

THE IMPACT OF DIGITAL TRANSFORMATION ON MUSIC EDUCATION FOR STUDENTS IN MUSIC SCHOOLS

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ABSTRACT

This study analyzes the impact of digital transformation on vocal music education at music schools. With the rapid development of digital technology, traditional teaching methods can no longer fully meet the flexible and effective learning needs of students. Technological tools such as online learning platforms, music software, and gamified learning systems have helped students enhance their vocal skills through practice and instant feedback. However, applying technology to vocal music teaching still faces several challenges, including incomplete technology infrastructure and differences in technological proficiency between instructors and students. The study proposes solutions such as developing online vocal music learning tools, training instructors, and supporting students in using technology to improve teaching and learning effectiveness in the digital transformation context.

Keywords: Digital transformation, Vocal music teaching, educational technology, Online learning platforms

1.0 INTRODUCTION

Digital transformation, an irreversible trend in many fields, has had a strong and obvious impact on music education. In the face of the explosion of technology and globalization, traditional teaching methods no longer fully meet the learning and development needs of students, especially in the field of music. Traditional vocal learning mainly relies on direct teaching methods and paper-based learning materials, which limits students' accessibility and flexibility in learning. However, the development of digital technology has created e-learning tools and platforms that can supplement and replace traditional methods, helping students access more flexible and optimal learning methods. Music learning software, online learning platforms, and interactive learning tools not only enhance the quality of training but also enable students to practice and receive instant feedback from instructors without being limited by space and time (Freeman & Magerko, 2018). These tools also help students learn and improve their vocal skills more effectively and accurately by providing visual lectures, practice exercises, and personalized learning support tools (Yu et al., 2024).

However, the application of digital technologies to vocal teaching in music schools is not simple. Factors such as limited technological infrastructure, uneven technology usage between lecturers and students, and difficulties in transitioning from traditional teaching methods to new technology-based methods are challenges facing the music education sector (Otaxonov, 2021). Digital tools require careful preparation of technological infrastructure, as well as skills and training for both lecturers and students. Many vocal teachers still have difficulty using

online learning platforms or digital music tools, which reduces the effectiveness of teaching and learning. Moreover, not all students have access to high technology, leading to differentiation in their ability to learn and develop vocal skills.

Therefore, an in-depth study is needed to examine the factors that affect digital transformation on students' vocal learning. This study will analyze different aspects of digital transformation in vocal teaching, from the opportunities that technology brings to the challenges that lecturers and students face. Furthermore, the study will also propose solutions to optimize the use of technology in vocal teaching, ensuring that students can make the most of online tools and platforms to develop their skills. The results of this study will help music schools, lecturers, and educational administrators develop a suitable teaching strategy in the context of digital transformation, thereby improving the quality of training and learning for music students.

2.0 THEORETICAL BASIS

2.1 Digital transformation in music education

Digital transformation in music education is not simply the application of digital technologies in teaching but also a comprehensive process, changing the way education is organized and managed. Digital technology plays an important role in optimizing teaching and learning methods, helping to improve the effectiveness and accessibility of music education. Online learning platforms, music learning software, and interactive learning tools not only help students learn in a flexible way but also create a new learning space, where digital technology tools help expand access and creativity in music. These tools can be music apps, audio recording and editing software, vocal analysis tools, or online learning platforms such as Coursera, edX, or gamified learning systems such as ArchiTone (Yu et al., 2024). Gamified technologies, such as ArchiTone, are particularly useful in creating an interactive learning space where students can practice, improve their vocal skills, and receive feedback through visualizations and music practice exercises. Additionally, these tools help students engage in a more active learning process, thereby improving accessibility and effectiveness. Traditional learning methods can be limiting in fostering creativity and flexibility, but when combined with technology, they open up opportunities for students to develop their musical skills in a more comprehensive and modern way.

Digital transformation in music education can help create a learning environment that is not limited by space and time. Students can participate in online vocal classes, practice, and receive feedback from instructors or classmates without having to be physically present in the classroom. This also helps instructors to monitor student learning more effectively, through the use of learning management platforms (LMS) to track learning outcomes, practice progress, and student interactions (Freeman & Magerko, 2018). However, to effectively implement digital transformation, there needs to be a synchronous investment from both sides – instructors and students, along with the development of technology infrastructure at educational institutions.

2.2 Benefits of Technology in Vocal Teaching

Technology not only improves learning efficiency but also helps create a flexible and personalized learning process for each student. Thanks to online learning platforms and

learning support tools, students can study and practice vocal music anytime, anywhere, providing convenience and initiative in acquiring knowledge. These tools not only support theoretical learning but also allow students to practice vocal skills, such as voice training, music theory, or participate in interactive classes without being limited by space or time. One of the outstanding benefits of applying technology in vocal teaching is the ability to receive immediate feedback from instructors or from automated systems. This helps students quickly recognize their mistakes and improve their skills without having to wait for feedback through live lessons. According to Freeman and Magerko (2018), online learning platforms not only allow students to learn flexibly but also provide tools to track student progress, thereby helping instructors adjust teaching methods to be more appropriate and effective.

Several studies have shown that incorporating technology into vocal instruction makes it easier for students to practice and develop their skills. For example, vocal software such as "SmartMusic" or "Sibelius" provide students with tools to practice and self-check their sound. Students can practice their voices while receiving feedback on pitch, rhythm and singing technique, which is important for improving vocal quality. These tools also allow students to easily edit and record their songs, which they can listen back to and identify areas for improvement. Additionally, instructors can use these tools to track student progress, providing timely and accurate guidance to help students develop their vocal skills to the fullest.

2.3 Challenges in technology adoption

Despite its many benefits, the use of technology in vocal education still faces many challenges. One of the important factors in the use of technology is the willingness and ability of lecturers and students to use technology. Students and lecturers need to have basic technological skills to use online learning platforms and digital music learning tools. However, not all students have the necessary technological skills, especially those from less technologically developed areas. These students may have difficulty getting used to online learning platforms, which may reduce their learning effectiveness. In addition, many lecturers also lack skills in using teaching technology, especially in the field of vocal education, a subject that requires direct interaction between lecturers and students to develop skills accurately and effectively (Otaxonov, 2021).

According to Otaxonov (2021), another important challenge is the lack of thorough guidance on how to use online learning tools and instructional technology for both teachers and students. The lack of training courses on instructional technology can make it difficult to integrate technology into vocal teaching. In addition, not all students have access to modern technologies, especially learning tools that are expensive or require powerful hardware. This creates a disparity in the quality of learning among students, affecting equity in education. Therefore, to ensure effective technology adoption, there is a need for adequate support strategies for both teachers and students, including technology skills training, improving technology infrastructure at educational institutions, and providing learning tools that are appropriate for each student's situation.

3.0 THE REALITY OF VOCAL TEACHING AT MUSIC SCHOOLS

3.1 Current situation

Although digital transformation has been recognized as an important factor in improving the quality of education, especially in the field of music, the application of technology in vocal teaching in music schools still faces many limitations. Currently, some music schools have begun to actively apply digital technologies in teaching, however, traditional methods still dominate in organizing vocal classes. Students mainly participate in direct classes or learn through paper documents such as books and music sheets, which limits their access to modern learning methods and the conveniences brought by digital technology. Traditional methods can provide a solid foundation for vocal learning, but they lack flexibility and cannot fully meet the learning needs of students in the modern context, especially when students may not have enough time and conditions to attend direct classes (Freeman & Magerko, 2018).

Digital technology is growing and has great potential to support vocal teaching, but online learning tools are still not widely applied in music schools. This leads to students not being able to take full advantage of the benefits that technology can bring to improve their vocal skills. The lack of synchronization and technology infrastructure in schools also makes teaching difficult, especially when technology is not used consistently between lecturers and students.

3.2 Online learning platforms

Some music schools have begun to experiment with the use of e-learning platforms for vocal teaching, but the results have been limited. These platforms are mainly used for theoretical subjects, while practical subjects such as vocal music have not yet been fully and effectively integrated into e-learning platforms. Current e-learning tools mainly serve the theoretical learning of music, such as music theory, music history, or sound recognition skills, but lack specialized tools for practical vocal teaching.

Teaching vocal music, a subject that requires direct interaction between instructors and students to evaluate and adjust singing techniques, is difficult to implement effectively through current online learning platforms. This is a major obstacle for students, because vocal music requires direct practice, where instructors can listen and give detailed comments on vocal techniques, helping students improve their abilities. Current online tools are not capable of completely replacing direct supervision and guidance from instructors during practical vocal lessons. Therefore, the lack of specialized tools, such as voice analysis software, to help students practice and improve their singing skills effectively, is one of the factors that makes the application of technology in vocal music teaching not yet maximize its effectiveness.

3.3 The need for improvement

Digital transformation in vocal teaching at music schools has not yet been implemented in a synchronous and effective manner. Although music schools have made progress in experimenting with online learning platforms and teaching support technology, the transition between traditional teaching methods and digital technology is still very slow. To promote the application of technology in vocal teaching, there needs to be strong investment in technology infrastructure at educational institutions, as well as the development of online vocal learning tools suitable for the specific characteristics of the subject. The development of online vocal learning software and platforms can help students practice their skills more effectively, while helping teachers easily monitor progress and improve teaching methods to suit each student.

Training teachers on how to use these technologies is also an important factor in ensuring an effective transition between traditional and digital teaching methods. Teachers need to be equipped with technological skills to be able to integrate technology into their teaching process effectively. Without investment in training and support, technology cannot fully develop its potential to improve the quality of vocal teaching. Therefore, developing online vocal learning tools and training teachers to use this technology is an essential factor to help music schools meet the increasing learning needs of students in the current digital transformation context.

4.0 SOLUTIONS TO IMPROVE THE EFFECTIVENESS OF VOCAL TEACHING IN THE CONTEXT OF DIGITAL TRANSFORMATION

4.1 Developing online vocal learning tools

To optimize the application of digital transformation in vocal education, it is important to develop online vocal learning tools that meet the needs and requirements of students. These tools must not only provide theoretical lessons, but also support practical training, helping students improve their singing skills effectively. Modern vocal learning software can integrate interactive features, allowing students to practice singing and receive immediate feedback. This not only helps students recognize and correct errors in singing technique, but also creates an active learning environment, helping them develop skills along a personalized path. Voice recognition and audio analysis technologies, such as pitch and timbre testing software, can help students improve their singing technique more accurately. These tools can analyze and provide detailed instructions on each pitch, rhythm, and breath control, thereby helping students practice and perfect their vocal skills in an online environment. According to Yu et al. (2024), these technologies not only help students learn effectively but also stimulate creativity and develop musical thinking, which is difficult to achieve with traditional teaching methods.

4.2 Training teachers on the use of technology in teaching

To maximize the effectiveness of technology in vocal teaching, teacher training is key. Teachers need to be properly trained in the use of technology in teaching, including the use of online learning platforms, music learning software, and other teaching aids. Teacher training not only helps them master technology, but also helps them integrate technology into their teaching methods in a flexible and effective way. Training courses on online teaching methods, the use of e-learning platforms, and interactive learning tools will help teachers improve their teaching skills, improve student engagement, and provide accurate and timely feedback. Furthermore, teachers will be able to better understand how to assess student progress through online learning platforms, helping them to adjust their teaching methods to suit the needs and levels of each student. Training teachers in technology will help improve the quality of teaching and create a positive and effective learning environment for students (Freeman & Magerko, 2018).

4.3 Support students in using technology

In addition to developing learning tools, providing students with the necessary support in using technology is an important factor in ensuring the success of digital transformation in vocal education. Students need to be provided with detailed instructions on how to use online learning platforms, music software and other learning tools. Organizing tutorials and technical support

sessions for students will help them become familiar with technology and make the most of learning tools. Furthermore, creating learning support resources, such as tutorial videos, online forums and help sessions, will help students overcome difficulties in using new technologies, especially for students with little experience with technology. Supporting students not only helps them access technology easily but also encourages them to participate in the learning process in an active and proactive manner. Students can practice their vocals on their own, improve their skills, and receive feedback from instructors and peers more flexibly and effectively. This will create a dynamic and evolving learning environment, helping students achieve better learning outcomes.

4.4 Building an internationally connected learning environment

Collaborating with international music schools will provide students with access to advanced teaching methods and rich learning resources. Online learning platforms can act as a bridge between students and teachers from different countries, creating a rich, diverse and global learning environment. Students not only have the opportunity to learn different teaching methods, but also participate in discussions, seminars and online classes with international teachers and students, expanding their knowledge and understanding of music from different cultures. Connecting with international music schools will provide students with access to richer learning resources, such as digital libraries, learning materials, and teaching videos, thereby helping them to improve their learning ability and develop their vocal skills comprehensively. In addition, international cooperation will also create opportunities for students to participate in international music competitions, student exchange programs and career opportunities, helping them expand their network of relationships and enhance their career development opportunities after graduation.

5.0 CONCLUSIONS

Digital transformation has brought about great opportunities to improve and innovate the way vocal teaching is conducted in music schools. Modern technological tools such as online learning platforms, music support software and gamified learning systems have contributed to optimizing the learning process of students, bringing greater flexibility and efficiency in practicing and developing vocal skills. Thanks to these tools, students can not only access theoretical lectures but also be provided with online practice opportunities, receive instant feedback from lecturers, and track their progress in detail. However, the application of technology in vocal teaching still faces some major challenges. In particular, the lack of synchronization in technological infrastructure, the difference in technology usage ability between lecturers and students, along with the delay in the transition between traditional and digital teaching methods, are still factors that need to be addressed. To ensure optimal digital transformation in vocal teaching, there needs to be strong investment in technology infrastructure, teacher training and provision of appropriate learning tools for students.

Developing specialized online vocal learning tools and training teachers in the use of teaching technology are prerequisites for improving the quality of teaching. Student support strategies, including providing instructional materials and organizing technical support sessions, will make technology more accessible to students, thereby creating a proactive and effective learning environment. Building an internationally connected vocal teaching ecosystem will open up opportunities for collaboration and learning from advanced teaching methods, while

providing students with access to rich learning resources. This requires close cooperation between educational institutions and music professionals to ensure that students can develop their comprehensive vocal skills in a modern and international learning environment.

Applying digital transformation in vocal teaching is an inevitable trend and needs to be implemented systematically, with synchronous solutions and long-term strategies to improve the quality of music education in the digital age.

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