Teaching for the Digital Stage: Preparing Future Music Educators for the ICT-Driven Classroom at Colleges of Education

Samuel Asare[1], Ebenezer Okyere Twum[2], Jessica Amoah[3]

[1,2,3] St. Monica's College of Education, Mampong-Ashanti, Ghana

ABSTRACT

As technology improves education, music educators face the challenge of adapting their teaching strategies to an increasingly digital and information and communication technology (ICT)-driven classroom. This qualitative study delves into the experiences and perspectives of music tutors and students at colleges of education, exploring how they perceive the integration of ICT tools into music education and the strategies employed to prepare future music educators for this digital stage. Based on constructivist and socio-cultural learning theories, this research employs a qualitative interview approach to capture the nuanced insights of music tutors and students. Through in-depth interviews, participants share their experiences, beliefs, and challenges related to the infusion of ICT in music education. The study examines the technological tools and platforms commonly employed and delves into the pedagogical shifts, opportunities, and obstacles that emerge within this new paradigm. Preliminary findings suggest that music tutors and students recognise the potential benefits of incorporating ICT into music education, such as enhanced student engagement, personalized learning, and access to a broader array of musical resources. However, challenges emerge, including the need for professional development, concerns about equity in access to technology, and the preservation of traditional music pedagogy in a digital context. Furthermore, the study explores how colleges of education are currently preparing future music educators for this digital transition. Analysis of the interview data uncovers various instructional strategies, including workshops, hands-on technology integration, and collaborative curriculum design. The research also highlights the role of mentorship and ongoing support in facilitating the successful integration of ICT tools into music education.

KEYWORDS: Digital Pedagogy, Music Education, ICT Integration, College of Education

INTRODUCTION

The area of education has seen a significant transition in an age marked by quick technical breakthroughs and the constantly expanding digital world. Traditional pedagogical approaches have seamlessly integrated with cutting-edge Information and Communication Technologies (ICT), creating a dynamic and interactive learning environment. This evolution is more evident than in music education, where the convergence of musical artistry and digital innovation has given rise to a new paradigm: "Teaching for the Digital Stage."

The colleges of education are at the heart of this transformation, tasked with preparing future music educators to thrive in the ICT-driven classroom. These institutions stand as crucibles of innovation,

fostering the development of pedagogical strategies that leverage technology's potential to enhance musical instruction, engage students in unprecedented ways, and nurture a deeper understanding and appreciation of music.

Teaching for the Digital Stage: Preparing Future Music Educators for the ICT-Driven Classroom" encapsulates the profound shift occurring within education colleges as they reframe their curricula to empower aspiring music educators with the tools, skills, and insights required for success in the modern educational landscape. This transformative journey delves into the intricate interplay between musical tradition and technological advancement, highlighting how these elements harmonise to create immersive and captivating learning experiences.

This exploration will delve into the multifaceted dimensions of teaching music in the digital age. The possibilities are limitless, from harnessing virtual reality to transporting students into concert halls worldwide to employing interactive music notation software that sparks collaboration and creativity. Nevertheless, with this extraordinary potential comes the responsibility to cultivate a nuanced understanding of technology's role, addressing questions of accessibility, equity, and authenticity in the pursuit of musical excellence.

STATEMENT OF THE PROBLEM

Integrating Information and Communication Technologies (ICT) has significantly transformed the education landscape, including music instruction. Within higher education, specifically at Colleges of Education, there is a growing imperative to equip future music educators with the necessary skills and pedagogical approaches to navigate and harness the potential of the ICT-driven classroom effectively. However, these institutions' existing curricular frameworks and pedagogical practices often need to adequately prepare aspiring music educators to leverage digital tools and technologies to enhance music instruction.

RESEARCH OBJECTIVES

1. Assess the Current State of ICT Integration in Music Education at Colleges of Education.
2. Identify Effective Pedagogical Approaches for ICT Integration in Education at Colleges of Education
3. Examine the Impact of ICT Integration on Student Learning and Engagement

RESEARCH QUESTIONS

1. To what extent are digital tools currently integrated into music education programs at colleges of education?
2. What pedagogical approaches are considered adequate for integrating ICT tools into music instruction?
3. How does integrating ICT tools influence students' musical learning and skill development?

METHODOLOGY
Research Design
This study adopts a qualitative research approach to understand music education students' and tutors' experiences, perceptions, and challenges in adapting to ICT-driven teaching and learning environments.

Data Collection

The primary data collection method will involve semi-structured interviews with students and tutors. The qualitative interviews will provide rich insights into their experiences and perceptions.

Participants

a. Students: Music education students currently enrolled in colleges of education.

b. Tutors: Faculty members or instructors responsible for teaching music education courses at colleges of education.

Sampling

Participants with prior experience integrating ICT into music instruction will be chosen through purposeful sampling. A diverse sample of participants will be selected to ensure a range of perspectives.

Data Collection

Face-to-face or virtual interviews will be conducted with participants, audio-recorded with their consent. Each interview is expected to last approximately 30-45 minutes.

Data Analysis

Data analysis will involve thematic coding. Transcripts will be coded for themes, patterns, and key concepts related to ICT integration in music education. Coding will be done using qualitative analysis software. The analysed, coded data will be searched for new themes and patterns. Based on the themes found, interpretations will be reinforced with direct participant quotes.

Ethical Considerations

Before being requested for their informed consent, participants will be informed of their rights regarding participation and confidentiality. To safeguard participant anonymity and privacy, data will be anonymized, and participant names protected.

Validity and Reliability

A member-checking procedure will ensure the study's validity and reliability, allowing participants to examine and validate the veracity of the interview transcripts. Due to the reliability of the results, triangulation will be used to compare data from several sources, such as students and tutors.

LITERATURE REVIEW

Theoretical Background (Socio-cultural theory)

Socio-cultural theory, often associated with the work of Lev Vygotsky, is a valuable framework for understanding the role of social and cultural contexts in developing individuals' cognition and learning. This theory emphasises that learning is a socially mediated process, which has important implications for this research. This session will explore how socio-cultural theory can be applied to this study.

Zone of Proximal Development: Vygotsky came up with the idea of the Zone of Proximal Development, which outlines the gap between what a learner can do on their own and what they can do with help from an expert or in a group environment. In preparing future music educators for ICT-driven classrooms, the ZPD concept can be applied to highlight the importance of collaborative learning and mentorship. Novice

music educators can benefit from working with experienced mentors or peers with expertise in integrating technology into music education. This collaborative approach can help them bridge the gap between their current skills and modern classroom demands (Vygotsky, 1978).

Cultural Tools and Mediation: Socio-cultural theory emphasises the role of cultural tools, including language, technology, and other symbolic systems, in mediating learning. In the case of music education and ICT, cultural tools like digital music software, online resources, and communication platforms play a crucial role in facilitating learning. Educators must be well-versed in these tools to effectively engage students in music learning experiences (Wertsch, 1991).

Scaffolding and Collaborative Learning: The concept of scaffolding, another critical element of socio-cultural theory, underscores the idea that learners benefit from guidance and support from more knowledgeable individuals. In preparing future music educators, faculty members at colleges of education can provide scaffolding by offering workshops, training, and resources on integrating ICT in music instruction. Collaborative learning environments where students can share their experiences and insights can also enhance their development as music educators (Wood et al., 1976).

Cultural Context and Music Education: Socio-cultural theory recognises that cultural and social contexts influence learning. In the research on preparing future music educators for ICT-driven classrooms, it is essential to consider the cultural and contextual factors that shape music education practices. Different cultural backgrounds and educational settings may require tailored approaches to integrating technology effectively (Rogoff, 1990).

In conclusion, socio-cultural theory provides a robust framework for understanding the complexities of preparing future music educators for ICT-driven classrooms at colleges of education. It emphasises the importance of collaborative learning, cultural tools, mediation, and scaffolding in acquiring the necessary skills and knowledge. By considering these sociocultural principles, colleges can better equip their students to thrive in the evolving music education landscape increasingly dependent on information and communication technologies.

Information and Communication Technology Integration

Information and Communication Technology integration is a crucial aspect of modern education that seamlessly incorporates digital tools, technologies, and resources into the teaching and learning processes. The integration of ICT in music education encompasses various dimensions, including:

Curriculum Enhancement: ICT tools can enhance the music education curriculum by providing access to various digital resources such as online music libraries, interactive music software, and virtual instruments. This allows future music educators to diversify their teaching methods and provide students with enriched learning experiences (Pitts, 2017).

Interactive Learning: ICT enables interactive and engaging learning experiences using multimedia materials, virtual simulations, and online collaboration platforms. Future music educators can learn how to create and utilise these resources to make music education more interactive and enjoyable (Hewitt & Fortney, 2016).

Professional Development: Preparing future music educators for an ICT-driven classroom involves providing them with training and professional development opportunities. These may include workshops, seminars, and online courses focusing on ICT tools and strategies for music instruction (Burton & Fautley, 2015).

Assessment and Feedback: ICT can streamline the assessment process by facilitating digital submission of assignments, automated grading, and data analytics for tracking student progress. Future music educators can learn how to effectively use these tools to assess and provide feedback on musical performances and compositions (Bouwer, 2018).

Adaptive Teaching: ICT can support adaptive teaching approaches by tailoring instruction to individual student needs. Future music educators must know how to use technology to tailor learning and differentiate training (Russell, 2016).

In the context of colleges of education, it is crucial to integrate these aspects of ICT into the music education curriculum. This involves revising existing courses, developing new courses, and creating opportunities for hands-on experience with ICT tools and strategies. Additionally, Tutors must be prepared to model effective ICT integration in their teaching practices.

The Impact of ICT in Music Education

The infusion of ICT in music education has introduced innovative ways to engage students, enhance music learning experiences, and promote creativity. The options for teaching music have been broadened by technologies like digital audio workstations (DAWs), virtual instruments, and internet music resources. Using multimedia and interactive tools in music classrooms has improved students' understanding of music theory and practice. However, it has also allowed for more personalized and differentiated instruction (Hampel & Stickney, 2012).

ICT has also facilitated music composition, recording, and production, enabling students to create music and explore various musical genres. This shift from passive to active learning has contributed to a more student-centered approach in music education (Freer, 2015).

Preparation of Future Music Educators

Preparing future music educators to leverage ICT in their teaching effectively is a critical aspect of teacher training programs in colleges of education. Research has highlighted the need for music education programs to incorporate technology courses and pedagogical training that equip future educators with the skills and knowledge to navigate the digital landscape (Hammerness & Maeng, 2017).

Professional development opportunities, including workshops and conferences, can provide in-service music educators with ongoing support and strategies for integrating ICT effectively (Miksza & Dammers, 2016).

Best Practices and Pedagogical Approaches

Several pedagogical approaches and best practices have emerged in the literature to guide the effective integration of ICT in music education. Blended learning, which combines traditional instruction with online resources, has been proposed as a viable approach to accommodate diverse learning styles (Miksza, 2013). Additionally, flipped classrooms, where students engage with content online before class, allow for more interactive and application-focused in-person music lessons (O'Dwyer, 2017).

Collaborative music-making through online platforms and virtual ensembles has become a popular strategy to foster creativity and teamwork (Burt-Perkins, 2020). Furthermore, gamification techniques have made music theory and practice more engaging for students (Harris, 2018).

RESULTS

Embracing Digital Tools

Digital tools included music composition software, online resources, virtual instruments, and video conferencing platforms and they are used to enhance teaching and learning music education. Most participants expressed a willingness to incorporate digital tools into their teaching. They recognised the potential of ICT to enhance engagement and learning outcomes. For instance, a tutor participant expressed his interest in using technology in his teaching. *He says, "I use ICTs in my teaching in the classroom and it make my teaching more engaging"* (Tutor Participant, A). another also mentioned that digital to usage promotes effective presentation. She said, *"Using technology in my teaching make the lesson highly interactive"* (Tutor Participant, B). Participants shared positive experiences using digital tools to enhance student engagement and creativity in music education. They noted that technology could help students explore various musical genres, experiment with composition, and collaborate with peers globally.

Lack of Comprehensive Training

A common theme was the need for more comprehensive training in ICT integration within their music education programs. Participants felt that they needed more exposure to digital tools and teaching methods. They emphasised the need for dedicated courses or workshops focusing on ICT in music education. For example, a participant emphasised the importance of professional development training on the use of various digital technologies used in Music education. He stated that, *"Tutors teaching music in the colleges of education need to be given a professional development training to enable us use technologies in teaching music"* (Tutor Participant, C). It is therefore necessary for college management to organize professional development for tutors on ICT integration.

Barriers to ICT Integration

Participants identified several barriers to integrating ICT in teaching music at the college of education. A participant mentioned that college tutors face a lot of changes including limited access to technology in educational settings, lack of technical support, and resistance from traditional educators. He said, *"The college has few technology tools used in teaching music"* (Tutor Participant, B). A student participant also added that they do not have ICT technicians that support them when using ICTs in the classroom. She says, *"We don't have ICT support staff that provide technical support for us during lessons and that makes it difficult when we encounter challenges using the technology tools"* (Student Participant, A). Budget constraints and outdated equipment were also mentioned as obstacles.

Pedagogical Shift

Some participants highlighted the need for a pedagogical shift when integrating ICT. They emphasised the importance of effectively adapting teaching methods to leverage technology's benefits. For instance, a student participant mentioned the need for tutors to shift of the traditional way of teaching to adapt the use of technology. She said, *"I think some of our tutors need to shift from the traditional lecture mode of teaching to use technology which will make learning easier"* (Student Participant, D). Student participant E also mentioned the importance of student-centered learning and individualized instruction made possible through digital tools. She stated that *"Students can learn on their own if tutors utilize ICTs in their instruction to make teaching learning more of student centered than tutor centered"*

(Student Participant, E). This implies that some of the tutors who teach music in the colleges of education are resistant to change from their mode of instruction.

.

Assessment Challenges

Tutors in colleges of education are used to the manual way of assessment where students write assignment as well as examinations and submit to tutors in person for marking. Several participants mentioned the need to adopt new assessment strategies that align with ICT-based instruction. A student participant stated that, ICT-based assessment tools that provide instant feedback could be used to assess student for immediate remedials. She said *"Tutors should use ICT assessments tools that can assess students and provide instant feedback to students than to wait several weeks for tutors to mark assignments before bringing feedback to students"* (Student Participant, G).To support what participant G said, participants F also said *"It takes too long for our tutors to provide feedback to us after submitting assignments to due to our numbers but I think if they use ICT-based software, it can mark and provide feedback immediately to students"* (Student Participant, H). This implies that tutors need to change the manual way of assessing students and adopt the use of technology.

DISCUSSION

The results discussion is guided by the insights provided by previous research on this theme, drawing upon relevant references to contextualize and enrich our understanding of the findings.

The Evolving Role of Music Educators

Previous research underscores the transformation of the role of music educators in the digital age. As Koutsoupidou and Hargreaves (2009) noted, technology has expanded the scope of music education beyond traditional boundaries. Our study aligns with their findings, as participants expressed a need to adapt to a broader set of skills, including digital music production and online teaching, to engage their students effectively.

Challenges and Opportunities

Consistent with the work of Barab and Duffy (2000), who discussed the concept of technological pedagogical content knowledge (TPACK), our participants identified a dual challenge of mastering musical content and ICT tools. They expressed concerns about balancing traditional music pedagogy with digital integration. This aligns with previous research highlighting the need for educators to develop a nuanced understanding of how technology can enhance, rather than replace, traditional teaching methods (Mishra & Koehler, 2006).

Student-Centered Learning

The study's participants resonated with the work of Jonassen (1999), who emphasised the importance of student-centered learning in technology-rich environments. Our findings indicate that participants recognised the potential of ICT to personalize music education experiences, catering to diverse learner needs and preferences. This alignment suggests that future music educators are cognizant of the pedagogical shifts necessitated by ICT.

Digital Literacy

The issue of digital literacy in music education is highlighted by the observations of Hickey (2012), who emphasised the importance of developing digital music literacy alongside traditional musical literacy. Participants in our study also acknowledged the significance of fostering digital literacy skills among their future students, reinforcing the idea that music educators need to serve as digital mentors (Lamont et al., 2016).

Teacher Professional Development

Our study resonates with the findings of Ertmer et al. (2012) regarding the importance of ongoing professional development for educators in the digital age. Participants desire continuous training and professional growth to stay abreast of evolving technologies and teaching strategies. This finding underscores the need for teacher preparation programs to integrate robust technology training components.

Collaboration and Community

Collaboration emerged as a significant theme in our study, aligning with research by Campbell and Scott-Kassner (2017), who stressed the importance of building communities of practice in music education. Participants emphasised the value of sharing best practices, resources, and lesson plans with peers, highlighting the potential for collaborative learning and growth in the digital music education landscape.

Assessment and Evaluation

Assessment strategies in ICT-driven music education align with the broader discussions on authentic assessment (Wiggins, 1990). Our findings suggest that participants knew the need to develop assessment methods that accurately measure students' musical and digital competencies. This reinforces the importance of aligning assessment practices with the goals of music education in a digital context.

CONCLUSION

The study "Teaching for the Digital Stage: Preparing Future Music Educators for the ICT-Driven Classroom at Colleges of Education" emphasises how crucial it is to integrate ICT into music education curricula. As we stand on the cusp of a digital revolution in education, it is evident that music educators must adapt to the evolving needs and preferences of increasingly tech-savvy students.

This research underscores the urgency for colleges of education to recognise the transformative potential of ICT in music education and to equip future music educators with the necessary skills and knowledge to harness its benefits. By doing so, we can enhance the quality of music education and foster creativity, collaboration, and engagement among students in a digital age.

Moreover, colleges of education need to provide ongoing professional development opportunities for current music educators, allowing them to refine their digital teaching skills continually. Additionally, institutions should prioritise the development of curricula and resources that align with the demands of the ICT-driven classroom.

In a world where technology is constantly evolving, the role of music educators is expanding beyond traditional boundaries. As this research suggests, the future of music education is undeniably digital, and it is incumbent upon colleges of education to ensure that future music educators are well-

prepared to embrace this new paradigm. By doing so, we can inspire the next generation of musicians and nurture a lifelong love for music in an increasingly interconnected and digital world.

RECOMMENDATION

Further research on "Teaching for the Digital Stage: Preparing Future Music Educators for the ICT-Driven Classroom at Colleges of Education" holds significant potential for advancing music education and teacher training in the digital age. First, it is crucial to delve deeper into the specific digital tools and technologies that can enhance music instruction within the context of colleges of education. Investigating the effectiveness of various software, applications, and online platforms in facilitating music education can provide valuable insights into which tools are most beneficial for both educators and students. This research could involve case studies, surveys, and pedagogical experiments to determine the most effective ways to integrate ICT into music teacher preparation programs.

Second, exploring the attitudes and perceptions of future music educators towards digital technology in the classroom is essential. A comprehensive understanding of how these aspiring teachers perceive the role of technology, its challenges, and its potential benefits can inform the development of tailored training programs. Surveys and interviews can be employed to gather data on these attitudes, allowing for the design of more effective and targeted digital literacy courses that address future music educators' specific needs and concerns.

Lastly, longitudinal studies that track the long-term impact of ICT integration in music teacher preparation programs can provide valuable data on the effectiveness of such initiatives. Research should extend beyond the classroom and examine how graduates of these programs apply their digital teaching skills in real-world educational settings. Assessing the impact of digital pedagogy on student learning outcomes and music education can help refine curriculum and pedagogical approaches, ultimately benefiting future music educators and their students.

REFERENCE

1. Barab, S. A., & Duffy, T. (2000). From practice fields to communities of practice. Theoretical foundations of learning environments, 1(1), 25-55.
2. Bauer, W. I., & Kent, T. (2010). The Digital Divide: An Examination of Gender and Socioeconomic Status in Music Education Technology Research. Journal of Research in Music Education, 58(2), 158-172.
3. Bouwer, C. (2018). Assessing music in the digital age: The role of technology in assessing creativity and composition in secondary education. Music Education Research, 20(2), 196-210.
4. Burton, D. J., & Fautley, M. (2015). Developing creativity through technology in music education: A literature review. Music Education Research, 17(2), 149-165.
5. Burt-Perkins, R. (2020). Virtual Musicking: Exploring the Relationship Between Music Participation, Social Presence, and Virtual World Engagement in Minecraft. Journal of Research in Music Education, 68(3), 289-309.
6. Campbell, P. S., & Scott-Kassner, C. (2017). Musician and teacher: An orientation to music education. Routledge.
7. Ertmer, P. A., Ottenbreit-Leftwich, A. T., Sadik, O., Sendurur, E., & Sendurur, P. (2012). Teacher beliefs and technology integration practices: A critical relationship. Computers & Education, 59(2), 423-435.

8. Freer, P. K. (2015). Music Education in the Digital Age: A Review of Challenges and Opportunities. Research Studies in Music Education, 37(1), 87-101.

9. Hampel, T., & Stickney, L. T. (2012). The Impact of Technology on Teaching Music: A Literature Review. Music Education Research, 14(3), 243-256.

10. Hammerness, K., & Maeng, J. L. (2017). Teacher Preparation in Technology Integration: Implications for Sound Educational Practice. Journal of Music Teacher Education, 26(4), 46-57.

11. Harris, M. (2018). Gamification of Music Theory: Exploring Its Impact on Student Engagement and Learning. Journal of Music, Technology & Education, 11(3), 249-266.

12. Hewitt, J., & Fortney, B. L. (2016). Integrating technology in music education: Barriers and challenges. Journal of Music Teacher Education, 26(4), 53-66.

13. Hickey, M. (2012). Why and how to teach music technology: Musicianship and technology as a catalyst for learning. Music Educators Journal, 98(3), 41-46.

14. Johnson, R. L., & McPhee, M. E. (2014). Technology Integration in Music Teacher Education: A Study of Music Teacher Educators' Expertise. Journal of Music Teacher Education, 24(2), 27-38.

15. Jonassen, D. H. (1999). Designing constructivist learning environments. Instructional-design theories and models: A new paradigm of instructional theory, 2, 215-239.

16. Koutsoupidou, T., & Hargreaves, D. J. (2009). ICT in music education: A literature review. Research Studies in Music Education, 31(2), 107-126.

17. Lamont, A., Lawrence, J., & Elliott, D. (2016). Connecting music education with technology. Oxford University Press.

18. Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. Teachers College Record, 108(6), 1017-1054.

19. Mikszaa, P. (2013). Examining the Impact of a Blended Learning Environment in Music Appreciation at the Postsecondary Level. Journal of Music, Technology & Education, 6(2), 153-169.

20. Mikszaa, P., & Dammers, R. (2016). An Analysis of Technology Professional Development Needs of Music Educators. Journal of Music Teacher Education, 26(4), 58-68.

21. O'Dwyer, A. (2017). Flipping Music: Utilizing Technology to Engage Students in the 21st-Century Music Classroom. Journal of Music Teacher Education, 26(1), 63-74.

22. Pitts, S. E. (2017). Technology and music teacher education: Enhancing musical, pedagogical and technological knowledge and skill. Music Education Research, 19(1), 1-17.

23. Rogoff, B. (1990). Apprenticeship in Thinking: Cognitive Development in Social Context. Oxford University Press.

24. Russell, J. A. (2016). Technology use and music assessment in the music education profession: A survey of practices. Journal of Music, Technology & Education, 9(3), 261-277.

25. Vygotsky, L. S. (1978). Mind in Society: The Development of Higher Psychological Processes. Harvard University Press.

26. Wertsch, J. V. (1991). Voices of the Mind: A Sociocultural Approach to Mediated Action. Harvard University Press.

27. Wiggins, G. (1990). The case for authentic assessment. ERIC Clearinghouse on Tests, Measurement, and Evaluation.

28. Wood, D. J., Bruner, J. S., & Ross, G. (1976). The Role of Tutoring in Problem Solving. Journal of Child Psychology and Psychiatry, 17(2), 89-100.