecturers teaching music require training in technology adoption. The findings are consistent with Davis's (2021) observations that there is still a skills gap among lecturers who lack the technological know-how to integrate technology into music education. This is consistent with views from Barrane, Karuranga and Poulin (2018) who allude to that the UTAUT still influences the creation of plans and programmes meant to encourage the uptake and application of technology in a variety of settings.

The study's participants acknowledged the necessity for thorough instructor training in the adoption of technology in teaching music. Similarly, Nart (2016) observes that many instructors lack prior experience or awareness of the online resources, software, and digital tools that are commonly used in technology environments. Lecturer training for technology integration into music education must be effectively planned, and digital technologies should be made available promptly to ensure proper acceptance and utilisation of technology in music education.

Furthermore, the participants emphasised the need to hold regular seminars and workshops in an ever-changing technical context. Basche et al. (2021) discovered that lecturers' technical confidence and skills can be enhanced by practical workshops that provide possibilities for practice, modelling, and step-by-step support. Thus, the study delves into the solutions and challenges of integrating technology into music teaching, emphasising the necessity of complete training, access to digital resources, and ongoing support for lecturers.

4.4 Summary of the chapter

The chapter discussed the teaching methods used by music lecturers at a college, focusing on lectures, tutorials, and practical exercises. Lectures provide a foundation in music theory, while tutorials allow students to apply concepts through problem-solving activities. The college emphasizes practical training, including singing sessions, to develop vocal skills and music theory knowledge. The lecturers emphasize the importance of a comprehensive understanding of music theory for all students, regardless of their major. The chapter recommends regular workshops to keep up to date with technological advancements as alluded to by the UTAUT theoretical framework.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 INTRODUCTION

In Chapter Four I presented and discussed the findings of the study. The purpose of this chapter is to conclude this study of lecturers' adoption of digital technology to promote student engagement in teaching music at a teachers' college in the Manzini region of Eswatini. Chapter five summarises the major findings of the study, provides conclusions of the study and gives recommendations about the findings of this study.

5.2 SUMMARY OF THE RESEARCH PROCESS

The main purpose of this study was to address the needs of college lecturers teaching music in the Manzini region of Eswatini by exploring lecturers' adoption of technology to enhance student engagement in creating and performing music pieces. The study employed a qualitative research methodology, which entailed a case study of a teacher training college in Eswatini. Purposive sampling was used to select study participants, four music lecturers.

In addressing the needs of college lecturers teaching music in the Manzini region of Eswatini, I established the experiences and perceptions of the lecturers teaching music. The literature reviewed revealed that every study is based on a broad theoretical framework. This study was underpinned by the Unified theory of acceptance and use of technology (UTAUT). Literature related to the study revealed that technology adoption is an important move in teaching music that offers new learning opportunities beyond traditional instructional methods, enabling students to access a wide range of resources, engage with virtual instruments, and explore music from different cultures. The study employed open-ended interviews, observations and open-ended questionnaires to gather data. Data were presented, discussed and analysed according to the themes that emerged. The data gathered was then compared with the literature related to the study.

The main research question of the study was; how are the college lecturers adopting technology to promote student engagement in teaching music? The sub-research questions are: What are the factors influencing college lecturers' adoption of technology in teaching music? What are the college lecturers' needs in adopting technology in teaching music? Which strategies can be used to address college lecturers' needs in adopting technology in teaching music? The data gathered, presented and analysed in this study ensured that all set research questions were answered. The participants' views on technology adoption were highlighted. The challenges that come with technology adoption were also highlighted. The study also recommended what could be done to address the needs of the lecturers in adopting technology. This study managed to answer the set research questions.

5.3 SUMMARY OF FINDINGS OF THE STUDY

The study revealed that college lecturers have adopted technology in the teaching and technology is also used in lesson preparation and job performance enhancement. Digital tools like laptops and smartphones are used for lesson preparation, making it easier for students to practice and learn. Technology also enhances job performance by allowing lecturers to input music notes and convert them into audio, making choir practice more efficient. The COVID-19 pandemic has accelerated the adoption of technology in music teaching due to WHO regulations and social distancing. The availability of software and apps on the internet and Learning Management Systems has also influenced the adoption of technology in teaching music.

College lecturers' needs in adopting technology include on-campus and off-campus data, smart gadgets for lecturers and students, funding for music, and proper training for lecturers. They emphasize the importance of resources provided during workshops and online teaching and technology integration training. To address these needs, strategies such as proper training on technology adoption, providing necessary tools and resources, and regular workshops and seminars can be implemented. Lecturers need training on proper technology adoption skills and knowledge to make tasks easier and more effective.

Providing the necessary tools and resources for technology adoption is another strategy suggested. The transition from face-to-face instruction to technology integration in music teaching can be made easier by providing proper technology resources for various music activities, including software. Phones are the most used digital tool for recording videos and sending voice notes to students. The study also highlights the need for better training, funding, and resources to support the adoption of technology in music teaching.

5.4 RESPONDING TO THE ASSUMPTIONS OF THE STUDY

This section presents conclusions to the assumptions that underpin this research study.

5.4.1 Assumption: 1 Digital technology adoption facilitates ease in teaching music

The assumption is in line with the UTAUT theory that suggests that perceived ease of use influences technology adoption. In music education, digital technology's ability to reach students and handle large classes positively impacts its adoption by college lecturers. Improved internet bandwidth and music software can enhance ease of use and clarity of concept explanations. However, other factors like lecturers' digital literacy, availability and accessibility of digital resources, institutional support, and student receptiveness to digital technology could also influence its adoption. These factors provide a deeper understanding of the factors influencing digital technology adoption in music education in the Manzini region of Eswatini.

5.4.2 Assumption: 2 The teacher's college has the infrastructure, resources, and support for the adoption of technology into music teaching.

This assumption is contrary to the results revealed in this study. The results of the study reveal that a teachers' college in Eswatini, has limited resources and infrastructure for lecturers to properly adopt technology into teaching music. The college lacks the necessary musical instruments and digital technology and software. The Ministry's insufficient funding hinders the integration. The study suggests that the government and Ministry should allocate dedicated funding for music education, even at the college level, to ensure that the appropriate infrastructure and resources are available for effective digital technology adoption.

5.4.3 Assumption: 3 Lecturers are willing to adopt digital technologies into the teaching of music.

The assumption is in line with the results of the study. The Unified Theory of Acceptance and Use of Technology (UTAUT) framework suggests that lecturers' willingness to adopt digital technologies in music teaching is influenced by performance expectancy and effort expectancy. Personal beliefs and experiences, such as finding digital tools user-friendly, also play a role. Other factors that influence lecturers' willingness to adopt digital technologies include perceived usefulness, institutional support and training, digital competence and comfort level, and institutional culture and leadership. The assumption can be more comprehensively qualified,

providing a deeper understanding of the complex interplay of factors influencing lecturers' willingness to adopt digital technologies in music teaching.

5.4.4 Assumption: 4 Adopting digital technology boosts student involvement and participation in music education.

The assumption is in line with the results of the study. The integration of digital technology in music education can increase student motivation and engagement, promote a sense of ownership, and encourage critical thinking, creativity, and problem-solving skills. However, the degree of motivation and engagement depends on the quality of digital resources and the lecturers' ability to integrate technology effectively. The design of technology-enhanced activities and student-centred learning opportunities also play a role. Additionally, digital tools can create an accepting learning environment and encourage active listening, contributing to a more inclusive and supportive learning environment. Careful consideration of these factors can maximize the potential benefits of integrating digital technology in music teaching.

5.5 CONCLUSIONS DRAWN FROM THE STUDY

This section presents conclusions drawn from the data gathered in the study. These conclusions are guided by the objectives of the study. The study explored how college lecturers adopt technology to promote student engagement in teaching music. It concluded that digital devices like computers, smartphones, and music software make tasks easier and improve job performance for lecturers and students. However, there is a challenge in adopting technology in teaching music due to limited internet access. To address this, providing students with high-speed internet broadband and suitable music software may help them understand the explanations and examples of various music ideas.

The study also concluded that the COVID-19 pandemic drove the adoption of technology in music teaching, with the need for social distancing measures and the availability of digital communication tools like MOODLE learning management system (LMS) and WhatsApp messaging app. The current 4IR era has also compelled lecturers to adopt technology, as per the Social Influence component of the Unified Theory of Acceptance and Use of Technology (UTAUT).

The study also concluded that the college lecturers had needs in adopting technology in teaching music, including limited internet bandwidth, slow system performance, and unavailability of necessary music software. Additionally, the college lacks music software, smart devices, and musical instruments, which hinders the adoption of technology. Limited funding for the music department contributes to these issues.

The study also concluded that the lecturers' needs could be addressed through training lecturers, migrating from traditional methods to technology, providing adequate resources, and using smartphones as communication tools. The study also concluded that workshops and seminars are vital in keeping lecturers informed and up-to-date with the constantly evolving technological landscape.

5.6 RECOMMENDATIONS FOR POLICY AND PRACTICE IN EDUCATION

The recommendations made in this study are in line with the research questions, findings from reviewed literature and findings of the study. The recommendations are meant to improve the lecturers' adoption of digital technology to promote student engagement in teaching music at a teachers' college in the Manzini region of Eswatini and these are;

5.6.1 Recommendations of findings

The recommendations of findings are presented under the subheadings: improve the infrastructure of technology, allocate specific funding and resources, put in place thorough training programs, encourage the transition to technology-integrated learning and utilise technology for communication.

5.6.1.1 Improve the Infrastructure of Technology

The study recommends that is important to modernise the technology infrastructure on campus in to facilitate the easy adoption of technology into music education. Enhancing network performance and internet bandwidth is one way to guarantee dependable access to digital tools and information. The college should also make sure that essential music software, like Sibelius, is available and provide students with access to it. To fully engage children with the adoption of technology, it is also essential to provide them with the necessary smart gadgets and musical instruments.

5.6.1.2 Allocate Specific Funding and Resources

The study also recommends that the Ministry of Education provides money expressly for the teaching of music. To enhance technology integration in music education, this targeted financing would assist address the shortage of resources and make it possible to purchase digital tools, software, and musical instruments.

5.6.1.3 Put in Place Thorough Training Programs

Further, the study recommends an extensive training program that gives lecturers the know-how and abilities they need to successfully adopt technology into their teaching of music. Training programs ought to incorporate interactive workshops and demos aimed at acquainting lecturers with digital tools, software, and pedagogical approaches. Promoting possibilities for further

professional development will also assist teachers in keeping abreast of the ever-changing technical scene.

5.6.1.4 Encourage the Transition to Technology-Integrated Learning

The study recommends the significance of offering direction and assistance to lecturers and students as well on the shift from conventional, in-person instruction to technology-enhanced techniques. Encouraging the college community to embrace and utilise digital tools and resources is essential to ensuring a seamless transition.

5.6.1.5 Utilise Technology for Communication

The study recommends extensive accessible communication channels, like WhatsApp, to improve the quality of student-teacher interactions and ease the exchange of course materials, evaluations, and feedback. Further, the study recommends the inclusion of different learning styles for various students by including the usage of smartphones.

5.6.1.6 Provide Mechanisms for Regular Review and Feedback

Based on the conclusions, the study recommends routinely assessing how well technology adoption programs are working and getting input from lecturers and students. The study also recommends that the technology adoption in teaching music should continue to be improved as well as the technological infrastructure, training courses, and technology adoption pedagogies.

5.6.2 Recommendations for further studies

The present study's conclusions have led to the following research recommendations being put out for future studies: These are presented under the following sub-headings: examining the views of students, a comparative study of technology adoption in different fields, evaluation of technology integration initiatives over time, examining institutional leadership's function and examining the effect on educational outcomes.

5.6.2.1 Examining the views of students

It would be beneficial to carry out a supplemental study that looks into the experiences and views of the students, as the current study concentrated on the needs and experiences of college lecturers. A more thorough knowledge of the process of technology adoption may be possible by delving deeper into how students view the use of technology in music education, as well as their unique requirements and obstacles.

5.6.2.2 A comparative study of technology adoption in different fields

Another study that focuses on Technology adoption in Different Fields could be conducted. The adoption of technology into music education was the main emphasis of the current study. Extending the research scope and performing a comparative examination of technology integration strategies among the college's various academic fields would be enlightening. This could make it easier to find common problems, best practices, and chances for information sharing and cross-disciplinary collaboration.

5.6.2.3 Evaluation of Technology Integration Initiatives over Time

A longitudinal study could be conducted to evaluate the technology integration projects' long-term effects and sustainability. This would entail monitoring the implementation activities' results and progress over a long-time frame, possibly several academic years. A study of this kind might yield important new information about how technology usage has changed over time, how well training initiatives have worked, and how instructors' and students' attitudes and skill levels have changed.

5.6.2.4 Examining Institutional Leadership's Function

Another study could focus on institutional leadership’s function in ensuring that there is technology adoption in the teaching of music. Although the requirements and experiences of lecturers were the focus of the current study, institutional leadership plays a critical role in promoting and assisting with technology integration projects. The viewpoints and methods of decision-making of legislators, deans, and college administrators might be the subject of future studies. This could clarify institutional obstacles, objectives for allocating resources, and strategic planning for integrating technology into music education.

5.6.2.5 Examining the Effect on Educational Outcomes

Further studies could also focus on how well technology is integrated into music education based on the students’ outcomes. This would offer insightful information about the advantages of technology adoption in teaching music.

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Appendices

Appendix 1: Informed consent declaration form sample

BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF SCIENCE EDUCATION

Informed consent declaration form for Lecturers

In terms of the ethical requirements of Bindura University of Science Education, I invite you to complete this form as an indication of your voluntarily participation in this study.

I __ _____hereby confirm that I have full knowledgeable about the purpose, procedures, and activities of the study. The rights and risks of participation have also been clarified to me. I was given full opportunity to ask questions and I understand that I can withdraw from the study at any stage and time, without giving any reasons.

I therefore hereby freely **Give** my consent to voluntarily take part in the study as outlined **(Delete the inapplicable).**

Signature: _____ Date: _____

Shelphe 13 June 2024

Researcher's signature: _____ Date: _____

Appendix 2: Open-ended questionnaire for college lecturers

BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF SCIENCE EDUCATION

Open-ended questionnaire for college lecturers

Adoption of ICTs in the teaching of music

How would you describe your current approach to teaching music in the college?

_____

_____

_____

_____

Explain, using examples or anecdotes, how you accepted and utilised technology in teaching music.

_____

_____

_____

_____

What are the key challenges or obstacles you face in utilizing technology to enhance your skills and promote student engagement in creating and performing music pieces?

_____

_____

_____

_____

College lecturers’ needs

What specific needs or support do you require to effectively utilize technology in your music instruction?

How do you assess and support students' musical performances in the context of technology utilisation?

How do you perceive the impact of technology utilisation on student engagement in creating and performing music pieces? Please provide examples or anecdotes if possible.

What resources or technologies do you currently have access to for music creation and performance in your college?

What are the limitations or gaps in terms of resources or technology that hinder your ability to effectively implement blended approaches?

Student Engagement

Describe how student engagement and interest in music instruction affect their overall musical development and growth.

What strategies do you believe can effectively address your needs and enhance student engagement in creating and performing music pieces?

Strategies and professional development

How do you perceive the role of your educational training in enhancing technology utilisation in the teaching of music?

What types of professional development or training opportunities would you find beneficial in enhancing your skills in utilising technology in the teaching of music?

State any additional comments or suggestions you would like to provide regarding the use of technology to enhance student engagement in music education.

Appendix 3: Open-ended interview questions for college lecturers

BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF SCIENCE EDUCATION

Open-ended interview questions for college lecturers

The utilisation of blended approaches

Narrate your current approach to teaching music in college within the Manzini region.

Describe providing specific examples of how you have utilised technology to your teaching.

What are the main challenges or obstacles you face in adoption of technology to enhance your skills and promote student engagement in creating and performing music pieces?

College lecturers' needs

What specific needs or support do you require to effectively utilize technology in your music instruction?

How do you assess and provide support for students' musical performances in the context of technology utilisation?

What impact do technology have on student engagement in creating and performing music pieces? Could you share any specific examples or anecdotes?

What resources or technologies are currently available to you for music creation and performance in your college?

What limitations or gaps in terms of resources or technology hinder your ability to effectively utilise technology in teaching music?

Student Engagement

How do student engagement and interest in music instruction affect their overall musical development and growth?

Based on your understanding of technology utilisation, what strategies do you believe can effectively address your needs and enhance student engagement in creating and performing music pieces?

Strategies and professional development

How do you perceive the role of your educational training in enhancing student engagement in music creation and performance?

What specific professional development or training opportunities do you believe would be beneficial in enhancing your skills in utilizing technology in teaching music?

Any additional comments or suggestions regarding the use of technology in teaching music?

Appendix 4: Observation schedule for college lecturers

BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF SCIENCE EDUCATION

Observation schedule

This observation schedule will be completed for all the aspects mentioned hereunder. These are technology utilisation in lesson preparation, resources available, and technology use in teaching music, gaps/needs in adoption of technology in teaching music

Section A

General Information

Date……

Section B

Activities to be observed

Activities to be observed	**Comments**
Technology utilisation in lesson preparation	
Resources	Music resources available in the teacher training college Music resources in the classrooms
Technology use in teaching music	Laptop. Projector
Gaps/Needs in adoption of technology in teaching music	

Appendix 5: Ethical Clearance

P Bag 1020
BINDURA
ZIMBABWE
Tel: 0271-7531 ext 1038
Fax: 263-71-7616
CEMS DEPT

BINDURA UNIVERSITY OF SCIENCE EDUCATION

Date: --05 June 2024---------

TO WHOM IT MAY CONCERN

NAME: Sithulisiwe Bhebhe REGISTRATION: ---B226420B----------

PROGRAMME: ---Masters in Curriculum Studies---------- PART: -------2.1----------

This memo serves to confirm that the above is a bona fide student at Bindura University of Science Education in the Faculty of Science Education.

The student has to undertake research and thereafter present a Research Project in partial fulfilment of the Masters in Curriculum Studies programme. The research topic is: Lecturers' acceptance and utilisation of technology to promote student engagement in teaching music at a teachers' college in the Manzini region of Eswatini

In this regard, the department kindly requests your permission to allow the student to carry out his/her research in your institution.

Your co-operation and assistance is greatly appreciated.

Thank you

The Government of the Kingdom of Eswatini

Ministry of Education & Training

Tel: (+268) 2 4042491/5
Fax:(+268) 2 404 3880

P. O. Box 39
Mbabane, ESWATINI

11 June 2024

The Principal

William Pitcher Teacher Training College

Dear Madam

RE: REQUEST FOR PERMISSION TO COLLECT DATA FOR THE BINDURA UNIVERSITY OF SCIENCE EDUCATION -MS SITHULISIWE BHEBHE.

1. The Ministry of Education and Training has received a request from Ms. Sithulisiwe Bhebhe, a student at the Bindura University of Science Education that in order for her to fulfill her academic requirements at the University she has to collect data (conduct research) and her study or research topic is: **"Lecturers' acceptance and utilization of technology to promote student engagement in teaching music at a teacher's college in the Manzini Region of Eswatini.** Data will be collected from Lecturers at William Pitcher Teacher Training College. All details concerning the study are stated in the participants' consent form which will have to be signed by all participants before Ms Bhebhe begins his data collection.

2. The Ministry of Education and Training requests your office to assist Ms Bhebhe by allowing him to use the College as his research site. Data collection period is **one month**.

RICHARD DLAMINI
ACTING DIRECTOR FOR EDUCATION

EDUCATION
DIRECTOR'S OFFICE
11 JUN 2024
P.O. BOX 39
MBABANE H100
ESWATINI

Appendix 7: Institutional clearance

William Pitcher College

P.O. Box 87, Manzini. Eswatini
Tel: (+268) 2505 2081/2; 2505 4672/7; Fax: (+268) 2505 4690
E-mail: wpc_info@wpc.ac.sz; Website : www.wpc.ac.sz

17th June, 2024

Ms Sithulisiwe Bhebhe
William Pitcher College

Dear **Ms Sithulisiwe Bhebhe**

RE: PERMISSION TO CONDUCT RESEARCH AT WILLIAM PITCHER COLLEGE

Kindly refer to above subject

William Pitcher College hereby grants you permission to conduct the research in the College entitled: "*Lecturers acceptance and utilisition of technology to promote student engagement in teaching music at teachers college in the Manzini Region of Eswatini*". A study in pursuit of your studies in the Bindura University of Science Education. The conditions of the approval are as follows:

- A copy of a letter from the Director of Education is submitted to the College Principal.
- Participants are not identifiable in any way from the results of the research and can participate willingly.

The College wishes you all the best in your studies.

Yours sincerely,

Dr. N.P. Mhlongo
Principal

WILLIAM PITCHER COLLEGE
PRINCIPAL
JUN 2024
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ESWATINI