

# The Use of Music Technology by College Music Academic Staffs Under the Vision of Digital Mindset

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## Abstract

With the promotion and popularity of digital music technology, it has become a popular trend to promote the use of digital music technology by College Music Academic Staffs. On this topic, how is the progress of relevant research? The author searched relevant literature around this issue. It is found that the literature related to digital music technology is still abundant, and there are few researches on the digital mentality of college music academic staffs in using digital music technology. It is necessary to explore the development mode of promoting college music academic staffs to use digital music technology. In the following research, we can further explore the perception and attitude of College Music Academic staff to digital Music technology from the perspective of digital mindset.

**Keywords:** Use; Music Technology; College Music; Academic Staffs; Digital Mindset

## Introduction

In February 2021, China Internet Network Information Center (CNNIC) released the 47th Statistical Report on the Development of the Internet in China. As of December 2020, China had 989 million Internet users, and the Internet penetration rate reached 70.4 percent, according to the report. Among them, the scale of online music users reached 658 million, accounting for 66.6 percent of the total Internet users; Mobile online music users reached 657 million, accounting for 66.6 percent of mobile Internet users. It can be seen that nearly half of the Chinese people began to consume digital music through mobile online music platforms.

The report also showed that paying for music has gradually become the consumption habit of Chinese online music users. As of October 2020, China's online music users paid more than 70 million, accounting for 10.9 percent of the total online music users, and paid listening to music is gradually being accepted by Chinese online music users. Therefore, in the era of digital music has been popular, we should not only pay attention to the development trend of digital music, but also think and study the relationship between digital music and music education, and actively expand the use of digital music to optimize the path of university music education.

College students are an important group of digital music users. College teachers' understanding, attitude and behavior towards digital music will affect college music literacy education. As human beings enter the era of digital media, digital music has become popular, and the technical literacy of digital music of college music teachers should be paid more attention to.

### **Personal use of music technology**

For music producers, how to apply music technology to music production has aroused the research interest of researchers. In 2001, Deng Shen Hai master's thesis "Technology and Art -- On Social Music Production in the Digital Age" discussed the changes of social music production under the condition of digital technology, and put forward some countermeasures to create a benign music production mode (Deng 2001). Zhang Chun (2012) was published in "Chinese music" 2012 4th issue of the theory of digital technology in contemporary music production and the influence of music consumption ", this paper analyzed from the perspective of sociology of music, music production in the world of digital technology environment (creation, performance, production), the spread of music (sales, broadcast, Internet downloads) and characteristics of music consumption (enjoy listening, use); From the perspectives of science and technology and cultural development, this paper discusses the reasons why art products, including music, are more easily digitized and the essential influence of music digitalization on the music life in today's society. Also some scholars began to explore digital technology of music creation, the influence of the spread of music, music industry, main achievements are the exploring new technology of digital media effect on the spread of music" (Zhang, 2019) "new technology of the digital age's influence on the music industry" (Mao, 2007) "the new technology of digital media's influence on music creation" (Zhuang, 2008) "the new technology of digital media to research on the influence of music creation" (Tian, 2015).

For music consumers, how to use music technology for music consumption has also aroused the research interest of researchers. Social Music: Research on the interaction between NetEase cloud music service chain from the Angle of interaction and ceremony, in combination with microscopic interaction theory of sociology, explains the subtle relationship between music and social basis of sociology, this paper discusses the NetEase cloud music "social music" opens the emotion as the joint and several unique social system, thus it is concluded that under the social trend of "intimate", Music may be the forerunner of new social experiences for the masses (Li, 2016). In the context of music technology, the willingness of music consumers to pay for digital music has also been paid attention by researchers. The Empirical Analysis of the Influencing Factors of Consumers' Willingness to Pay in Digital Music is based on the theory of planned behavior, the expanded theory of planned behavior, the deconstructed theory of planned behavior and the legal deterrent theory. Including collective norms, attitudes, quality sensitivity, music affinity, legal deterrence, resource access difficulty and other core concepts to study Chinese consumers' willingness to pay for digital music and its influencing factors (Xiang, 2016).

### **Using music technology for College Music Academic Staffs**

The early application of music technology in music teaching is mainly reflected in the use of Internet music resources to serve music teaching. In the face of the vast Internet music resources, how to query and use in music teaching has aroused the research interest of researchers. In the article "Application of Internet Music Resources in Music Teaching in Normal Universities", Wang Ruinian (2003) classifies Internet music websites and Internet music resources, and explains the main application methods of Internet music resources in music teaching in normal universities: material reference, classroom teaching and interactive participation. This document also discusses the specific application of online music resources

in courses of music history, composition theory, vocal music, instrumental music, etc.

Later, some scholars explored the application of music technology in music theory teaching. Such researchers believe that "the application of digital music technology to change the concept, model and learning theory of music theory teaching, so that teaching to achieve audio-visual unity, has become a new model of music theory teaching." "In the specific teaching practice, digital music technology has completed a series of audio-visual unified music theory teaching system by using different software platforms according to the characteristics of solfeggio practice, harmony, form, polyphony, instrumentation and other disciplines" (Luo, 2011).

Some scholars have explored the application of digital music technology in solfeggio teaching in normal universities. Some scholars have applied music technology in solfeggio and ear training, and carried out teaching reform in four aspects: using digital music technology for solfeggio training, using digital music technology for rhythm training, using solfeggio and ear training software for auxiliary teaching, and using intelligent terminal APP for self-learning (Shi, 2018). Digital audio technology is also widely used in harmony teaching. Tonica is one of the representative works of the famous British software company Partner Software, which is mainly used in the teaching of primary harmony. Through the use of Tonica, students' harmonic works can be imported into the computer in the form of MIDI files and modified by using it. At present, under the condition of large class teaching in domestic colleges and universities, using Tonica software to assist students in harmonic learning is undoubtedly an efficient and feasible method (Liu, 2007).

In modern music education, the development of music accompaniment program and the use of other simple interactive music software can effectively integrate students' music creation materials, so as to lay the foundation for the creation of new works. This is reflected in different areas of music education. Some scholars have explored the specific practice of digital music mixing teaching, so that students can experience the wonderful effect of digital mixing: "Mixing technology is a form of digital music technology, so that the music finally presents a perfect hierarchical effect that the audience can not hear on the spot" (Zhao, 2020). Some scholars have used digital technology in piano teaching, and believe that "digital technology is an important tool for the current junior middle school piano classroom teaching activities. Teachers should make reasonable use of it, truly reflect its application value, and lay a good foundation for the improvement of piano classroom teaching efficiency (Yang, 2018).

Some scholars believe that music technology can be applied to all aspects of music creation and should be fully integrated into modern music education. Some examples are given as follows: "Modern music education, the technology of digital story, is a traditional art form and give it pictures, background music, text and voice of comprehensive representation of narrator, it not only enrich the properties of its artistic form, but also expanded its information, deepens the situation and insight (Song, 2012).

### **Professional education of music technology**

The Berklee College of Music in 2014, introduced the industry benchmarking avid company's most advanced audio production system, under the condition of the industry's top technology tools auxiliary teaching, the students must take music production related courses, do art and technology cultivation, fully digital audio technology learning and professional teaching music performance.

In 1994, Professor Zhang Xiao Fu founded China Modern Electronic Music Center in The Central Conservatory of Music. In 1997, he began to recruit master students majoring in "electronic Music Composition" and "electronic Music technology theory". In 2003, Wu Yue Bei established the Department of Music Engineering at Shang Hai Conservatory of Music, recruiting undergraduate and graduate students in the direction of music audio directing and music art and technology. In 2003, the Department of Music Science and Technology was established in the Conservatory of Music of Capital Normal University, with major directions related to music science and technology such as recording Art, music Psychology and Therapy, digital Music Production, Music Media and Management, Computer Network music and game music production, instrument Production and evaluation, music copyright management and so on. It mainly trains specialized talents in music science and technology to adapt to the combination of music art and science and technology development, and undertakes the teaching of modern music educational technology and multimedia technology courses in other departments.

In addition, Tian Jin Conservatory of Music, Xing Hai Conservatory of Music, Si Chuan Conservatory of Music, Shen Yang Conservatory of Music, Nan Jing University of the Arts, Ji Lin University of the Arts and other professional institutions have opened computer music related majors. The major of music Technology and Art aims to cultivate talents in sound engineering, music recording, music information gathering and editing, multimedia software technology and music education technology in radio and television, mass media, music websites, software engineering and other departments (Sun, 2010).

### **Adult perception and attitude in music technology**

According to Rogers's theory of diffusion of innovation, "early adopters" of new technologies tend to be "more educated and younger" (Hu, Z,R.2017). A 2010 study found that over-55s were below average in using music technology, putting them at risk of losing music (Intel, 2010). If older people are excluded from technological advances, they face being deprived of many activities, including the right to listen to music, with a marked lack of technical knowledge among the over-55s.

However, recent advances in Internet technology in China tell a different story. There were 309 million rural Internet users in China, accounting for 31.3% of all Internet users; The Internet penetration rate in rural China is 55.9 percent, and the online poverty alleviation campaign is constantly promoting the rapid transformation of rural non-internet users into Internet users. As a matter of fact, in China, many elderly mobile phone users are more likely to listen to operas, music, radio and videos than to receive and make phone calls. Many mobile APP operators have started to pay attention to the market of elderly mobile phone users, providing them with more convenient operating systems and more appropriate content.

Internet technology is deeply embedded in people's way of life, and it is changing the production, transmission and consumption of music. As far as the current literature is concerned, there is not much academic literature on adults' cognition and attitude towards music technology, leaving us a large space for research.

Perception and attitude of faculty members in music technology is still a relatively new topic with few research results. In order to explore and demonstrate the perception and attitude of the faculty in music technology, we need to refer to the research results of this topic: Teachers' attitudes towards Technology. Attitudes towards technology is a topic with a long history.

In 1989, Bame used PATT-USA teacher questionnaire to investigate the technical attitudes of 71 teachers from 18 schools in Virginia. The questionnaire contained 5 demographic variables, 9 dimensions and 60 questions, but the questionnaire did not clearly elaborate the question items and measurement dimensions, nor revealed detailed research results. Androulidakis surveyed 251 Greek teachers about their attitudes to technology, but only two meaningful factors were included: the importance and necessity of technology and technical education, and interest in technology (Xu, 2020).

Asma, Molen, Aalderen-Smeets surveyed 84 teachers' attitudes toward technology and science through semi-structured interviews, and classified teachers' attitudes toward technology and science into three aspects: cognitive beliefs (importance, difficulty, gender beliefs), emotions (pleasure, anxiety), and perceived control (self-efficacy, external resources). Nordlof, Hallstrom and Host interviewed 10 technology teachers about their views and attitudes towards technology and technology education. From the perspectives of self-efficacy (teaching experience, educational experience, interest, curriculum knowledge and teaching preparation) and external resources (peer support, syllabus, teaching resources and curriculum status), it is demonstrated that external support and individual internal factors can influence teachers' attitudes to technical teaching. Nordlof, Host and Hallstrom conducted a questionnaire survey on 1153 Swedish technology teachers' attitudes toward technology education from four perspectives: "importance of technology education", "external resources of technology education", "course content of technology education", and "confidence, interest and knowledge of technology teachers". The connections and differences between groups with different technical attitudes (negative, general, positive) and teachers' personal backgrounds, school curriculum and teaching resources are obtained (Xu, 2020).

On the basis of summarizing previous studies, Xu Mei Dan produced a measurement framework for analyzing teachers' technical attitude, as shown in Figure 2-1. This analytical framework can be used for reference in this paper to study Music college academic staffs' attitude toward digital music technology.

In terms of cognition, it mainly measured the evaluation, opinion and belief of Music college academic staffs on technology, which was composed of three components: importance, difficulty and gender belief. Importance refers to the general technology teacher's understanding of the importance of technology curriculum. For example, the faculty of the Conservatory of Music believes that "it is necessary to set up music technology courses for students of the conservatory of Music", "It is important to use music technology to assist music course teaching", etc.

In terms of emotion, it mainly measures the emotion and emotion expressed by Music college academic staffs in the face of technology, which is composed of pleasure and anxiety. Pleasure refers to teachers' happiness, satisfaction, curiosity, interest and desire when facing music technology, such as "teachers enjoy music technology assisted teaching", "willing to share music technology knowledge with students", "willing to undertake music technology courses" and "full of enthusiasm for teaching music technology courses", etc. Anxiety refers to teachers' anxiety and confusion in the face of music technology, such as

"teachers are worried that the use of music technology to assist music teaching is not smooth", "they are worried that they cannot bear music technology courses", "they are full of anxiety about music technology practice activities" and "they feel uneasy in the process of music technology teaching".

Behavioral control measures the self-efficacy and external resource dependence of Music college academic staffs in the face of technology. Self-efficacy refers to teachers' cognition of their own abilities, which depends on the internal factors of teachers, such as ability cognition and sense of control. For example, the faculty members of the Conservatory believe that "I can introduce a lot of ideas into technology teaching", "I can effectively carry out music technology course teaching", "I can understand the teaching content of music technology course well" and "I can properly deal with the difficulties students encounter in music technology course". Dependence on external resources refers to Music college academic staffs in the face of music technology rely on external factors and situation, for example: "music technology provided by the school teaching resources", "music school leaders support technical curriculum development" and "colleagues" ready to help and support music technical courses and "student attaches great importance to the course of music and technology", etc.

## **The use of music technology by College Music Academic Staffs under the vision of digital mindset**

### **mindset and digital mindset**

Mindset is a combination of cognition and attitude, which determines the way people explain things and guides people to take actions. In general, mindset is defined as a set of knowledge system. This system of knowledge predetermines how a person will react, react and act in a given situation. Every state of mind has two main components: cognition and action.

In cognitive psychology, mindset can be divided into growth mindset and fixed mindset. People with a growth mindset believe in development and challenges, while those with a fixed mindset prefer nostalgia and well-known things.

"Digital mindset" refers to the changes in people's cognition, attitude and behavior due to digital technology and digital revolution. As people rely more and more on technology, their approaches and methods to solve practical problems are changing, which in turn changes their way of thinking and behavior.

"Digital" is not exactly the same as digital technology itself. Digitization not only describes digital technology, but also reflects the values and norms accepted by the society under digital technology. Therefore, this paper argues that digitalization is digital technology and its impact on society and individuals.

Digital mindset also has two main components: cognitive component and action component. The internal cognitive component refers to numerical knowledge. The action component also has two possibilities: accept and reject. Digital technology can be accepted and used, or rejected and discarded, but both decisions are based on cognitive components and one's knowledge of digital technology.

### **digital mindset and non-digital mindset**

This paper mainly studies the digital mindset of the staff of the conservatory of Music. Not every faculty member has a digital mindset. What is the difference between a digital mindset and a non-digital mindset?

Digitalization requires embracing the new. In the digital age, we need to learn new knowledge, master new technology and change old habits.

Digital mindset encourages the faculty and staff of the conservatory to embrace new technology, new knowledge and use of technology. These faculty members are comfortable with digital technology and the uncertainty it brings, flexible and receptive. However, there is also a segment of the conservatory faculty that is uncomfortable with new technology, and they prefer conservative, traditional teaching methods to new, uncertain digital ones. They are faculty members with a non-digital mindset who are uncomfortable with digital music technology and the uncertainty it brings, and are not comfortable with digital music technology. Both mindsets have their own characteristics, as shown in Figure 1.

**Table1 The difference between digital mindset and non-digital mindset**

<b>digital mindset</b>	<b>non-digital mindset</b>
Conservative teaching methods	Embrace new teaching methods
Lack of curiosity about digital technology	Be curious about digital technology
Can't keep up with the pace of digital technology	Can keep up with the pace of digital technology
Use digital technology only when necessary	Explore the use of digital technology in teaching
Adopt new technology only when there is external pressure (e.g., when asked by a leader)	Take the initiative to meet the challenges brought by digital technology
Feeling insecure, uncomfortable and uncomfortable with changes in digital technology and its teaching	Be comfortable and comfortable with the changes in digital technology and its teaching and can translate into teaching advantages

### **Conclusion**

First of all, teachers with digital mindset are full of curiosity about new technology and digital technology. In the digital age, it is impossible for teachers to make full use of digital technology in teaching without their curiosity about it. Teachers with digital mindset are always looking for new technologies and new ways to improve their music teaching methods.

Second, update digital teaching methods in time. Teachers with digital mindset believe that it is necessary to understand the latest digital technology as soon as possible, so as to discover and evaluate the usefulness of these digital technologies to music teaching. A music teacher must keep pace with technological innovation in order to be able to turn it to his advantage in teaching.

Thirdly, teachers with digital mindset will have the impulse to use digital technology. Teachers with digital mindset believe that digital technology is not only used in the classroom, but also in the whole professional field. Teachers with digital mindset will use digital technology to educate themselves, such as further training themselves. In addition, they also

use digital technology in their personal lives and for leisure purposes in their free time. Teachers with a non-digital mindset feel uncomfortable with digital technology and try to avoid using digital technology. They lack interest in these digital technologies and are unhappy with them and reluctant to be exposed to them. The gap is not so obvious now, but the gap in digital skills is getting wider.

Fourthly, teachers with digital mindset can accept the challenges brought by digital technology. Digital technology has brought many challenges to traditional music teaching. Teachers with digital mindset will not be afraid of these challenges and are willing to accept them and the risks they bring. Teachers with a non-digital mindset prefer less challenging tasks and do not pursue innovation in teaching methods, because they believe that successful teaching methods can be realized through traditional methods.

In short, the four main features of digital mindset can be summarized into two aspects. One is the cognitive component, which involves curiosity and keeping up with The Times; Another aspect is the attitude and behavior section, which includes widespread use and acceptance of challenges.

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