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The Application and Practice of Smart Classroom in Teaching Non-Heritage Music

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Abstract: New technology brings about a comprehensive change in the form of education at all levels and in all types of schools, the article firstly begins with the concept of smart classroom and analyses the practical application of smart classroom technology in non-heritage music education, including multimedia resources, virtual reality, and automatic evaluation of multiple intelligences. It further explores that the smart classroom provides learners with teaching services such as data presentation, real-time feedback and personalised guidance. Finally, the article introduces the whole process evaluation methods such as evaluation subject, evaluation form and evaluation content to better meet the needs of students' personalised and differentiated learning, to stimulate learning enthusiasm and to improve learning interest.

Keywords: Smart Classroom; Vocational Education; Non-Heritage Music; Teaching Practice; Strategy

1. Introduction

In contemporary times, the field of education is undergoing profound changes, and emerging technologies such as artificial intelligence, big data, and robotics are redefining educational models and organisational structures. Therefore, integrated teaching models such as smart classrooms are being constructed to meet the needs of modern vocational education and to improve the quality of education.

Non-heritage music is an important part of the national cultural treasury, but it is facing the problem of waning interest in it and its transmission, including among the younger generation. At this critical moment, vocational colleges and universities have the responsibility to actively protect and pass on the non-heritage music culture, as well as cultivate professionals in order to improve students' cultural literacy and contribute to cultural inheritance and dissemination. Taking the teaching of Poyang fishing song as an example, this study aims to explore how to apply the smart classroom method and develop strategies for non-heritage music education, so as to provide new ideas for the teaching of non-heritage music education in vocational colleges and universities.

2. Intelligent classroom and its characteristics

2.1 Definition of the concept of smart classroom

In 1988, Ronald C. Rescigno introduced the concept of "Smart Classroom", which he defined as a classroom that embeds information technology such as personal computers, interactive CD-ROM videos, etc. in a traditional classroom. In 2009, The Daily Foru in the United States stated that. A smart classroom is a learning environment that employs innovative educational methods to comprehensively improve the application of technology in all aspects of instructional management and teaching. Some scholars in China also define "smart classroom" as a learning environment that uses information technology to create a spatial and temporal learning environment with intelligent characteristics such as perception, reasoning, and assisted decision-making, in order to promote the comprehensive, coordinated, and sustainable development of students' intellects (Zhu Zhiting, 2012). Since scholars at home and abroad have not yet reached a consensus on the definition of the concept of smart classroom, this study, after reviewing the literature, defines "smart classroom" as an educational model that realises intelligent classroom environment, informatisation of the process and digitisation of the resources by means of smart technology. It is a new classroom model that promotes creative thinking by broadening the depth and scope of learning, improving students' learning efficiency, and cultivating their ability to discover, think and solve problems.

2.2 Characteristics of a smart classroom

The smart classroom, as an important innovation in the field of modern education, has several features that contribute to the improvement of the quality of teaching and learning, personalised learning and the advantages of data-driven education (Papanastasiou & Zembylas, 2004; Najafi & Shadiev, 2015):

- (1) Diversity in the learning process: smart classrooms offer diverse learning opportunities, where students can learn and interact in a

personalised, diverse, open, interactive and creative way through new technologies, mobile learning tools and support platforms, which is in line with the concepts of the constructivist school of thought (Piaget, 1968; Vygotsky, 1978).

(2) Data presentation with technical support: based on the dynamic analysis of learning data, the smart classroom realises the data presentation of students' learning behaviours and feedback effects, which is used for the accurate tracking of the learning process and effects, which supports the concept of data-driven education (Baker & Inventado, 2014).

(3) Real-time feedback and guidance: smart classrooms provide real-time feedback mechanisms to help students receive accurate guidance and corrections to improve their skills and performance levels, which are associated with personalised learning and technology-supported education (Boekaerts & Corno, 2005).

(4) Personalised learning and model training: the importance of personalised learning is emphasised by the fact that it is based on techniques such as learning analytics, which enable the assessment and monitoring of students' progress and points of difficulty, as well as the provision of personalised advice and exercises (Boekaerts & Corno, 2005).

(5) Innovative teaching methods and tools: Smart classrooms utilise Virtual Reality (VR) and Augmented Reality (AR) technologies to provide immersive learning experiences, innovative teaching methods and tools, and increased learning interest, which is related to the combination of constructivism and new media (Papert, 1980; Dede, 2009).

These features make the smart classroom a more flexible and adaptable educational model that helps improve student learning experiences and outcomes.

3. The Application and Practice of Smart Classroom in Teaching Non-Heritage Music

Taking "Poyang Fishing Song" as the theme of teaching activities in the series of courses of "Non-heritage Music", the design of intelligent classroom teaching activity strategy is carried out. The activities in this class are classified as migration application activities, which mainly include video presentation of inheritors and famous non-heritage artists, teacher guidance, communication and interaction, group mutual evaluation, sharing of results and other classroom activities. The knowledge map of this class is clearer, mainly focusing on learning to sing the fishing song of Poyang, which involves related knowledge points such as music literacy, music theory and fishing song culture.

3.1 Design of Interactive Activities for Teaching Poyang Fishing Songs

This class is implemented in a smart classroom composed of cameras, multimedia teaching all-in-one machines, AI robots, VR glasses, mobile learning tools and other smart devices, and the NRM website, APP, and VET learning platforms provide students with all kinds of learning resources and interact with each other online on the learning platform.

① Scenario 1: Teachers firstly comment on and explain in detail the concentrated problems in students' learning before the class, and lead students to understand in depth the cultural and artistic values of non-heritage music, as well as the roles and significance of pitch, rhythm, chord, melody, modulation, and lyrics, and also create a virtual scene of the Poyang Fishing Song. Learning groups learn to sing and use props and costumes according to the learning tasks and scenes. On the premise of learning the repertoire, each group conducts group PK and mutual evaluation between groups. The learning analytics system captured the information of students' interactive activities through the camera, and showed the progress of task completion of each group to the teacher in a visual form, so as to facilitate the teacher to control the process of the activities in a reasonable way. The task mobilises the enthusiasm of group members to participate, enlivens the classroom atmosphere and enhances the friendship and sense of collective honour among members.

② Scenario 2: Teachers explain to students in the form of animation the video of Poyang fishing song inheritors singing, performance costumes and props, the expression of the inherited group, the inherited group body language and other fishing song figurative. On the one hand, students can provide the "teaching and learning" environment of knowledge visualisation through the augmented reality teaching (AR teaching) technology, i.e.: through the construction of AR scene (augmented reality scene), the three-dimensional, graphic and vivid explanation of non-heritage music knowledge points; teachers can also provide the service demand of multi-dimensional interactive experience through the virtual reality teaching (AR teaching) technology, and the learners can learn through the interactive experience of the virtual reality teaching. Interactive experience of the service demand, learners immersive participation in non-heritage music performance, feel the way of playing different instruments and music emotion expression, this immersive learning experience helps to stimulate students' interest and learning motivation. On the other hand, we organise students to watch relevant video cases of non-heritage music inheritors and famous artists to show students the charm of traditional culture, so that they can experience the profoundness of Chinese traditional culture, thus generating a sense of identity and increasing their attention.

In the process of arranging the teaching content and interacting with activities, teachers should always connect the points of music theory knowledge such as the development of musical instruments and the flow of tuning of non-heritage music with the grand historical and cultural

background and humanistic vein behind it. Integrating the course content with music anthropology, ethnomusicology, country music history, etc., leading students to feel the greatness of traditional music as the traditional language of mankind not only expands the breadth and depth of students' cognition, but also sublimates to the positive guidance of values.

3.2 Analysis of the Effectiveness of Teaching Interactive Activities of Poyang Fishing Songs

We conducted a comprehensive analysis and evaluation of teaching interactions with the help of the Learning Behaviour Analysis System (LBA), in which we focused on analysing whether the teaching achieved knowledge generation, emotion generation and competence generation for students. Specifically:

(1) Diverse subject evaluation. In the classroom activities, teachers, students and intelligent technology participate in evaluation (James Banks, 2008). Teacher evaluation in the classroom as well as students with outstanding classroom performance participate in evaluation, and group members conduct mutual evaluation. After class, teachers use intelligent technology to conduct comprehensive evaluation of students' learning performance and task completion, and also organise students to conduct self-evaluation such as student engagement scale on the learning platform.

(2) A three-stage evaluation approach. Through diagnostic evaluation before class, formative evaluation during class, and summative evaluation after class, evaluation is carried out through all aspects of the teaching process. Before class: diagnostic evaluation of students' learning in terms of knowledge preview, online seminar, and pre-class evaluation. During the lesson: process evaluation from the active participation in the task, the quality of task completion, students' interaction with the teacher and group members, and students' body language. Post-lesson: Summative assessment in terms of learning work submitted by students, learning tests taken, students' reflective reports and contributions.

(3) Open evaluation content. As a public culture course, we evaluate students' learning from various dimensions such as learning attitude, participation in classroom activities, communication and exchanges, creativity of thinking, quality of works, self-reflection, etc. We conduct an all-round examination of students, respecting their individual differences, stimulating their learning enthusiasm, and enhancing their sense of fun and experience in learning.

4. Conclusion

Vocational education smart classroom is the current new type of classroom that can really tap the learners' own wisdom and help them construct self-organisation, self-repair, self-evolution, self-construction and self-development system. Especially through the wisdom of teaching interactive tools and interactive forms, it significantly improves students' learning participation and learning activity. How to further integrate the smart classroom with art and technology in depth, and explore students' independent learning and deep learning, we need to constantly think and empirically prove.

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