

# 第三届国际音乐教育论坛 暨首届龙港音乐教育论坛

The 3rd International Music Education Forum and  
The 1st Heilongjiang - Hong Kong Music Education Forum

## 传统音乐与 AI 音乐 对青少年心智发展的深远影响

The Profound Impact of Traditional and AI-Generated Music  
on the Mental Development of Adolescents

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香港特区政府文化体育及旅游局  
Culture, Sports and Tourism Bureau of HKSAR Government

# 国际音乐教育高峰论坛

音乐教育学术报告

Music Education Academic Report

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## 活 动 背 景 Activity background

音乐作为无国界的世界语言，既能娱己娱人，亦可丰富生命。它不仅是人类生活的精神调剂、文化遗产与情感结晶，更能跨越时空，让历史与现实交汇，如瑰宝般在文明长河中熠熠生辉，塑造我们的感知世界，滋养青少年的心灵成长。

因此，当各国政府倾注资源发展音乐教育时，我们需清醒认知：音乐教育的终极目标绝非仅追求演奏技巧或创作成就，而在于如何通过有效的音乐实践，引领青少年成长发展，激发促进终身成长的正向能量。

科技浪潮下，人工智能正推动人们跨越现实与虚拟的边界。它不仅革新日常生活，更深刻影响精神世界，重新唤起对音乐本质的思考——在此变革中，音乐的未来将迎来何种新声？

值此第三届香港国际音乐节高峰论坛之际，我们承前启后，整合学者数十年教学经验与往届论坛成果，于这座国际枢纽，以人工智能为全新视角，开启一场关于“传统音乐与AI音乐”的深度研讨，让美妙旋律在科技浪潮中激荡新时代的回响。

传统音乐的深厚人文底蕴与AI技术的创新潜力，在青少年教育领域绝非对立，而是相融互生的音符与和弦。青年是地球未来的主人，若能掌握有效的音乐育人方法，结合前沿科技持续完善，便能引领其思想发展，激发自强精神与正能量，为音乐世界注入多元色彩与挑战。

本届论坛旨在促成传统人文温度与新兴AI技术的和谐共鸣，汇聚四海学者，共绘关乎未来人才核心素养的蓝图：如何以智能激发潜能？如何用旋律滋养灵魂？让音乐的力量更智能、精准、广泛地浸润每位青少年，促进心智全面、协调、蓬勃地发展，携手为人类命运共同体创造更美好和谐的世界。

Music, as a universal language transcending borders, enriches lives while entertaining both performers and audiences. It serves not only as spiritual sustenance for humanity, a cultural legacy, and the crystallization of emotions, but also bridges time and space, allowing history and reality to converge like luminous treasures in the river of civilization. It shapes our perceptual world and nurtures the growth of young minds.

Therefore, as governments worldwide invest resources in music education, we must remain clear-eyed about its ultimate purpose: the goal is not merely to cultivate technical proficiency or creative achievements, but rather to guide the holistic development of youth through effective musical practice, igniting positive energy that fosters lifelong growth.

Amid the tide of technological advancement, artificial intelligence is enabling humanity to traverse the boundaries between reality and the virtual realm. It is not only transforming daily life but also profoundly influencing our spiritual world, prompting renewed reflection on the essence of music. In this transformative era, what new harmonies will the future of music bring?

On the occasion of the 3rd Hong Kong International Music Festival Summit Forum, we build upon past achievements, integrating decades of scholarly expertise and insights from previous forums. In this global hub, we adopt AI as a fresh lens to initiate an in-depth exploration of “Traditional Music and AI-Generated Music,” allowing melodies to resonate with new vitality amid technological waves.

The profound humanistic heritage of traditional music and the innovative potential of AI technology are not opposing forces in youth education but rather complementary notes and harmonies. As the future stewards of our planet, young people stand to benefit immensely from effective music education methods enhanced by cutting-edge technology. Such synergy can guide their intellectual development, inspire self-motivation, and infuse the world of music with diverse colors and challenges.

This forum seeks to harmonize the warmth of traditional humanistic values with emerging AI technologies, gathering scholars from across the globe to chart a blueprint for cultivating core competencies in future talents: How can intelligence unlock potential? How can melodies nourish the soul? By making the power of music more intelligent, precise, and far-reaching, we aim to foster comprehensive, balanced, and vibrant mental growth in every young individual. Together, let us create a more harmonious and beautiful world for the human community.

## 主席献词 Chairman Message



许俊辉  
Frankie Hui Chun Fai

香港国际音乐节 主席  
香港教育促进会 主席



今年我们迎来第三届国际音乐教育高峰论坛，继续聚焦音乐教育对人类发展的深远影响，重点探讨如何借力AI音乐与传统艺术的共融，引领青少年健康成长。

音乐作为人类情感的永恒载体，承载着珍贵的文化遗产。在科技革新浪潮中，我相信AI可以成为传统音乐的守护者：通过数字修复濒危曲谱、智能还原古乐音色，让千年雅韵重获新生。当算法与传统旋律深度交融，我们创造出跨越时空的音乐对话。

这种创新共融对青少年成长意义深远：

- AI活化传统音乐，使年轻世代在科技语境中亲近文化根脉
- 智能创作工具激发艺术表达，培育文化自信与创新思维
- 数字疗愈音乐可科学调节情绪，助力青少年心理健康发展

我们主张：音乐教育不应止于技艺传授，更需善用科技力量。当敦煌古乐经由AI焕发新声，当粤剧唱腔融合电子音律，青少年将在传统与创新的共振中，建构包容的世界观与健全人格。

本次论坛致力探索AI赋能下的音乐教育新路径，让科技与人文共同滋养地球村新一代的成长，为构建和谐未来奏响希望乐章。



许俊辉  
Frankie Hui Chun Fai

Chairman of Hong Kong International Music Festival  
Chairman of Hong Kong Education Promotion Association



香港国际音乐节

HONG KONG INTERNATIONAL MUSIC FESTIVAL

**This year, we are welcoming the third International Music Education Summit Forum, continuing to focus on the profound impact of music education on human development, and focusing on discussing how to leverage the integration of AI music and traditional art to guide the healthy growth of young people.**

**Music, as an eternal carrier of human emotions, carries precious cultural heritage. In the wave of technological innovation, I believe AI can become the guardian of traditional music: by digitally repairing endangered scores and intelligently restoring the timbre of ancient music, it can give new life to the thousand-year-old elegant music. When algorithms are deeply integrated with traditional melodies, we create a musical dialogue that transcends time and space.**

**This kind of innovation and integration has far-reaching significance for the growth of young people:**

- AI revitalizes traditional music, allowing the younger generation to get close to cultural roots in the context of technology
- Intelligent creation tools inspire artistic expression, cultivate cultural confidence and innovative thinking
- Digital healing music can scientifically regulate emotions and help the mental health development of young people

**We advocate that music education should not only be about imparting skills, but also make good use of the power of science and technology. When the ancient music of Dunhuang is given new life through AI, and when the singing of Cantonese opera is integrated with electronic music, young people will build an inclusive worldview and a sound personality in the resonance of tradition and innovation.**

**This forum is committed to exploring new paths for music education empowered by AI, so that science and technology and humanities can jointly nourish the growth of the new generation of the global village and play a movement of hope for building a harmonious future.**

## 音乐教育学术报告 Music Education Academic Report



安娜·瑞德  
Anna Reid

澳洲悉尼大学音乐学院院长  
皇家新南威尔士学会院士



澳洲悉尼大学音乐学院  
Sydney Conservatorium of Music

### 使用人工智能支援高等教育音乐的创造性思维

#### 文章摘要

高等音乐教育的教师正面临职业生涯中最重大挑战之一——如何将人工智能（A I）融入教学。如今，人工智能已成为学生生活的一部分，并将逐步广泛应用。正如互联网、毡头笔、GOOGLE 和 BING 印刷机以及录制音乐在不同时代改变了我们的世界一样，人工智能也为学习和音乐创作带来了新的维度，这促使我们必须重新思考教学法、评估、创作和职业发展。在这次演讲中，我将探讨这些挑战，希望我们能找到方法来支持学生顺利进入未来的专业领域。

#### 新音乐的创作——人工智能对作曲实践与思维的影响

教育工作者的焦虑首先来自于那些开始音乐创作过程的技术。我们不禁思考：「人工智能会扼杀创造力吗？我们能分辨人类与机器创作的差异吗？人工智能是否意味着作曲家将失去工作？」这些问题涉及重要的本体论探讨——「创造力的本质是什麽？创造性思维是人类独有的，还是超越人类的？我们如何理解自身作为艺术家？」接着，这些问题引发了认识论上的回应——「在这个新环境中，什麽才算是知识？当一切都可能是由人工智能生成时，我们如何确定我们所知？我们的音乐能力是否有其局限性？」

这两个核心理念——关乎我们是谁以及我们如何行事的基本问题——构成了我们作为音乐教育工作者对 A I 做出可能回应的核心。由于 A I 蕴含的可能性，作曲家处于实践变革的最前沿。必须指出的是，A I 不会自发地生成任何东西，它必须基于人类设定的参数工作。从 A I 过程的起始点起，就离不开人的参与。

A I 可以通过生成旋律、和声乃至整部作品来协助作曲自动化。随着我们对 A I 工作原理的了解加深，我们也

发现了它的局限性——生成的东西往往重复、平庸且通常有些乏味。最初担忧 A I 会包揽所有作曲工作的恐慌似乎已有所消退，利用 A I 辅助作曲如今已相当普遍。

对学生而言，要求 A I 模仿古今作曲家的风格，能带来启发性体验。在这个意义上，A I 模拟了他人的作曲技法。巴赫年轻时曾长途跋涉，只为聆听和抄录他人的音乐（预录制时代），以此理解其他作曲家的典型音响特征，从而形成自己的思维方式。他正是运用聆听和抄录的技巧来激发新想法，并可能改变某些旋律、和声及节奏的呈现方式。在著名的电影《莫扎特传》中，我们看到年轻的莫扎特演奏并重新思考萨列里的音乐。如今，利用 A I 生成的主题和音乐模式作为灵感工具，亦是同理。从这个角度看，它是对创造性活动的增强。

作曲家的风格与其创作实践紧密相连，并为演奏者和听众所熟知。我记得第一次辨别出某件未曾听闻的作品属于巴赫时的情景——那种认知打开了一个全新的音乐思维世界，即作曲家的个性与特质蕴含在他们的音乐之中。A I 也可以通过建立风格术语库来对此提供帮助。学生随后可以利用这些风格来探索过去的模式，并为未来重新构想。

对于认真的音乐专业学生，必须考虑音乐分析——曲式与结构、配器选择等。A I 可以协助完成这项工作，因为它能分析大量的音乐数据集以识别趋势、结构和模式，为作曲家提供关于当代音乐潮流的洞见。年轻作曲家可以将 A I 作为一种导师工具，要求它分析自己的作品，并就某些可能更好的选择提供反馈。

A I 还有其他多种方式可以改变当前的实践。有些工具允许音乐家实时协作。这意味着从业者可以在作曲实践中成为

协作者，同时利用 A I 工具获得即时反馈。A I 可以通过协助混音、母带处理和提升音质来帮助简化制作流程。在我们这个时代，作曲家和演奏者必须能够数字化处理他们的录音，以便作品能在音乐厅舞台之外传播——也为准备比赛视频！对于那些对非音乐人士来说显得颇为深奥的音乐创作，A I 可以通过降低门槛，让未经大量训练或技能不足的人也能参与创作，从而弥合差距。以此为前提，意味着我们教育工作者必须了解 A I 环境所提供的支持，并专注于发展全面的音乐技能。

换个角度，我们可以考虑利用 A I 的优势，针对不同主题个人开发播放列表。在音乐治疗领域，众所周知，罹患各种病症的老年人能在他们青年时代的音乐——那些熟悉而令人慰藉的声音——中找到慰藉。A I 可以瞬间生成此类列表，辅助治疗过程。个人也可以“获取”列表来帮助放松、学习、睡眠、驾驶等等。

## A I 在高等音乐教育中的应用

我的演讲从作曲开始切入。这至关重要，因为正是创作活动催生了表演实践。作曲与表演密不可分。人工智能在高等音乐教育中的融入，已经彻底改变了学生学习音乐和参与音乐的方式。

此外，A I 可以作为音乐分析的强大工具，帮助表演专业学生剖析复杂作品，理解作品的深层结构。通过模拟不同的音乐场景并提供实时反馈，A I 促进了批判性聆听和分析能力的发展。同时，A I 辅助平台能够适应个体学习风格，为学生提供个性化的学习建议和资源。

在表演场景中，A I 可以充当互动协作者，使学生能够以创新的方式与技术互动。例如，A I 可以对现场表演做出反应，提供伴奏或增强整体音响体验。这种互动不仅加深了对音乐动态的理解，也为学生在技术驱动的音乐产业中的未来职业生涯做好了准备。

总体而言，A I 在高等音乐教育中的作用正在营造一个充满活力的学习环境，将传统技法与现代技术相融合，培养学生成为在不断发展变化的环境中多才多艺的音乐家。在作曲、分析和表演中利用 A I 工具的能力，丰富了教育体验，并为创造力和表达开辟了新的途径。

顺便提一下，最后这三段是由 A I 生成的——我们现在生活的世界真是奇妙！

## 对音乐教育工作者的启示

如今，固步自封将毫无意义。教育工作者迫切需要立即转向，以便为学生未来的发展做好最佳准备。这意味着教育者自身也需要接受相应的教育。了解有哪些可用的 A I 工具、它们能做什么以及是否能使用 A I 来支持学生的数字音频工作站 ( D A W ) 进行交流也是至关重要的。我们需要了解如何生成现代的节目单说明及此类生成可能存在的陷阱。我感觉目前 A I 仍处于发展初期，但他将不断进化。作为高等音乐教育工作者，我们应该善用这项新技术，就像我们曾利用印刷术的出现来传播我们的音乐一样，如此才能走向积极的未来。

## 音乐教育学术报告 Music Education Academic Report



安娜·瑞德  
Anna Reid

Using AI to support creative thinking in higher education music.  
Professor Anna Reid, PhD FRSN



澳洲悉尼大学音乐学院  
Sydney Conservatorium of Music

## Using AI to support creative thinking in higher education music.

### Abstract

The teachers of students in higher education music have the biggest challenge of our careers – how to integrate the use of AI into our teaching. Artificial Intelligence now belongs to the lives of our students and they will start to use it ubiquitously. In much the same way that the World Wide Web, the felt tipped pen, Google and Bing, the printing press, and recorded music have changed our world in different eras, so now AI brings a dimension to learning and music making that simply demands a change in thinking about pedagogy, assessment, creation, and work. In this presentation, I will be speaking about many of these challenges in hope that we can find ways to support our students into their future professional worlds.

### Creation of new music – the impact of AI on compositional practice and thinking

Some of the first moments of anxiety for educators has come with technologies that start the process of new music creation. We have wondered, “Will AI stifle creativity? Can we tell the difference between a human and a bot? Will AI mean that composers will lose their jobs?”. These questions deal with important ontological questions – “What is the nature of creativity? Is creative thinking truly human, or, more than human? How do we understand ourselves as artists?”. These issues then promote epistemological responses – “What counts as knowledge in this new environment, How do we know what we know when things can simply be AI generated? Are there limitations to our musical abilities?”.

These two ideas, the fundamental issues of who we are, and how we do things, are at the core of our possible responses as music educators to AI. Composers are at the forefront of practical change due to the possibilities inherent in AI. It is important to note that AI will not spontaneously

generate anything, rather, it has to work with parameters that are created by people. From the very start of an AI process, there is a person.

AI can assist with the automation of composition through the generation of melodies, harmony, and indeed entire works. As we have come to understand the workings of AI we have also discovered its limitations – that things are repetitive, averaged, and usually somewhat boring. The initial scare that AI would do all the composing seems to have disappeared somewhat and the use of AI to assist composition is now rather normal.

For a student it can be illuminating for them to ask AI to emulate styles of composers both current and past. In this sense AI mimics the compositional techniques of others. When Bach was young he travelled great distances so that he could listen and copy the music of others (pre recording era!) and in this way come to understand the characteristic sounds of other composers in order to generate his own way of thinking. He was using the listening and copying technique to generate new ideas and perhaps change the way some melodies, harmonies, and rhythms were presented. In the famous movie ‘Amadeus’ we see the young Mozart play and rethink the music of Salieri. This is the same now with AI generated themes and musical patterns that can be used as an inspirational tool. In this sense, it is an enhancement of creative activity.

Composers have styles that pertain to their practice that are well observed by players and listeners. I remember the time that I first identified something that I had not heard as the work of Bach – that recognition opened a whole world of music thinking, that the character and characteristics of composers are found inside their music. AI can help with this too by developing a glossary of styles.

Students can then use these styles to explore the modes of the past and reconceive of them for the future.

For the serious student musician, there must be consideration of musical analysis – form and structure, orchestration choices, etc. AI can assist with this as it can analyze extensive datasets of music to identify trends, structures, and patterns, informing composers about contemporary musical tendencies. Young composers to use AI as a form of tutor, asking it to analyse their own works and provide feedback on some, perhaps, better choices.

There are several other ways in which AI can simply change current practices. There are tools that allow musicians to collaborate in real time. This means practitioners can also become collaborators on composition practice whilst also receiving instant feedback using AI tools. AI can help streamline production by providing help with mixing, mastering, and enhancing sound quality. In our era it is imperative that composers and players be able to digitally manipulate their recordings so that their work can be promulgated beyond a concert stage – and also for the preparation of competition videos! Where music composition has seemed rather esoteric to non-musicians, AI can help fill the gap by making composition more accessible for people without extensive training or skills. With this as a premise it means that we educators must be aware of the supports provided by AI environments and focus on the development of global musical skills.

Taking a different approach, we can consider the strengths of using AI to develop play lists for individuals against different themes. In the field of music therapy it is well known that elderly people suffering from various conditions find solace in the music of their youth – the familiar and comforting sounds. AI can generate such lists in a flash aiding the therapeutic processes. Individuals can also 'get' lists to help with relaxation, study, sleep, driving etc etc.

## AI in Tertiary Music Education

I have started this talk with a focus on composition. This is essential as it is that activity that generates performance practice. Composition and Performance are incredibly entwined. The incorporation of artificial intelligence in

tertiary music education has revolutionized the way students learn and engage with music.

Moreover, AI can serve as a powerful tool for music analysis, helping performance students dissect complex works and understand the underlying structures of compositions. By simulating different musical scenarios and providing real-time feedback, AI encourages critical listening and analytical skills. Additionally, AI-assisted platforms can adapt to individual learning styles, offering personalized recommendations and resources for students.

In performance settings, AI can function as an interactive collaborator, enabling students to engage with technology in innovative ways. For example, AI can respond to live performances, offering accompaniment or enhancing the overall sound experience. This interaction not only fosters a deeper understanding of musical dynamics but also prepares students for future careers in a technology-driven music industry.

Overall, AI's role in tertiary music education is fostering a dynamic learning environment that blends traditional techniques with modern technology, preparing students to become versatile musicians in an evolving landscape. The ability to leverage AI tools in composition, analysis, and performance enriches the educational experience and opens up new avenues for creativity and expression.

And, by the way ,the last three paragraphs were generated by AI - What a fun world we now live in!

## Implications for Music Educators

There is no sense now in standing still. There is an urgency for educators to pivot immediately so that are students are best prepared for their futures. It means that we educators need in turn to be educated. Finding out what AI tools are available, and what they can do is essential. Being able to chat with students about using AI to support their DAW is essential. We need to understand how modern program notes can be generated, as well as the pitfalls in such generation. AI will constantly evolve, I have the feeling it is in its infancy. But as higher music educators we should take advantage of this new technology, in just the way that we used the emergence of the printing press to promulgate our music, and see our way into a positive future.

# 音乐教育学术报告

## Music Education Academic Report



黄甦  
Prof. Frank Su Huang

国际著名大提琴演奏家  
勋菲尔德国际音乐协会副主席



勋菲尔德国际音乐协会  
Schoenfeld International Music Society

## 人工智能在音乐教育中的作用

### 一、人工智能在当今音乐产业的发展

如今，人工智能在音乐领域的应用已从实验阶段迈入规模化应用时代，重塑了从创作、制作到演出、消费的整个音乐产业链。许多主流在线平台已开始使用人工智能音乐工具自动生成播客的免版权配乐，日产量超过10万首。语音克隆库得到广泛应用，智能化制作流程显著提升了效率。自动化编曲和乐谱生成则大幅降低了成本。

在音乐教育领域，人工智能练习系统利用摄像头评估手势定位，并通过声波识别音高准确性，纠错率超过90%。此外，人工智能在文化保护、数字考古、修复受损的早期音频和声乐谱以及重建古代碎片录音等领域取得了技术突破。2024年，全球人工智能音乐市场规模达到27亿美元（年增长率达89%），专业音乐家的人工智能应用率达到78%（自2020年以来增长了五倍）。人工智能已成为音乐产业的“新基石”，堪比昔日电声技术带来的革命。它象征着音乐在人机协作时代蓬勃发展的未来。

### 二、人工智能在音乐市场的需求与影响

人工智能正在重塑音乐产业的供需格局，推动从创作到消费的每个环节发生深刻变革。高效的内容生成能力使人工智能工具能够每天为短视频和游戏制作30万首定制音轨，将需求响应时间从三天缩短至仅需10分钟。游戏开发者和广告商可以将音乐制作预算削减70%。在发展中国家，人工智能正在普及音乐教育，以传统学费十分之一的价格提供入门课程，让更多孩子能够快速接触、理解并爱上音乐。

### 三、人工智能在音乐领域面临的瓶颈

人工智能应用于音乐教育的一个显著痛点是“缺乏人情味”。人工智能钢琴老师可以纠正错误的音符，但无法理解孩子因沮丧或恐惧而犯下的错误。过度依赖人工智能，可能会培养出技术上完美无瑕、情感上麻木的年轻音乐家。人工智能天生缺乏人类情感驱动的能力。音乐是一门情感艺术——虽然人工智能解决了一些技术难题，但它尚无法取代人类在演奏中表达的深度。作为一种辅助工具，它值得我们认真思考。

#### 四、人工智能在音乐发展中的前景与希望

人工智能与音乐的融合正开启一个充满可能性的新时代，拥有令人振奋的发展前景和突破性潜力。音乐创作将变得普及，人人成为音乐家的梦想不再是天方夜谭。只需通过文本输入关键词，人工智能即可在几分钟内生成完整的乐曲，极大地提升了公众对音乐创作的可及性和兴趣。未来五年，全球音乐爱好者的数量预计将增长300%，这反映了音乐创作的快速民主化。人工智能解决了传统教学的局限性和教师资源分配不均的问题，提供全天候多语言教学、实时姿势矫正、生物力学分析以及大数据驱动的演奏图表。音乐大数据图谱将极大地提高音乐教育的基础效率。

#### 五、终极愿景

人工智能应该增强音乐表达力，而不是完全取代它。未来，人类将专注于情感意图和文化背景，而人工智能则负责技术执行、无限试错和即时响应。音乐与人工智能的融合正在超越地球的界限——这场革命代表着人类利用科技拓展艺术疆域的伟大探索。

#### 六、我们的立场：对音乐教育界的建议

1. 对教育机构：与科技公司、投资者和音乐创作者合作，构建全新的教育生态系统。
2. 对音乐教育者：拥抱时代的变革与挑战，提升自身能力，不断学习新的人工智能技术。
3. 对音乐学习者：融入时代创新，运用多媒体和科技进步，融合传统音乐、流行音乐、电子音乐和现代音乐的发展。

#### 结语

我们希望所有音乐专业人士积极参与，创造更多由人工智能驱动的音乐制作主题和数据集。愿音乐行业的远见卓识者早日开发出更多符合时代精神的人工智能音乐工具！

## 音乐教育学术报告 Music Education Academic Report



黄甦

Prof. Frank Su Huang

Internationally Renowned Cellist

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## The Role of AI in Music Education

### I. The Development of AI in Today's Music Industry

Today, AI in the music field has transitioned from the experimental stage to an era of large-scale application, reshaping the entire music industry chain—from creation and production to performance and consumption. Many mainstream online platforms now use AI music tools to automatically generate royalty-free soundtracks for podcasts, with a daily output exceeding 100,000 tracks. Voice cloning libraries are widely employed, and intelligent production processes have significantly improved efficiency. Automated orchestration and score generation have drastically reduced costs.

In music education, AI practice systems use cameras to assess hand positioning and sound waves to identify pitch accuracy, achieving an error-correction rate of over 90%. Additionally, AI has made technological breakthroughs in cultural preservation, digital archaeology, restoring damaged early audio and vocal scores, and reconstructing ancient fragmented recordings. The global AI music market reached \$2.7 billion in 2024 (an 89% annual growth), with AI adoption among professional musicians hitting 78% (a fivefold increase since 2020). AI has become a “new foundational element” in the music industry, akin to the revolution brought by electric sound technology in the past. It symbolizes a future where music will thrive in an era of human-machine collaboration.

### II. The Demand and Impact of AI in the Music Market

AI is reshaping the supply-demand dynamics of the music industry, driving profound changes at every stage from creation to consumption. High-efficiency content generation enables AI tools to produce 300,000 customized audio tracks daily for short videos and games, reducing demand response time from three days to just 10 minutes. Game developers and advertisers can cut music production budgets by 70%. In developing countries, AI democratizes music education, offering beginner lessons at 1/10th of traditional tuition costs, allowing more children to quickly access, understand, and fall in love with music.

### III. The Bottlenecks AI Faces in the Music Field

A notable pain point in AI's application to music education is its “lack of human touch.” AI piano tutors can correct wrong notes but cannot understand a child's mistakes stemming from frustration or fear. Over-reliance on AI may produce technically flawless but emotionally numb young musicians. AI inherently lacks the capacity for human emotional drive. Music is an art of emotion—while AI solves some technical challenges, it cannot yet replace the depth of human expression in performance. As an auxiliary tool, it warrants our careful consideration.

#### **IV. The Prospects and Hope for AI in Music Development**

The integration of AI and music is ushering in a new era of possibilities, with exhilarating development prospects and breakthrough potential. Music creation can become universal, and the dream of everyone becoming a musician is no longer a fantasy. By inputting keywords via text, AI can generate fully arranged compositions in minutes, greatly enhancing public accessibility and interest in music creation. Over the next five years, the global number of music hobbyist creators is projected to grow by 300%, reflecting the rapid democratization of music production. AI solutions address the limitations of traditional teaching and the uneven distribution of instructor resources, offering 24/7 multilingual instruction, real-time posture correction, biomechanical analysis, and big-data-driven performance graphs. Music big-data mapping will vastly improve the foundational efficiency of music education.

#### **V. The Ultimate Vision**

AI should enhance musical expression rather than wholly replace it. In the future, humans will focus on emotional intent and cultural context, while AI handles technical execution, infinite trial-and-error, and instant response. The fusion of music and AI is transcending earthly boundaries—this revolution represents humanity’s grand exploration of expanding artistic frontiers through technology.

#### **VI. Our Stance: Recommendations for the Music Education Community**

1. For Educational Institutions: Collaborate with tech companies, investors, and music creators to establish a new educational ecosystem.
2. For Music Educators: Embrace the evolution and challenges of the times, enhance self-competency, and continually learn new AI technologies.
3. For Music Learners: Immerse in the innovations of the era, adopt multimedia and technological advancements, and integrate the development of traditional, popular, electronic, and modern music.

#### **Conclusion**

We hope all music professionals will actively participate in creating more AI-driven music production topics and datasets. May the visionaries of the music industry soon develop more AI-powered music tools that align with the spirit of our times!

## 音乐教育学术报告 Music Education Academic Report



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### 共处与共情：音乐表演与人文成长

摘要：深入探讨音乐教育的发展与前景，为人类音乐共同体的构建作出积极贡献。

本届论坛聚焦：传统音乐与AI音乐对青少年心智发展的深远影响，并探讨如何透过音乐学习提升青少年的自信、品德、社交能力及自主学习能力。

如果我们把青少年在文化自信、良好品德、社交能力和自主学习能力等方面的成长视为一种“人文成长”，从而认识艺术教育在青少年成长中不可或缺的重要作用，那么，共处与共情，则是艺术教育领域人文成长得以实现的重要标志。

音乐表演是一门讲究“共处”、追求“合作共赢”的艺术，在音乐表演中，无论是在学校音乐教育还是专业表演团体中，乐队协奏的合作、合唱等多种音乐活动中的合作，既需要有个体的自信，又要有“我”与“我们”的共处与合作，从而成就一首完美的音乐作品。从某种意义上说，“合作共赢”，就是音乐艺术的专业精神。音乐的表演和交流，是很多青少年成长过程中，形成文化自信，提升社会交往能力甚至自主学习能力的有效学习途径。音乐舞蹈的表达，也是包括心智能力在内的各种心理能力得的一个训练和培养途径。音乐中的共处、共赢，从最本原的意义上讲，就是人类生存能力的一部分，这类能力的培养，其实在人类的蒙昧时期就已经开始了。这也是我们包括听觉、视觉、肢体、语言这四类“感官艺术”的基本功能。

音乐表演，无论是在学习的过程，还是在舞台上的展示，都是一个“共情”的过程。音乐表演，面对的是音乐的作品。其中无论是中国音乐作品，还是西方音乐作品以及世界不同国家、民族的音乐作品，在中国音乐作品中，又无论是传统音乐作品，还是在文化的创造性转化中，在与世界文化乃至不同文明的传播、交流中产生的新的中国音乐作品，都会有一个“共情”的需求，从整体上讲，这种共情是开放的，是面向全人类的，越来越具有人类性的共情。只有共情，才能欣赏他人，理解他人，甚至用他文化的语言来和他人交流，从我的演出经验来看，音乐中的共情，往往是促进文化的传播和交流最有效的方式。在国际化的视野中，不同的国家和民族，在文化交流中，都会用各自的传统音乐进行交流，在这种“和而不同”的交流中所达成的“共情”，恰恰就是文化交流的目的。所以，在青少年的培养和音乐学习中，学会用自己的音乐语言、风格，用最具有自身文化特色的传统音乐，以开放的心态进行文化交流，这对于青少年成长中培养文化自信，更善于与人交流的个体，是很有帮助的。



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## Live and Feel with Humanistic Enrichment on Music

### Forum Focus:

The profound impact of traditional and AI-generated music on adolescent cognitive development. It also explores how music learning can foster confidence, character, social skills, and self-directed learning among young people.

If we view the development of young people in cultural confidence, moral integrity, social skills, and autonomous learning as a form of “humanistic growth,” then art education plays an indispensable role in their development. In this context, “coexistence” and “empathy” serve as key indicators of such growth within the realm of artistic education.

Musical performance is an art that values coexistence and strives for collaborative success. Whether in school-based music programs or professional ensembles, cooperation through orchestral playing, choral singing, and various group activities not only requires individual confidence but also a shared sense of “me” and “us.” This collaborative spirit culminates in the creation of an outstanding musical work. In a deeper sense, “win-win cooperation” represents the professional ethos of music as an art form. For many young people, musical performance and communication are powerful avenues for developing cultural confidence, enhancing social interaction, and cultivating autonomous learning skills. Musical expression—whether through music or dance—also serves as a vital training ground for nurturing cognitive and emotional intelligence.

Coexistence and mutual success in music stem from a fundamental human survival skill, one that traces back to early human societies. This capacity is rooted in the core functions of the four sensory arts: hearing, vision, movement, and language.

Whether during the learning process or on stage, musical performance is inherently an act of empathy. Performers engage with musical works—be they Chinese, Western, or from diverse global traditions. Within Chinese music, whether traditional pieces or new compositions born from the creative transformation and cultural exchange with global civilizations, empathy is always central. This empathy is open and inclusive, increasingly reflecting a shared human essence.

It is only through empathy that we can appreciate and understand others, and even communicate using their cultural language. From my performance experience, empathy in music is often the most effective channel for fostering cultural dissemination and exchange. On the global stage, nations and peoples often rely on their traditional music to engage in dialogue. In this “harmony in diversity,” empathy becomes the true goal of cultural exchange.

Therefore, in the education and musical development of young people, it is essential to help them learn to communicate with their own musical language and style, especially through traditional music imbued with cultural identity. With an open mindset, such engagement fosters cultural confidence and nurtures individuals who are more adept at interpersonal communication.

# 音乐教育学术报告

## Music Education Academic Report



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## 人工智能时代音乐的持久力量 ——为何音乐教育是人类应对科技孤立的响应？

### 1. 音乐作为人类的情感支柱

音乐是一种独特的人类经验。无论你是独奏钢琴，还是在一支80人的管弦乐团中，音乐都能传递情感、与他人建立联系，甚至触动你内心深处的某种东西，这是任何其他艺术形式都无法比拟的。随着人工智能开始渗透到我们社会的各个层面之中，我们作为音乐家拥有的独特优势，可以帮助维系音乐表演所带来的至关重要的人际关系。

### 2. 合奏的教育力量

如今，音乐教育比以往任何时候都更有机会将自己定位为应对人工智能可能带来的彼此之间更深层的孤立的一剂解药。随着越来越多的年轻人沉迷于电子设备，透过社群媒体寻求社交联系，并在过程中常常感到越来越孤独，音乐可以成为一种与他们建立联系的方式。我们目前在美国看到许多学生参加大型合奏（乐队、管弦乐团和合唱团）的情况。根据美国国立卫生研究院2020年8月的研究，研究人员发现，与他人一起参与音乐创作活动（例如唱歌或演奏乐器）可以培养强烈的群体认同感和连结感。参与音乐教育的学生在学校表现出更紧密的友谊和参与度，并且取得了更好的学业成绩。

### 3. 探索人工智能在音乐创作中的作用

人工智能可能会如何干扰这项进程？人们可能会认为人工智能对音乐或音乐教育没有任何威胁。如果人工智能正在创作音乐家演奏的音乐，这会改变他们透过音乐相互交流的能力吗？我们可以假设，我们将继续演奏巴赫、莫扎特、贝多芬和布拉姆斯等大师的作品。但人工智能或许会淡化普通音乐学生对这些大师作品伟大之处的欣赏。人工智能能否取代普通音乐教师，从而不再需要真正的人类教师？如前所述，音乐本质上是人类的事业。认为人工智能产生的模型可以取代人类教授音乐似乎有些荒谬，但这种想法肯定会被尝试。它可以充当导师，确保良好的技巧、准确的节奏，甚至是正确的音高。但真正重要的是音乐创作中人类独有的某些特质：表现力、情感容量或现场表演的活力。

多年来，人们一直在争论传统古典音乐的“诠释性表演”是否缺乏创造力，尤其是在大型乐团中。专制的指挥家对乐手们厉声要求，告诉他们如何演奏特定乐曲，而演奏者几乎或完全不参与。人们对生成式人工智能的担忧之一在于，这种创造力的衰退会加剧，这不仅只发生在作曲领域。学生只需点击几下鼠标，几乎无需任何背景知识，就能创作出一首乐曲。这两个轶事描述了这些场景的极端结果，但也提醒我们，音乐教育者需要在学生的音乐创作中扮演重要角色，无论是在演奏还是作曲方面。在我们的指导下，他们可以创造出与当下所有赋予音乐重要性的元素紧密相连的音乐。

#### 4. 呼吁保护音乐，造福全人类

在人类发展的几乎每一个重要阶段，科技都颠覆了我们的生活，许多人甚至认为科技是为了让生活变得更好。车轮、印刷机、蒸汽机、电力和灯泡都为人类做出了重大而积极的贡献。但尽管经历了所有这些技术进步，音乐却经久不衰。或许形式有所不同（例如录制的音乐极大地改变了普通人的音乐体验），但数千年来人类一直用声音或乐器创作音乐。无论有没有人工智能，这种创作方式几乎肯定会在未来一千年内持续下去。我们几乎肯定会回顾人工智能的曙光，回顾它是如何改善许多人的生活，同时又不破坏那些构成我们独特人性的特质。

为了全人类的福祉，我们需要更多人学习以任何形式为自己创作音乐。这是对音乐教育的行动呼吁。让我们设定一个目标，让所有人都在他们生命中的关键时刻体验音乐制作，而不仅仅是在小学音乐课堂上短暂地体验，而是在成长过程中以持续而有意义的方式进行。一般认为，音乐创作能为参与者带来快乐和归属感。尤其是在我们深入探索这个全新的科技世界时，这些体验能够让世界变得更美好。音乐属于所有人。音乐属于人类。

# 音乐教育学术报告

## Music Education Academic Report



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## The Enduring Power of Music in an Age of Artificial Intelligence

### Why Music Education Is Humanity's Response to Technological Isolation?

#### 1. Music as Humanity's Emotional Anchor

Music is a distinctly human experience. Whether you are playing solo piano or in an 80-piece orchestra, music has the ability to communicate emotion, connect with others, or simply stir something deep within yourself unlike any other artform. As AI begins to take hold within many aspects of our society, we have a unique advantage as musicians. We can help maintain that ever-important human connection that music performance brings.

#### 2. The Educational Power of Ensemble

Now more than ever there is an opportunity for music education to position itself as an antidote for what AI might bring: deeper isolation from one another. As more and more young people lose themselves in electronic devices, seek out social media for their social connections, and often become increasingly lonely in the process, music can be a way to reach them. We see this presently in the United States with students who participate in large ensembles (band, orchestra, and choir). According to the National Institutes of Health in an August 2020 study, researchers found that engaging in music-making activities with others (like singing or playing instruments) cultivates a strong sense of group identity and connection. Students show closer bonds of friendship and engagement in school, as well as better academic outcomes as a result of their participation in music education.

#### 3. Navigating AI's Role in Music Creation

How might AI interfere with this endeavor? One might imagine there to be no threat whatsoever to music or music education from AI. If AI is writing the music that our musicians perform, does that change their ability to connect with one another through it? One could assume that we will continue to perform the music of Masters of the common practice period: Bach, Mozart, Beethoven, and Brahms. But perhaps AI could "water down" the average music student's appreciation for what makes these master works great. Could AI replace the average music teacher, making the need for

actual human teachers obsolete? As previously mentioned, music is inherently a human endeavor. It seems absurd to think an AI generated model could replace a human being when it comes to teaching music, but it surely will be tried. It could work as a tutor to ensure good technique, accurate rhythm, even correct pitch. But what makes all the difference are the specific aspects of music making that are uniquely human: expressivity, emotional capacity, or the vibrancy of a live performance.

Debates have been underway for years regarding the perceived lack of creativity involved with “interpretive performance” of traditional classical music, particularly in the large ensemble. An “authoritarian” conductor barks demands to their musicians, telling them exactly how to play a given piece, with little or no contribution from the players themselves. One fear of generative AI is an exacerbation of this creative diminution, this time in the world of composition. Students can, with just a few clicks, create a piece of music, with very little background knowledge of what they are creating. Both of these anecdotes describe extreme outcomes of these settings but draw attention to the need for music educators to play an important role in the music creation of their students, either in performance or composition. With our guidance, they can create music with deep connections to all that makes music important in the current moment.

#### **4. A Call to Preserve Music for All**

At virtually every major stage of human development, technology has disrupted our lives, many would argue for the better. The wheel, printing press, steam engine, electricity, and the light bulb all made significant, positive contributions to humanity. But through all of these technical advancements, music has endured. Perhaps not in the same forms (recorded music brought a big change to the commoner’s experience of music, for example), but for thousands of years, humans have made music with their voices or instruments, and it will almost certainly continue for a thousand more years into the future, with or without AI. We will almost certainly look back to the dawn of AI and see, in retrospect, how it made many lives better, without destroying the things that make us unmistakably human.

For the betterment of all humanity, we need more people to learn to make music for themselves, in any form. This is a call to action for music education. Let us make it a goal that all humans experience music making at some point in their lives, and not just fleetingly through an elementary school music classroom, but in ongoing, meaningful ways as they come through their formative years and into adulthood. It is a widely held belief that music making brings joy and a sense of community to those who participate in it. These experiences have the capacity to make the world a better place for all, particularly as we dive more deeply into an omni-technological world. Music for all. Music for humanity.

## 音乐教育学术报告 Music Education Academic Report



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### 人工智能音乐教育对人类未来的影响： 香港传统与创新的融合

人工智能的飞速发展正深刻重塑教育体系，而音乐教育更处于这场变革的最前沿。我们所见证的不仅是技术变革，更是对音乐知识获取、创作与保存方式的根本性重构。在香港这个东西文化交汇的动态十字路口，古筝的淙淙弦音与钢琴的浑厚声响和谐共存，人工智能为提升音乐教学法开创了非凡可能，同时又能恪守数百年来艺术传统。

近年来，人工智能应用已在音乐教育领域掀起了一场名副其实的革命。Yousician和Simply Piano等平台重新定义了个性化学习，能实时适应学生不断变化的技能水平，提供连最专注的人类教师都难以持续做到的实时反馈。这些智能系统不仅纠正错音，更能分析学生的演奏模式，识别持续存在的挑战，并相应调整教学方法。在作曲领域，AIVA和Amper Music等工具开辟了崭新的创作途径，让学生得以尝试人工智能生成的旋律，或探索其音乐构想在贝多芬、莫扎特或巴赫等古典风格下的演绎效果。这对音乐创造力与技术发展的影响深远。

最为关键的是，人工智能正以前所未有的方式推动音乐教育普及化。肢体残障的学生如今能通过手势识别与语音控制接口进行创作与演奏。弱势背景的学子得以接触原本因经济条件限制而无法企及的高质量音乐指导。地域、经济与身体条件等传统藩篱，正被这些科技进步逐一打破。

然而在这令人振奋的技术进程中，我们必须警醒地守护音乐教育中不可替代的人文元素。任何算法，无论多么精密，都无法复制师生间那种细腻的情感链接——当音乐大师示范特定乐句或发音技巧时，所传递的不仅是技术，更是音乐灵魂的那种神奇时刻。传统的一对一教学所培养的纪律性、艺术性，以及那种可称为“音乐智能”的难以言喻的质量——这是由历代表演者通过言传身教积淀而来的珍贵遗产。

这种创新与传统的张力，在香港独特的音乐传承背景下显得尤为鲜明。在教授粤剧或琵琶、二胡等中国传统乐器时，人工智能可作为得力助手，记录繁复的装饰音、分析节奏型态或提供历史脉络。然而那些微妙的风格差异、颤音的细微变化，或赋予特定乐句的情感张力，仍需要人类大师的亲身指导。理想的模式似乎是：人工智能构建技术框架，而人类教师专注于诠释、表达与文化内涵的传授。

我们必须警惕这种人工智能增强型音乐环境中的潜在隐忧。过度依赖算法建议可能抑制创造力，促使学生接受人工智能生成的方案，而非发展自己的音乐语言。这些工具提供的实时满足，或

将削弱传统音乐精进所需的耐心反复练习的价值。更值得注意的是，当前人工智能模型明显倾向西方音乐传统，其数据库充斥贝多芬奏鸣曲与爵士标准曲目，却鲜少收录粤剧或中国/亚洲音乐范例。随着技术发展，确保香港独特音乐遗产在人工智能训练数据中获得平等呈现至关重要。

人工智能在香港音乐教育中的课堂应用前景广阔。设想能实时调节节奏配合学生练习的AI伴奏系统，或将听觉训练转化为趣味挑战的游戏化学习平台。通过与AI虚拟乐手共组数字乐团，学生能在无风险环境中尝试不同音乐角色与风格，自主学习将蓬勃发展。如SoundGym等应用程序，更能为学生量身定制音准与音程辨识训练，彻底革新听力培养模式。

最令人振奋的，莫过于AI融合多元音乐文化的潜能。香港作为东西传统交汇处的独特地位，可藉由能解析与融汇不同音乐语言的AI系统进一步强化——例如演绎五声音阶旋律如何以西方古典和声呈现，或巴赫赋格曲用传统中国乐器演奏的艺术效果。这类跨文化探索，将深化香港学生的音乐理解力与创新思维。

然而要公平落实这些技术仍面临重大挑战。香港各校对先进AI工具的取得机会不均，可能导致仅优势学生受惠的新型教育落差。政府若资助公立学校基础AI音乐软件，有助创造平等发展环境。同样关键的是师资培训——目前许多音乐教师对运用AI应用信心不足，亟需建立完善的专业进修体系。

展望未来，香港音乐教育可通过人工智能的审慎整合实现转型。音乐学院可开设结合AI实时分析的大师班，让学生兼得人文底蕴与数位精准。音乐治疗课程能运用AI协助管理演出焦虑等情绪挑战。通过AI媒介的虚拟合奏，跨校协作将更为蓬勃，而区块链技术可为这新兴数字创作经济中的学生作品提供保障。

建议教育局成立「人工智能教育专责小组」统筹变革，透过重点学校试行不同整合方案，并促成学界与科技企业的策略合作，推动符合香港教育需求的创新发展。

我们正站在音乐教育新纪元的开端。AI并非取代传统教学，而是如同加入整组虚拟助教乐团，强力辅佐人类教师。香港凭借文化荟萃与科技优势，最适发展兼顾伦理平衡的AI增强型音乐教学法。当尖端科技与音乐传统永恒价值交融，我们将培育出技艺精湛且创意奔放的新世代音乐家——既能传承经典，更能开创未来。

这番变革的可能性仅受限于想象力，而其成败更攸关音乐灵魂的存续与进化。前行之际，我们既要拥抱科技潜能，更需谨守音乐人文本质。正是在此微妙平衡中，蕴藏着传统与创新完美和鸣的音乐教育未来。

# 音乐教育学术报告

## Music Education Academic Report



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## The Impact of AI Music Education on Humanity's Future: Integrating Tradition and Innovation in Hong Kong

The rapid advancement of artificial intelligence is reshaping education in profound ways, with music education standing at the forefront of this transformation. What we are witnessing is not merely a technological shift but a fundamental reimagining of how musical knowledge can be acquired, created, and preserved. In Hong Kong, that dynamic crossroads where East meets West, where the plucked strings of the guzheng coexist with the sonorous tones of the grand piano, AI presents extraordinary possibilities for enhancing music pedagogy while honouring centuries-old artistic traditions.

Recent years have seen nothing short of a revolution in music education through AI applications. Platforms like Yousician and Simply Piano have redefined personalised learning, adapting in real-time to a student's evolving skill level while providing instantaneous feedback that would be impossible for even the most attentive human teacher to match consistently. These intelligent systems do not just correct wrong notes; they analyse patterns in a student's playing, identifying persistent challenges, and adjusting teaching methodology accordingly. In the realm of composition, tools such as AIVA and Amper Music have opened new creative pathways, allowing students to experiment with AI-generated melodies or explore how their musical ideas might sound if developed in the style of classical works such as those of Beethoven, Mozart, or Bach. The implications for musical creativity and technical development are profound.

Perhaps most significantly, AI is democratising music education in unprecedented ways. Students with physical disabilities can now compose and perform through gesture recognition and voice-controlled interfaces. Those from less privileged backgrounds can access high-quality musical instruction that would otherwise be financially out of reach. The traditional barriers of geography, economics, and physical ability are being dismantled by these technological advancements.

Yet amidst this exciting technological progress, we must remain vigilant about preserving the irreplaceable human elements of music education. No algorithm, no matter how sophisticated, can replicate the nuanced emotional connection between teacher and student, that magical moment when a master musician demonstrates a particular phrasing or articulation, communicating not just technique but musical soul. Traditional one-to-one instruction cultivates discipline, artistry, and that ineffable quality we might call musical wisdom, the accumulated experience of generations of performers passed down through personal mentorship.

This tension between innovation and tradition becomes particularly poignant when considering Hong Kong's unique musical heritage. In teaching Cantonese opera or traditional Chinese instruments like the pipa or erhu, AI can serve as a powerful assistant, transcribing complex ornamentations, analysing rhythmic patterns, or providing historical context. However, the subtle stylistic nuances, the slight variations in

vibrato or the emotional weight given to certain phrases, these still require the guidance of human masters. The ideal approach appears to be a hybrid model where AI handles the technical scaffolding while human teachers focus on interpretation, expression, and cultural context.

We must, however, remain cautious about potential pitfalls in this AI-augmented musical landscape. There is a genuine risk that over-reliance on algorithmic suggestions could stifle creativity, encouraging students to accept AI-generated solutions rather than developing their own musical voice. The instant gratification provided by these tools might undermine the value of patient, repetitive practice that has traditionally been the foundation of musical mastery. Additionally, current AI models demonstrate a noticeable bias toward Western musical traditions, their databases filled with Beethoven sonatas and jazz standards while containing far fewer examples of Cantonese opera or Chinese/Asian music. As these technologies develop, it is crucial that Hong Kong's unique musical heritage receives equal representation in AI training datasets.

The classroom applications of AI in Hong Kong's music education are tremendously promising. Imagine an AI accompanist that can instantly adjust tempo to match a student's fluctuating rhythm during rehearsal, or gamified learning platforms that transform aural training into engaging challenges. Self-directed learning could flourish through virtual ensembles where students collaborate with AI-generated musicians, trying out different musical roles and styles in a risk-free environment. Aural skills development could be revolutionised by apps like SoundGym that provide personalised pitch and interval recognition training tailored to each student's specific needs.

Perhaps most exciting is AI's potential to bridge musical cultures. Hong Kong's unique position as a meeting point of Eastern and Western traditions could be enhanced by AI systems capable of analysing and fusing different musical languages, showing how a pentatonic melody might be harmonised in Western classical style, or how a Bach fugue might sound interpreted on traditional Chinese instruments. Such cross-cultural explorations could foster deeper musical understanding and innovation among Hong Kong students.

However, significant challenges remain in implementing these technologies equitably. Not all schools in Hong Kong have equal access to advanced AI tools, risking a new form

of educational inequality where only privileged students benefit from these innovations. Government subsidies for basic AI music software in public schools could help level the playing field. Equally important is training educators to work effectively with these new tools; many music teachers currently lack confidence in using AI applications, necessitating comprehensive professional development programmes.

Looking to the future, Hong Kong's music education landscape could be transformed through thoughtful integration of AI. Conservatories might offer masterclasses augmented by AI feedback, providing students with both human expertise and machine precision. Music therapy programmes could employ AI to help students manage performance anxiety or other emotional challenges. Cross-institutional collaborations could flourish through AI-mediated virtual ensembles, while blockchain technology might protect student compositions in this new digital creative economy.

The establishment of an AI Education Task Force under Hong Kong's Education Bureau could provide crucial leadership in navigating these changes. Pilot programmes in selected schools could test different approaches to AI integration, while partnerships between academic institutions and tech companies could drive innovation tailored to Hong Kong's specific educational needs.

Ultimately, we stand at the threshold of a new era in music education. AI is not a replacement for traditional teaching but a powerful complement, like adding a full orchestra of virtual teaching assistants to support human educators. Hong Kong, with its unique cultural synthesis and technological sophistication, is ideally positioned to develop an ethical, balanced approach to AI-enhanced music pedagogy. By combining the best of cutting-edge technology with the timeless values of musical tradition, we can nurture a generation of musicians who are not only technically accomplished but creatively fearless, artists who can honour the past while inventing the future.

The possibilities are as limitless as our imagination, and the stakes are nothing less than the preservation and evolution of our musical soul. As we move forward, we must do so with both enthusiasm for what technology can achieve and wisdom about what makes music truly human. In this careful balance lies the future of music education - a future where tradition and innovation perform in perfect harmony.

## 音乐教育学术报告 Music Education Academic Report



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### 我们的声音在哪里？亚洲音乐在人工智能系统中的缺失及其对音乐教育的影响

#### 摘要

本文探讨了人工智能音乐生成系统中蕴含的文化偏见及其对音乐教育的影响，尤其对亚洲次大陆音乐的影响。尽管 MusicLM、AIVA 和 Suno 等人工智能工具为音乐创作和学习提供了宝贵的途径，但它们仍然优先考虑西方音乐形式和音色。这往往导致对非西方传统的曲解或排斥，强化了音乐等级制度，更令人担忧的是，这可能会扭曲学生对全球音乐的理解。基于现有研究，本文强调了这些算法偏见如何影响课堂学习、边缘化文化传承者，并可能导致长期的文化和音乐同质化。为此，本文呼吁开展人工智能协作开发，让传统音乐家作为共同设计者参与其中，纳入文化多元化的数据集，并在课堂上采用批判性人工智能教学法。本文还讨论了近期在音乐领域推动负责任人工智能发展的举措，强调了伦理框架和政策支持的重要性。最终，它得出结论，人工智能在音乐教育中的未来将不是由其技术速度或输出来定义的，而是由其深入、包容地聆听的能力来定义的，并最终发展出对人类音乐表达的全部范围的认识。

#### 引言

音乐是一种超越国界、文化和世代的通用语言。它能够用情感讲述故事并跨越时空连接人们。几个世纪以来，音乐不仅作为一种艺术表达形式，而且作为教育、文化认同，甚至人类和动物健康的基石，发挥着至关重要的作用。在世界各地的教室、社区和家庭中，音乐融入了日常生活，塑造着我们学习、庆祝和相互联系的方式。

如今，人工智能（AI）的快速发展已经开始重塑我们生活的方方面面，包括我们创作、体验、教授和学习音乐的方式。如今，人工智能工具正在协助作曲家创作新歌、自动制作曲目、为

独奏者到六十人管弦乐队提供伴奏，甚至将口语文本转化为歌曲。所有这些都几乎不需要用户具备任何音乐知识，用户可能根本不是训练有素的音乐家或作曲家。这些创新不仅打破了音乐障碍，更重要的是创造了新一代的“音乐家”和“作曲家”，他们能够以曾经难以想象的方式通过声音探索、实验和表达自己。

谷歌 MusicLM、Open AI Music Maker、AIVA、Suno、Mubert 和 Mureka 等基于人工智能的音乐工具越来越多地被用于辅助作曲、编曲，并为音乐学习和制作提供新的途径。对于音乐教育者和学生来说，这些工具提供了独特的教学机会，例如，评估音乐能力以获得更快的反馈，开发和个性化学生学习，甚至接触过过去仅在世界特定地区少数社区可用的新音乐理念（Merchán Sánchez-Jara 等人，2024年）。

然而，随着人工智能系统越来越深入地融入音乐教育和创作，一些重要的问题也随之出现：这些技术青睐哪些类型的音乐，哪些人的声音被忽视了。虽然人工智能音乐生成系统的快速发展为音乐创作和教育创造了前所未有的机会，但这些技术也揭示了一种文化偏见，这种偏见往往会边缘化传统音乐的形式及其教育价值，尤其是亚洲次大陆的音乐。本文探讨了在音乐教育中，人工智能的前景与传统音乐在现有体系中被边缘化的现实之间日益扩大的差距。我们将探讨这种代表性不足如何影响青少年音乐教育，它为何对文化认同和身心健康至关重要，以及如何确保在人工智能时代，所有音乐传统的声音都能被听到。

#### 人工智能音乐平台的固有偏见

近年来，人工智能音乐平台的偏见问题在学术界引起了越来越多的关注。随着人工智能开始重塑音乐创作格局，许多出版物纷纷报道人工智能音乐模型中存在的差异和偏见，

这些模型偏爱“西方声音”，而非非西方国家的音乐。这些出版物也强调了人工智能生成音乐的包容性和公平性（Born 等人，2021年；Mehta 等人，2025年；Merchán Sánchez-Jara 等人，2024年；Wang 等人，2024年）。核心问题在于支撑这些系统的数据。这些系统生成的大多数音乐或音频样本都建立在以西方音乐为中心的数据库上，该数据库基于西方记谱法、西方乐器和四等律调音系统，这使得它们在生成非西方音乐声音和音色方面效率较低，尤其是在亚洲音乐方面。在一篇探讨人工智能生成音乐模型中代表性偏差的论文中（Mehta et al., 2025 p. 4571），他指出：“现有数据集中约 94% 的时长用于西方音乐，而南亚、中东、大洋洲、中亚、拉丁美洲和非洲音乐加起来仅占 5.7%”。这种令人担忧的代表性不足在分析区域分布时尤为明显，南亚音乐传统仅占可用训练数据的 0.9%（Malin, 2025）。这种对西方古典和流行音乐的压倒性偏见从根本上塑造了人工智能系统理解、生成和教授音乐的方式，造成了算法盲点，导致数十亿人的音乐遗产被遗漏（Mehta et al., 2024; Mehta et al., 2025; Malin, 2025）。例如，当研究人员提示SunoAI生成一首古筝（一种来自中国的拨弦琴）器乐曲时，AI生成的音频样本类似于西方竖琴。同样，Mehta等人（2024，第2页）指出，当尝试在SunoAI上生成木卡姆（阿拉伯模型系统）时，输出“会将微分音舍入到最接近的西方等效值，导致乐曲缺乏阿拉伯音乐的独特音色”。他们的研究表明，当AI模型主要接受西方流行音乐的训练时，最终创作的作品反映的音乐传统和价值观范围狭窄，可能会掩盖一些鲜为人知或代表性不足的音乐类型。

这样的音乐输出不仅不准确，更重要的是，它在很多方面都存在问题。首先，它们加剧了文化上的误解，暗示非西方音乐可以被简化为模糊的、可以互换的“异国”声音。其次，这种不准确的输出会导致教育上的误解，尤其是当学习者不熟悉这种原始乐器时，他们会误以为人工智能生成的声音是真实的。随着时间的推移，这种误解会渗透到学习过程中，导致关于非西方音乐传统的错误信息广泛传播。第三，这些系统将西方音乐框架定位为默认框架，从而强化了技术偏见，进一步巩固了全球音乐教育的等级制度。第四，排除传统乐器、调音系统和音域，抑制了创造力和跨文化合作，因为它极大地限制了人工智能生成音乐在声音

上的可能性。最后，更重要的是，人工智能生成的音乐和声音缺乏准确的非西方音乐表征，这不仅会误导学习，还会降低人工智能生成内容的可信度和教学应用。这在很多方面违背了人工智能的初衷——拓展人类潜能，而不是限制人类潜能。由于无法全面展现全球音乐传统，这些系统可能会沦为排他性而非包容性的工具。

## 对音乐教育的影响

上述文化和算法偏见并不局限于技术领域，最令人担忧的是，它们正波及音乐教育的核心。随着人工智能生成的音乐工具越来越多地融入课堂、作曲应用程序和在线学习平台，这些偏见的影响也日益加深。诸如 Harmonia on the-go、谷歌的 MusicFX、BandLab 和 Sound trap 等工具，因其在提升创造力和课堂参与度方面的潜力，如今已被世界各地的课堂广泛采用（Chong, 2019; Dai 2021; Holland, 2000）。然而，这些旨在让音乐创作更容易普及的系统，也塑造了年轻学习者对音乐本身的定义，往往偏重西方规范，而边缘化其他音乐声音。

2006年，卡洛斯·阿布里尔（Carlos Abril）进行了一项研究，探讨多元文化音乐教学对10至11岁儿童课堂学习成果的影响。他在研究结果中指出，在研究报告中他指出，当前音乐教育更需要突破浅层接触，转而注重文化背景的阐释、批判反思能力的培养，以及深度理解音乐背后的传统与价值观。他在讨论中强调：“如果教育者不让学生参与围绕社会文化问题的明确讨论，学生可能会对不熟悉的音乐风格或文化产生负面反应”（Abril, 2006，第40页）。这在人工智能时代尤为重要，因为数字平台正成为学生学习和参与音乐的主要参考来源。因此，包容且具有文化意识的人工智能音乐平台不仅仅是一种奢侈品，更是必需品，尤其在教育领域。在此背景下，通过文化包容性的人工智能平台接触到广泛音乐传统的学习者将拥有明显的优势，因为他们在成长过程中会对音乐的文化多样性及其在塑造身份认同和社群方面的作用拥有更广泛、更具同理心的理解，这与Abril（2006）的研究结果一致。因此，人工智能音乐平台有潜力通过让全球音乐传统更容易被理解、挑战根深蒂固的偏见以及培养对音乐更深入、更包容的理解来扩大音乐教育的覆盖面。

然而，这也赋予了教育者一项重大的责任。人工智能开发者和教育利益相关者。随着这些工具越来越多地承担起音乐教育者的角色，它们所包含或排除的内容将带来重大的教学后果。如今，这已不仅是技术能力的问题，更是伦理责任的担当。若要让人工智能成为有价值的教育伙伴，其设计不仅要推动创新教育形式——更要准确呈现、充分尊重并深刻反映世界音乐遗产的全部范畴。

## 人工智能音乐教育中的文化同质化风险

人工智能生成的音乐日益融入教育环境，正引发深层的文化同质化危机。当学生长期接触默认采用西方结构、音阶和乐器的AI生成的音乐时，他们对“音乐”的理解会变得狭隘，这往往以牺牲世界其他地区音乐的丰富多样性为代价 (Vasquez, 2025)。由此形成的教育环境，无形中将西方音乐价值奉为标准范式，而传统音乐中独特的音色体系、微分音变化、复节奏结构及文化叙事，则被边缘化甚至曲解。尽管这种对多元音乐体系的排斥未必出于故意，但基于有限且文化偏见数据集训练的AI，已然成为文化同质化的共谋。

这种文化同质化更威胁着传统区域音乐传承者的地位。这些教育者与文化持有者不仅传授音乐技法，更传递着音乐背后的故事、价值观及创作意义——这些元素深深植根于社区的社会历史肌理中。在音乐与日常生活紧密交织的亚洲地区尤其令人忧心，从祭祀仪式、节庆活动到语言信仰体系，音乐渗透于社会文化表达的各个维度 (Nettl, 2005) 因此，未经本地化改造的AI工具引入非西方语境时，可能无意间瓦解基于社区的学习传统，割裂学习者与传统音乐实践的社会现实联结。长此以往，本土及传统音乐的传承兴趣将逐渐消退，代际传递的可能性持续降低。随着AI工具在资金匮乏地区的教育场景中取代或补充教学，学界日益担忧：学生可能过度依赖这些缺乏文化敏感性与语境深度的技术 (Born et al., 2021; Malin, 2025; Mehta et al., 2025)。

此外，同质化的人工智能生成音乐的长期影响不仅限于课堂。其影响深远，甚至可能波及更广泛的音乐产业，误导下一代音乐家、制作人和消费者。如果胸怀抱负的艺术家在成长过程中接触全球各种音乐形式的渠道有限，他们的创作成果将不可

避免地反映出他们所使用的工具所设定的狭窄界限。这不仅会削弱音乐的文化代表性，最终还会削弱依赖多样性和创新的音乐生态系统的韧性。正如 Mehta (2025) 恰当地警告的那样，“随着人工智能越来越多地影响音乐的创作和传播，音乐流派在数据集和研究中的严重代表性不足对全球音乐多样性构成了严重威胁” (Mehta等人, 2025年, 第1页)。

## 迈向包容性AI音乐的未来

鉴于上述问题，一个亟待解决的问题浮现：如果AI的构建脱离了文化背景，它能否成为文化桥梁？为了解决这个问题，必须将讨论的重点从批判转向解决方案。前进的道路需要开发者、教育工作者、研究人员和文化机构的共同努力，构建包容性强、文化素养高、教学负责的AI系统。为了真正增强而不是抹杀全球音乐传统的多样性，AI必须与其希望代表的音乐群体合作开发。这包括让文化传承者参与进来，而不是作为内容来源，而是作为AI系统的共同设计者，以确保他们的教学法、表演风格和价值能够体现在音乐的教学和创作方式中。

来自代表性不足地区的音乐家往往只是作为被动的内容提供者被纳入AI开发之中 (Mehta等人, 2025)。相反，他们必须充当共同设计者，参与乐器的采样方式、演奏实践的编码方式，以及如何在AI声音样本中呈现西方受过训练的耳朵不熟悉的音调变化。这种协作设计的呼吁直接呼应了 Schippers (2009) 关于多元文化音乐教育的基础性工作，他在其中断言文化包容性不仅是一种丰富，而且是一种必需品。他强调，文化包容性是音乐教育的一个重要特征，因为它确保所有学生都感到被包容，并且他们在课程中的反思有助于提高自我价值、积极性和参与度，这一结果在AI驱动的音乐学习环境中同样重要 (Schippers, 2009)。他进一步强调教育公平的必要性，因为它通过平等地重视所有文化传统来解决结构性不平等，而不仅仅是偏袒西方规范 (Schippers, 2009)。在人工智能音乐设计的背景下，这意味着构建的系统不仅将非西方音乐作为表面的“附加组件”来容纳，而且将其嵌入为平台的核心、结构集成元素。

然而，这些变化并非孤立发生。机构和政策层面的支持对

于实现长期的系统性变革至关重要。因此，令人欣慰的是，研究人员和音乐家们已经发起了一系列倡议，共同探讨如何解决人工智能音乐平台之间的差异。2024年1月，一个研究团队牵头开展了一项为期12个月的项目，名为“负责任的人工智能国际社区，以减少人工智能音乐生成和分析中的偏见”，旨在建立一个由志同道合者组成的国际社区，共同致力于应对负责任的人工智能（RAI）在人工智能音乐生成和分析中带来的偏见挑战。他们举办了一场为期一天的“负责任的音乐人工智能”研讨会，来自音乐家、学者和利益相关者组成的跨学科社区约100人参加了研讨会，共同探讨在音乐实践中使用低资源模型和小型数据集的潜力和挑战（Music RAI）。这些举措对于确保公平、均衡地呈现非西方社区特定文化的音乐词汇至关重要。

与此同时，音乐教育者必须开发一种批判性教学方法，以应对课堂上人工智能的使用。人工智能生成的音乐工具不应被当作中立或完全可靠的工具引入，而应被视为人类设计的产物，并受到其创造者的局限性和偏见的影响。作为教育者，我们有责任培养学生的人工智能素养，鼓励他们质疑所收到的输出，并理解其背后的来源和假设。鉴于目前人工智能音乐平台已知的局限性，这可能需要进行对比聆听练习，以揭示人工智能生成的传统音乐“版本”与真实的田野录音或现场表演之间的差异。这是一种更有效地向学生介绍人工智能的方式，同时教会他们不要完全依赖科技。

## 结论

人工智能持续重塑音乐创作和教育的格局，在带来非凡潜力的同时，更肩负着深刻责任。本文指出，尽管AI音乐平台为创作、普及与参与提供了创新工具，但其现行架构仍存在双重困境——既将西方音乐范式置于特权地位，又边缘化了全球多元的音声身份（尤以亚洲次大陆为甚）。人工智能生成的音乐对传统音乐体系的低估和误读，不仅扭曲了文化理解，也影响了学生的音乐教学、学习和表演方式。当学生依赖那些无法准确表征传统乐器、音律及演奏实践的AI内容时，他们吸收的实则是狭隘的世界观：这种认知悄然巩固文化等级秩序，最终将音乐贬抑为剥离文化意义的空洞数字化产物。

归根结底，人工智能终究是机器——其本质映射着被编程输入的数据与价值观。构建一个包容的人工智能音乐未来意味着认识到单靠技术无法保护文化遗产。它必须以道德框架、协作参与以及对全球音乐传统复杂性的真正尊重为塑造基础。如果人工智能要以造福人类的方式增强音乐教育，它就不能仅仅生成声音，而必须能够以智能、敏感和包容的方式聆听人类音乐表达的全部合唱，而这种能力即使是迄今为止最先进的人工智能系统也仍然难以实现。它是否能够做到如此细致入微的聆听仍是未知数。

然而，显而易见的是，在人工智能驱动的世界中，音乐教育的未来将取决于我们现在做出的选择，这些选择必须优先考虑文化多元化、教学责任和有意义的人类协作，而不是仅仅为了速度和复制而训练人工智能模型，这会导致同质化的输出。没有这样的人类指导，人工智能将仍然是现有偏见的一面镜子，而不是一个有意义的参与和协作的工具。因此，最终，人工智能在音乐教育中的成功将不是以生成输出的速度来评判，而是以它能多准确地呼应塑造音乐本身的多元人类故事来评判。

# 音乐教育学术报告

## Music Education Academic Report



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## WHERE ARE OUR VOICES? THE UNDERREPRESENTATION OF ASIAN MUSIC IN AI SYSTEMS AND ITS IMPACT ON MUSIC EDUCATION

### Abstract

This paper examines the cultural biases embedded within AI-generated music systems and their implications for music education, particularly in relation to music from the Asian subcontinent. While AI tools such as MusicLM, AIVA, and Suno offer valuable access to music creation and learning, they nevertheless prioritize Western musical forms and timbres. This often results in the misrepresentation or exclusion non-Western traditions, reinforcing musical hierarchies but more concerningly, potentially distorting students' understanding of global music. Drawing on current research, the paper highlights how these algorithmic biases shape classroom learning, marginalize culture bearers, and risk long-term cultural and musical homogenization. In response, the paper calls for collaborative AI development involving traditional musicians as co-designers, the inclusion of culturally diverse datasets, and the adoption of critical AI pedagogy in classrooms. The paper also discusses recent initiatives toward responsible AI in music, emphasizing the importance of ethical frameworks and policy support. Ultimately, it concludes that the future of AI in music education will not be defined by its technical speed or output, but by its ability to listen deeply, inclusively, and eventually develop an awareness of the full spectrum of human musical expressions.

### Introduction

Music is a universal language that transcends borders, cultures, and generations. It has the power to evoke emotions, tell stories, and connect people across time and space. For centuries, music has played a vital role not only as a form of artistic expression but also as a cornerstone of education, cultural identity, and even wellness for both humans and animals. In classrooms, communities, and homes around the

world, music is woven into the fabric of daily life, shaping how we learn, celebrate, and connect with one another.

Today, the rapid advancement of Artificial Intelligence (AI) has begun to reshape nearly every aspect of our lives, including how we create, experience, teach and learn music. AI-powered tools now assist composers, from generating new songs, auto mastering tracks, providing accompaniment from solo to a sixty-piece orchestra and even transforming spoken text to songs. All this requiring minimal to no music knowledge on the part of the user, who may not be a trained musician or composer at all. These innovations are not only breaking down musical barriers but more significantly are creating a new generation of 'musicians' and 'composers' who are able to explore, experiment, and express themselves through sound in ways that were once unimaginable.

AI-based music tools like Google's MusicLM, Open AI's Music Maker, AIVA, Suno, Mubert and Mureka are increasingly used to assist in composition, arrangement and offer new approaches to music learning and production. For music educators and students, these tools offer unique teaching and learning opportunities, for example, assessing musical competence for faster feedback, developing and personalizing student learning and even engaging with new musical ideas that were in the past only available to a handful of communities in selected parts of the world (Merchán Sánchez-Jara et al., 2024).

However, as AI systems become more deeply embedded in music education and creation, important questions arise about what kinds of music these technologies favour and whose voices are being ignored. While the rapid

advancement of AI music generation systems has created unprecedented opportunities for musical creativity and education, these same technologies reveal a pattern of cultural bias that often marginalize traditional music forms and their educational value particularly music of the Asian subcontinent. This article explores the growing gap between the promise of AI in music education and the reality of traditional music's marginalization within these systems. We will examine how this underrepresentation affects youth music education, why it matters for cultural identity and wellness, and what can be done to ensure that the voices of all musical traditions are heard in the age of artificial intelligence.

### Inherent Bias in AI Music Platforms

In recent years, bias in AI music platforms has gained growing attention within academic discourse. As AI began reshaping the landscape of music creation, a number of publications have emerged reporting disparities and bias in AI music models that favour "Western sounds" over music from non-Western countries. These publications also emphasize the need for inclusivity and equity in AI-generated music (Born et al., 2021; Mehta et al., 2025; Merchán Sánchez-Jara et al., 2024; Wang et al., 2024). A core issue lies in the data that underpins these systems. Most of the music or audio samples these systems produce are built on a Western music centric database that is based on Western notation, Western instrumentation and equal 4 temperament tuning system, making them less effective in producing non-Western musical sounds and timbre particularly Asian music. In a paper discussing representational bias in AI generated music models, (Mehta et al., 2025 p. 4571) notes that "approximately 94% of the total hours in available datasets are dedicated to music from the Western world, while only 5.7% are devoted to South Asian, Middle Eastern, Oceanian, Central Asian, Latin American, and African music combined". This concerning underrepresentation becomes even more pronounced when examining regional breakdowns where South Asian musical traditions represent just 0.9% of available training data (Malin, 2025). This overwhelming bias toward Western classical and popular music fundamentally shapes how AI systems understand, generate, and teach music, creating algorithmic blind spots that exclude billions of people's musical heritage (Mehta et al., 2024; Mehta et al., 2025; Malin, 2025). For example, when the researcher prompted SunoAI to generate an instrumental Guzheng piece, (a plucked zither from China) the AI generated an audio sample resembling a Western Harp. Similarly, Mehta et al., (2024 p. 2) notes that when attempting to generate a Maqam (Arabic model system) on SunoAI, the output "will round off the microtones to the nearest Western equivalent, resulting in a piece that lacks the distinctive sound of Arabic music". Their research demonstrates that when AI

models are predominantly trained on Western pop music, the resulting compositions reflect a narrow range of musical traditions and values, potentially overshadowing lesser-known or underrepresented genres.

Such musical outputs are not just inaccurate, but more importantly problematic on a number of fronts. Firstly, they perpetuate cultural misrepresentation, implying that non-Western music can be reduced to vague, interchangeable "exotic" sounds. Secondly, such inaccurate output can lead to educational misconceptions, especially when learners unfamiliar with the 5 original instruments, mistakenly accept the AI generated sound as authentic. Over time, such misrepresentations become embedded in the learning process, leading to widespread misinformation regarding non-Western musical traditions. Thirdly, these systems reinforce technological bias by positioning Western musical frameworks as the default, further entrenching hierarchies in global music education. Fourthly, the exclusion of traditional instrumentation, tuning system and tonal range, curbs creativity and cross-cultural collaboration, as it significantly limits the scope of what is sonically possible within AI generated music. Lastly and more importantly, the lack of accurate non-Western music representation in AI generated music and sounds not only misguides learning but also diminishes the credibility and pedagogical application of AI-generated content. In many ways this defeats the purpose of AI which is to expand human potential, not restrict it. By failing to represent the full spectrum of global musical traditions, these systems risk becoming tools of exclusivity rather than inclusivity.

### Implications in Music Education

The cultural and algorithmic biases outlined above are not confined to the realm of technology, what is most concerning is that they ripple into the heart of music education. As AI-generated music tools become increasingly integrated into classrooms, composition apps, and online learning platforms, the influence of these biases deepens. Tools like Harmonia on the-go, Google's MusicFX, BandLab, and Sound trap are now widely adopted into classrooms around the world in view of their potential to enhance creativity and in class engagement (Chong, 2019; Dai 2021; Holland, 2000). However, these systems that are intended to make music-making more accessible, also shape how young learners define music itself, often privileging Western norms while marginalizing other musical voices.

In 2006, Carlos Abril conducted a study to examine the effect of multicultural music instruction on classroom learning outcome among children aged 10 to 11. In his findings, he

reported that there was greater need for music education that goes beyond surface-level exposure and instead emphasizes cultural context, critical reflection, and meaningful engagement with the traditions and values behind the music. In his discussion, he stresses that “if educators do not engage students in explicit discussion surrounding sociocultural issues, students may react negatively to the unfamiliar musical styles or cultures” (Abril, 2006 p. 40). This is especially relevant in the age of AI, where digital platforms are becoming the primary reference source for students to learn and engage with music. Hence, inclusive and culturally aware AI music platforms are not merely a luxury but a necessity, particularly in the education world. In this context, learners who are introduced to a wide range of musical traditions through culturally inclusive AI platforms are at a distinct advantage, as they grow up with a broader more empathetic understanding of music’s cultural diversity and its role in shaping identity and community, which aligns with Abril’s (2006) findings.

AI music platforms, therefore, have the potential to expand the reach of music education by making global musical traditions more accessible, challenging entrenched biases, and fostering a deeper and more inclusive understanding of music. However, this also places a profound responsibility on AI developers and educational stakeholders. As these tools increasingly take on the role of the music educator, what they include or exclude carries significant pedagogical consequences. Today, it is no longer just a question of technical capacity, but one of ethical obligation. If AI is to be a valuable educational partner, it must be designed not only to innovate but also to represent, respect, and reflect the full spectrum of the world’s musical heritage.

### Risks of Cultural Homogenization in AI Music Education

The increasing integration of AI-generated music into educational settings carries a profound risk of cultural homogenization. When students are consistently exposed to AI-generated music that defaults to Western structures, scales, and instrumentation, they develop a narrow perception of what constitutes “music”, often at the expense of the rich diversity found in music from other parts of the world (Vasquez, 2025). The result is an educational environment where Western musical values are implicitly upheld as the standard, while the unique sounds, microtonal inflections, polyrhythmic structures and cultural narratives embedded in traditional music are side-lined or misrepresented. While the marginalization of diverse musical systems may not be deliberate, training AI on limited and culturally biased datasets renders AI complicit in cultural homogenization. This form of cultural homogenization also risks displacing educators and cultural knowledge holders who traditionally served as transmitters of regional music practices. These individuals not only teach the mechanics of music but also pass on stories, values, and

the meaning behind music making, all elements deeply embedded in the social and historical fabric of a community. This is especially concerning, particularly in places like Asia, where music is deeply woven into the fabric of daily life and informs all aspects of their social and cultural expression, from ritualistic ceremonies and festivals to language and belief systems (Nettl, 2005). Therefore, when AI tools are introduced into non-Western contexts without localization, they may inadvertently undermine community-based learning traditions, and risk disconnecting learners from the social and lived realities of traditional music practices. Over time, this can diminish interest in local or heritage-based music and reduce the likelihood of its transmission to future generations. As AI tools replace or supplement instruction, particularly in underfunded or resource-limited educational settings, there is a growing concern that students may become increasingly reliant on technologies that lack cultural sensitivity or contextual depth (Born et al., 2021; Malin, 2025; Mehta et al., 2025). Furthermore, the long-term impact of homogenized AI-generated music is not limited to the classroom. Its implications are far reaching and can potentially affect the broader music industry, misguiding the next generation of musicians, producers, and consumers. If aspiring artists grow up with limited exposure to the full spectrum of global musical forms, their creative output will inevitably reflect the narrow boundaries set by the tools they prescribe to. This not only weakens cultural representation in music but will eventually reduce the resilience of musical ecosystems dependent on diversity and innovation. As Mehta (2025) aptly warns, “as AI increasingly shapes the creation and dissemination of music, the significant underrepresentation of music genres in datasets and research presents a serious threat to global musical diversity” (Mehta et al., 2025 p. 1).

### Toward Inclusive AI Music Futures

In view of the issues raised, one pressing question emerges: can AI serve as a cultural bridge when it is built without cultural context? To address this question, it is imperative to shift the conversation from critique to solution. The path forward requires consolidated action from developers, educators, researchers, and cultural institutions to build AI systems that are inclusive, culturally literate, and pedagogically responsible. To truly enhance rather than erase the diversity of global music traditions, AI must be developed in partnership with the communities whose music it hopes to represent. This includes engaging culture bearers not as content sources but as co-designers of AI systems, to ensure that their pedagogies, performance styles, and values are reflected in how music is taught and generated.

Too often, musicians from underrepresented regions are included in AI development only as passive content providers (Mehta et al 2025). Instead, they must function as

co-designers, contributing to how instruments are sampled, how performance practices are encoded, and how tonal inflections unfamiliar to the Western trained ear can and should be represented within AI sound samples. This call for collaborative design directly echoes Schippers' (2009) foundational work on multicultural music education, where he asserts that cultural inclusion is not merely an enrichment but a necessity. He emphasizes that cultural inclusion is a significant feature in music education as it ensures all students feel included and their reflection in the curriculum helps boost self-worth, motivation, and engagement, an outcome that is equally crucial in AI-driven music learning environments (Schippers, 2009). He further stresses the need for equity in education, as it addresses structural inequalities by valuing all cultural traditions equally which does not only privilege Western norms (Schippers, 2009). In the context of AI music design, this means building systems that do not merely accommodate non-Western music as superficial "add-ons" but embed them as core, structurally integrated elements of the platform.

These changes, however, cannot occur in isolation. Institutional and policy-level support is essential to create long-term, systemic change. Therefore, it is promising to note that there have already been initiatives made by researcher and musicians to come together and look at solutions to address the disparity in AI music platforms. In January 2024, a team of researchers spearheaded a 12-month project titled "Responsible AI international community to reduce bias in AI music generation and analysis" aimed at building an international community of likeminded individuals with a common goal to address Responsible AI (RAI) challenges of bias in AI music generation and analysis. They conducted a one-day workshop on Responsible Music AI which saw the participation of approximately 100 people from an interdisciplinary community of musicians, academics, and stakeholders to collaboratively identify the potential and challenges for using low-resource models and small datasets in musical practice (Music RAI). Such initiatives are extremely vital in ensuring the fair and balanced representation of culturally specific musical vocabularies from non-Western communities.

In parallel, music educators must develop a critical pedagogical approach to AI use in the classroom. AI-generated music tools should not be introduced as neutral or completely reliable but they must be framed as products of human design, shaped by the limitations and biases of their creators. We as educator have a responsibility to foster AI literacy among students, encouraging them to question the outputs they receive and to understand the sources and assumptions behind them. Given the current known limitations in AI music platforms, this might involve comparative listening

exercises that expose discrepancies between AI-generated "versions" of traditional music and authentic field recordings or live performances which is a more productive way on introducing students to AI while at the same time teaching them not to be completely dependent on technology.

## Conclusion

As artificial intelligence continues to reshape the landscape of music creation and education, it brings with it extraordinary potential and profound responsibility. This paper has argued that while AI music platforms offer exciting tools for creativity, access, and engagement, they are currently built upon structures that privilege Western musical idioms while marginalizing the diverse tonal identities of the world, particularly those from the Asian subcontinent. The underrepresentation and misrepresentation of traditional musical systems in AI-generated music not only distort cultural understanding but also affect how music is taught, learned, and performed by students. When students rely on AI-generated content that fails to accurately represent traditional instruments, tunings, and performance practices, they absorb a narrowed worldview, one that silently reaffirms cultural hierarchies and reduces music to mere digitized output devoid of cultural meaning.

Ultimately, AI is just a machine, one that reflects the data and values programmed into it, and building an inclusive AI music future means recognizing that technology alone cannot safeguard cultural heritage. It must be shaped by ethical frameworks, collaborative engagement, and a genuine respect for the complexity of global musical traditions. If AI is to enhance music education in a way that benefits humanity, it must be built not just to generate sound, but to listen, intelligently, sensitively, and inclusively, to the full chorus of human musical expression, an ability that continues to elude even the most advanced AI systems to date. Whether it will ever be capable of such nuanced listening remains uncertain.

What is clear, however, is that the future of music education in an AI-driven world will depend on the choices we make now, choices that must prioritize cultural plurality, pedagogical responsibility, and meaningful human collaboration over merely training AI models for speed and replication which results in homogenized outputs. Without such human guidance, AI will remain a mirror of existing biases rather than a tool for meaningful engagement and collaboration. Therefore, in the end, AI's success in music education will not be judged by how quickly it generates output, but by how accurately it can echo the diverse human stories that shape music itself.

# 音乐教育学术报告

## Music Education Academic Report



席文·格迪罗斯  
German A. Gutierrez

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美国德州基督教大学音乐学院  
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## 重塑音乐教育： 人工智能与科技的变革力量

我是席文·格迪罗斯 (Germán Gutiérrez) ·自1996年起·我担任美国德州基督教大学音乐学院 (Texas Christian University) 的管弦乐团总监及拉丁美洲音乐节总监。

我谨感谢香港国际音乐节为我们提供这一宝贵机会·共同探讨人工智能 (AI) 对音乐教育的影响。

毫无疑问·技术已经改变了现代生活的几乎每一个方面——教育亦不例外。在音乐领域·人工智能正以强大的方式重塑教育。它实现了个性化学习·增强了创造力·并为音乐专业的各个领域——包括作曲、表演、指挥、教学、出版和推广——提供了关键的支持工具。

尽管发生了这些变化·许多课堂的结构却依然惊人地传统。教师仍在讲台前授课·学生则成排就坐。但不同的是·过去学生使用印刷教材·如今许多学生则在笔记本电脑、平板电脑或智能手机上学习课程。

历史上·知识的获取渠道十分有限。书籍稀有·教育机会仅限于少数人。我们都熟知约翰·塞巴斯蒂安·巴赫的故事：他在20岁时·步行250多英里前往吕贝克·只为聆听伟大的管风琴家迪特里希·布克斯特胡德的演奏。相比之下·今天的互联网提供了前所未有的海量即时信息——从书籍、录音到图像、视频和虚拟课程。学习机会的范围从未如此广阔。

这种技术转变也在改变教师和学生的角色。教师曾是知识的主要来源·而如今的学生则越来越有能力主导自己的学习。教师的角色正逐渐演变为更像一位“引导者”·帮助学生驾驭浩瀚的数字资源和工具。

技术不仅仅是补充——它是一股教育变革的力量。它赋能教师开发动态的教学材料·并以新颖创新的方式鼓励协作学习。

作为一名拥有40多年经验的音乐教育工作者·我亲眼见证了音乐创作、练习和分享方式的演变。如今的软件让作曲家在极短时间内就能创作出高质量的乐谱。人工智能工具可以模拟乐团伴奏·为学生提供与虚拟乐队或管弦乐团一起练习的机会——这是一个强大的工具·尤其有助于培养即兴演奏能力。

人工智能的影响力持续增长，为师生提供了新的教学和互动工具。人工智能驱动的平台提供互动课程、练习习题和乐理模块，无论学生的地理位置或社会经济背景如何，都能获得高质量的教学。

然而，这种进步并非没有挑战。

在过去的二十年里，我观察到学生对研究和历史探究的兴趣明显下降。由于信息唾手可得，许多学生现在忽视了深入探索的重要性。同样，诸如手写乐谱等传统技能正在消失。大多数作业现在都以数字方式提交，像手写和声进行或正确手抄乐谱线这样的基本技能正变得罕见。

事实上，我并非总是最受欢迎的教师——我至今仍不接受电脑生成的配器作业。我坚信通过手动实践来培养基础技能的重要性，它能以技术无法替代的方式加深理解。将人工智能融入音乐教育前景广阔。但我们必须谨慎推进，确保它能增强而非削弱音乐的表现力和情感维度——这些品质只能源自人类的洞察力和经验。

COVID-19疫情迫使我们所有人重新思考教学方式。在那段时期，我最大的担忧之一是如何继续与交响乐团的学生合作，尤其是那些需要完成合奏学位要求的学生。我们开发了几种新策略——线上试听、虚拟大师班、分声部排练和线上直播音乐会——事实证明这些方法非常有效，其中许多至今仍是我们的课程的一部分。这些方法甚至让我们得以接触到原本无法连接的全球观众。

人工智能最有前景的贡献之一，是其拓宽高质量音乐教育获取渠道的能力。人工智能驱动的平台可以触达偏远和服务不足地区的学生，提供从基础乐理到高级演奏技巧的各类课程。

总之，人工智能与音乐教育的关系仍在发展之中。作为教育工作者，我们必须拥抱它带来的机遇，同时时刻关注其伦理和教学法上的挑战。通过采取深思熟虑、以学生为中心的方法，我们可以确保技术持续丰富我们的音乐传统——而非取代其核心的人性艺术与修养。

# 音乐教育学术报告

## Music Education Academic Report



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## Reshaping Music Education: The Transformative Power of Technology and AI

My name is Germán Gutiérrez, and since 1996 I have served as Director of Orchestras and Director of the Latin American Music Festival at Texas Christian University in Fort Worth, Texas.

I would like to thank the Hong Kong International Music Festival for offering us this valuable opportunity to reflect on the impact of Artificial Intelligence (AI) on music education.

There is no doubt that technology has transformed nearly every aspect of modern life—and education is no exception. In the field of music, AI is reshaping education in powerful ways. It enables personalized learning, enhances creativity, and offers critical tools that support all areas of the music profession: composition, performance, conducting, teaching, publishing, and promotion.

Despite these changes, the structure of many classrooms remains surprisingly traditional. Teachers still lecture from the front while students sit in rows. But where students once followed along with printed books, many now follow lessons on laptops, tablets, or smartphones.

Historically, access to knowledge was limited. Books were rare, and educational opportunities were restricted to a select few. We all know the story of Johann Sebastian Bach, who, at the age of 20, walked over 250 miles to Lübeck to hear the great organist Dietrich Buxtehude. Today, by contrast, the internet offers instant access to an unprecedented amount of information—from books and audio recordings to images, videos, and virtual lessons. The scope of learning opportunities has never been broader.

This technological shift is also changing the roles of teachers and students. While teachers were once the primary sources of knowledge, students today are increasingly able to direct their own learning. The teacher's role is evolving into more of a "guide on the side," helping students navigate a sea of digital resources and tools.

Technology is not just a supplement—it is a transformative force in education. It empowers teachers to develop dynamic instructional materials and encourages collaborative learning in new and innovative ways.

As a music educator for over 40 years, I've witnessed firsthand the evolution of how music is written, practiced, and shared. Software now allows composers to create high-quality scores in a fraction of the time. AI tools can simulate ensemble accompaniments, providing students with opportunities to practice with virtual bands or orchestras—a powerful tool, especially for building improvisation skills.

AI's influence continues to grow, offering teachers and students new tools for instruction and engagement. AI-driven platforms offer interactive lessons, practice exercises, and music theory modules, making high-quality instruction available regardless of a student's location or socio-economic background.

However, this progress is not without its challenges.

Over the past two decades, I've observed a noticeable decline in student interest in research and historical inquiry. With information so easily available, many students now overlook the importance of deep exploration. Similarly, traditional skills like handwriting music are fading. Most assignments are now submitted digitally, and fundamental skills such as writing harmonic columns or properly notating lines by hand are becoming rare.

In fact, I'm not always the most popular teacher—I still do not accept computer-generated instrumentation assignments. I believe strongly in developing foundational skills through manual practice, which reinforces understanding in ways technology cannot replace.

The integration of AI in music education holds enormous promise. But we must proceed with care, ensuring it enhances, rather than diminishes, the expressive and emotional dimensions of music—qualities that can only come from human insight and experience.

The COVID-19 pandemic forced all of us to rethink how we teach. One of my greatest concerns during that time was how to continue working with Symphony Orchestra students, especially those fulfilling ensemble degree requirements. We developed several new strategies—online auditions, virtual masterclasses, sectional rehearsals, and streamed concerts—which proved so effective that many remain part of our curriculum today. These methods even allowed us to reach global audiences we would not have connected with otherwise.

One of AI's most promising contributions is its ability to broaden access to high-quality music education. AI-powered platforms can reach students in remote and underserved areas, providing lessons in everything from basic theory to advanced instrumental techniques.

In conclusion, the relationship between AI and music education is still evolving. As educators, we must embrace the opportunities it brings while remaining mindful of the ethical and pedagogical challenges. With a thoughtful, student-centered approach, we can ensure that technology continues to enrich our musical traditions—not replace the human artistry and discipline at their core.

## 音乐教育学术报告 Music Education Academic Report



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## AI:音乐生态重构“催化剂”，搅动边界与催生新可能

**摘要：**本文探讨了 AI 音乐教育对人类未来的深远影响，并分析了传统音乐与 AI 音乐融合引领儿童及青少年发展的路径。随着 AI 技术的迅猛发展，音乐教育领域正经历着前所未有的变革，AI 音乐教育不仅为音乐创作与教学带来了新的可能性，也为人类音乐素养的提升和音乐文化的传承开辟了新的道路。同时，传统音乐与 AI 音乐的融合，为儿童及青少年的音乐教育提供了更加丰富多元的学习体验，有助于培养他们的创造力、审美能力和跨文化交流能力。

**关键词：**AI 音乐教育; 人类未来; 传统音乐; 融合发展; 儿童及青少年

### 一、引言

随着科技的飞速发展，人工智能 (AI) 技术已逐渐渗透到各行各业，深刻改变着人类生活的方方面面。音乐教育领域亦不例外，AI 技术的引入正在重塑音乐教育的形态与未来趋势。本文旨在探讨 AI 音乐教育对人类未来的深远影响，并分析传统音乐与 AI 音乐融合引领儿童及青少年发展的路径。

### 二、AI 音乐教育对人类未来的深远影响

#### 2.1 AI 音乐教育重塑音乐创作与教学模式

AI 音乐教育通过智能算法和大数据分析，为音乐创作与教学带来了革命性的变化。在音乐创作方面，AI 技术能够自动生成旋律、和声、节奏等音乐元素，帮助音乐家快速完成创作。例如，OpenAI 的 MuseNet 可以生成多种风格的音乐作品，从古典到流行，从爵士到摇滚，极大地拓宽了音乐创作的边界。在教学方面，AI 音乐教育平台能够为学生提供个性化的学习。

#### 2.2 AI 音乐教育提升全民音乐素养

AI 音乐教育的普及将有助于提高全民音乐素养。通过智能化的学习工具和丰富的教学资源，AI 音乐教育能够降低音乐学习的门槛，让更多人参与到音乐学习中来。无论是城市还是偏远地区，只要有网络连接，学生就能接触到高质量的音乐教育资源。这种普及化的音乐教育模式，将有助于培养更多具有音乐素养的人才，推动音乐文化的传承与发展。

#### 2.3 AI 音乐教育促进音乐产业创新

AI 音乐教育不仅改变了音乐创作与教学模式，也促进了音乐产业的创新。AI 技术能够分析市场趋势和用户偏好，为音乐制作、发行和推广提供精准的数据支持。同时，AI 音乐教育平台还能够为音乐人提供展示才华的舞台，帮助他们与全球听众建立联系，推动音乐产业的全球化发展。

### 三、传统音乐与 AI音乐的融合发展

#### 3.1 融合发展的必要性

传统音乐是人类文化的重要组成部分，承载着丰富的历史和文化内涵。然而，随着时代的发展，传统音乐面临着传承与创新的挑战。AI音乐的兴起为传统音乐的传承与创新提供了新的机遇。通过融合传统音乐与AI音乐，可以创造出既具有传统文化底蕴又具有现代科技感的音乐作品，满足现代人的审美需求。

#### 3.2 融合发展的路径

##### 3.2.1 技术层：建立 AI工具评估体系，筛选符合教学伦理的应用程序

在 AI音乐教育蓬勃发展的当下，建立一套科学、全面的 AI 工具评估体系显得尤为重要。这一体系不仅关乎教学质量的提升，更直接影响到学生的身心健康与未来发展。评估体系应涵盖多个维度，包括但不限于技术性能、用户体验、数据安全及教学伦理等。在技术性能方面，需评估 AI 工具的稳定性、响应速度及生成内容的准确性与创新性；用户体验则关注工具的易用性、互动性及个性化程度；数据安全是保障用户隐私与权益的基石，需严格审查数据收集、存储与处理的合规性；而教学伦理则是评估体系的核心，要求AI工具在辅助教学时，必须遵循教育规律，尊重学生个性，避免过度依赖技术而忽视人文关怀。通过这一评估体系，我们能够筛选出真正符合教学伦理的AI应用程序，为AI音乐教育的健康发展提供有力保障。

##### 3.2.2 教学层：推行“双师模式”（人类教师+AI 系统）的混合式教学

“双师模式”作为一种创新的混合式教学方式，正逐渐成为 AI 音乐教育领域的热点。该模式通过整合人类教师的专业知识与 AI系统的技术优势，实现了教学资源的优化配置与教学效果的显著提升。在“双师模式”下，人类教师负责制定教学目标、规划教学内容、引导学生思考与探索，而 AI 系统则承担起智能辅导、个性化推荐、作业批改等辅助性工作。这种分工合作不仅减轻了教师的工作负担，还使得教学更加精准高效。同时，AI 系统的实时反馈与数据分析功能，能够帮助教师及时了解学生的学习状况，调整教学策略，实现因材施教。此外，“双师模式”还促进了师生之间的深度互动与情感交流，营造了更加和谐、积极的学习氛围。

##### 3.2.3 创作层：发展“人机共创”新范式，保留艺术创作的情感内核

在 AI音乐创作领域，“人机共创”正成为一种新的创作范式。这一范式强调人类创作者与 AI系统的深度合作与相互启发，共同创造出既具有科技感又不失人文情怀的音乐作品。在“人机共创”过程中，人类创作者负责提供创作灵感、把握艺术方向、注入情感内核，而 AI 系统则通过智能算法与大数据分析，为创作提供丰富的素材、多样的风格选择及高效的创作工具。这种合作方式不仅拓宽了音乐创作的边界，还使得作品更加贴近时代脉搏，满足现代人的审美需求。然而，值得注意的是，在追求技术创新的同时，我们必须始终坚守艺术创作的情感内核，确保作品能够触动人心、引发共鸣。只有这样，“人机共创”才能真正成为推动音乐艺术发展的新动力。

## 四、传统音乐与AI音乐融合：推动儿童及青少年成长的关键路径

### 4.1 智能化指引：定制化学习轨迹

AI 技术在音乐教学指导领域的应用，宛如为每位学习者配备了一位专属的音乐导师，能给予精准且个性化的反馈。在传统的音乐学习场景里，教师难以在有限的时间内对每个学生的演奏细节进行全面、细致的剖析。而 AI 系统凭借其强大的算法和数据分析能力，能够迅速且精准地剖析学生的演奏技巧，无论是细微的指法运用，还是整体的演奏风格；对音准的把握，哪怕是最微小的音高偏差；以及节奏的稳定性，包括快慢变化和节拍的精准度等。

一旦发现问题，AI 系统会即时为学生提供反馈，不仅指出问题所在，还会详细指导学生如何改进。比如，对于音准问题，会告知学生音高偏移的具体数值和方向，并提供针对性的练习方法；对于节奏问题，会分析节奏不稳定的根源，如某个节拍的时值把握不准，并给出相应的节奏训练建议。这种精准的反馈机制大大提高了学习效率，让学生能够快速找到问题并加以解决。同时，这种个性化的学习方式为学生营造了一个安全、无压力的学习环境，他们无需担心因犯错而受到批评，可以自由地探索音乐世界，尽情发挥自己的音乐潜能。

### 4.2 创意的交融：AI与音乐创作的深度融合

音乐创作向来是一项充满挑战与创造性的活动，它要求作曲家具备深厚的音乐理论知识、精湛的创作技巧以及丰富的艺术灵感。然而，人工智能的出现为音乐创作领域带来了新的活力，在一定程度上降低了音乐创作的门槛，让更多人有机会参与到音乐创作中来。

AI 技术为音乐创作提供了海量的资源和强大的创作工具。通过对大量音乐数据的智能分析和处理，AI 能够深入挖掘不同音乐风格的特点和规律，生成各种风格的音乐作品。它可以模仿古典音乐的庄重典雅、流行音乐的时尚动感、摇滚音乐的激情澎湃等。对于学生而言，AI 生成的旋律、和弦甚至完整的乐曲，可以成为他们创作的灵感源泉和参考样本。

智能编曲软件、自动伴奏系统等先进的音乐创作工具，更是为学生提供了便捷的创作途径。这些工具能够根据学生输入的简单旋律或和弦进行，自动生成丰富的编曲和伴奏。学生可以在此基础上进行个性化的修改和完善，添加自己的创意和想法，将简单的构思变成完整的音乐作品。这种创作方式极大地激发了学生的创造力和想象力，让他们在音乐创作的道路上不断探索和创新。

### 4.3 沉浸式研习：深化对音乐的领悟

郭元祥等学者提出的深度教学理念，强调学生要在教师引导下，对知识进行内在结构逐层深化的递进式学习，以及对学习过程深入参与和投入的沉浸式学习，以实现学习的过程价值和实践属性。AI 技术在音乐教育中的应用，完美契合了这一理念，为学生带来了沉浸式的学习体验，有力地增强了他们对音乐的理解。

AI 技术具有强大的探索和分析能力，它可以根据一个问题，连续深入追问，对知识的内在逻辑和外在线索进行寻根究底的探索，从而完整呈现一个问题的全部面貌。在音乐学习中，学生可以借助 AI 系统的引导，深入探究

音乐作品的背景、创作意图、音乐风格演变等知识。例如，在学习一首古典音乐作品时，AI系统可以提供关于作曲家所处的时代背景、创作时的个人经历等信息，帮助学生更好地理解作品的内涵。

借助虚拟现实、增强现实等先进技术，学生还能够与虚拟音乐家进行实时互动，仿佛置身于一个真实的音乐场景中。在这种沉浸式的学习环境中，学生可以近距离观察虚拟音乐家的演奏姿态、表情变化，感受不同音乐风格的独特魅力。他们可以自由地探索不同的音乐风格，从古典到现代，从东方到西方；尝试各种演奏技巧，如钢琴的快速跑动、小提琴的揉弦等。通过与虚拟音乐家的互动和模仿，学生能够培养出更加丰富的音乐素养和表现能力，对音乐的理解也会更加深刻。

#### 4.4表演的新高度：AI与音乐表演的完美融合

在传统的音乐教学中，学生在音乐表演方面常常面临诸多难题，如演唱不准确、节奏不稳定、情感表达不到位等。这些问题不仅影响了学生的学习效果，也制约了他们在音乐表演领域的发展。而以人工智能技术为支持的音乐教学，为学生和教师提供了全新的解决方案，将音乐表演提升到了一个新的高度。

学生可以利用演唱录音软件、音乐创作软件等工具，进行实时的表演和创作。这些工具能够对学生的表演进行全方位、精准的后台评估，从音准、节奏、音色、情感表达等多个维度进行分析，并给出详细的评估结果和建议。学生可以根据这些反馈，及时调整自己的表演方式，不断提高表演水平。

同时，教师可以利用人工智能技术，对学生的音乐表演和创作过程进行数据分析。通过分析学生在表演中的音准波动范围、节奏变化规律、情感表达的强弱等数据，教师能够深入了解学生的表达特点、表达难点和表达弱化点。基于这些数据，教师可以为学生制定个性化的教学方案，提供针对性的帮助和指导。例如，对于情感表达不足的学生，教师可以引导他们深入理解音乐作品的情感内涵，通过情境模拟、情感体验等方式，提高学生的情感表达能力。在AI技术的辅助下，学生能够更加科学、高效地提升自己的音乐表演水平，达到新的艺术境界。

## 五、结论与展望

AI音乐教育对人类未来的深远影响不可忽视，它不仅重塑了音乐创作与教学模式，提升了全民音乐素养，还促进了音乐产业的创新与发展。同时，传统音乐与AI音乐的融合发展为儿童及青少年的音乐教育提供了更加丰富多元的学习体验，有助于培养他们的创造力、审美能力和跨文化交流能力。未来，随着AI技术的不断进步和应用场景的拓展，AI音乐教育将在更多领域发挥重要作用，为人类音乐文化的传承与发展贡献力量。我们期待看到更多创新性的AI音乐教育产品和服务涌现出来，为人类音乐教育的未来发展注入新的活力。

## 音乐教育学术报告 Music Education Academic Report



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## AI: The “Catalyst” for Music Ecosystem Restructuring, Stirring Boundaries and Catalyzing New Possibilities

### Abstract:

This paper explores the profound impact of AI music education on humanity’s future and analyzes pathways for integrating traditional and AI music to guide the development of children and adolescents. With the rapid advancement of AI technology, the field of music education is undergoing unprecedented transformation. AI music education not only introduces new possibilities for music creation and teaching but also opens new avenues for enhancing human musical literacy and preserving musical culture. Simultaneously, the fusion of traditional and AI music enriches learning experiences for children and adolescents, fostering their creativity, aesthetic sensibility, and cross-cultural communication skills.

Keywords: AI music education ; humanity’s future ; traditional music; integrated development; children and adolescents

### 1. Introduction

With the rapid development of technology, artificial intelligence (AI) has permeated various industries, profoundly reshaping all aspects of human life. The field of music education is no exception. The integration of AI is redefining the form and future trajectory of music education. This paper examines the far-reaching implications of AI music education for humanity’s future and explores pathways for leveraging the fusion of traditional and AI music to advance the development of children and adolescents.

### 2.The Profound Impact of AI Music Education on Humanity’s Future

#### 2.1 Reshaping Music Creation and Pedagogy

AI music education revolutionizes music creation and teaching through intelligent algorithms and big data

analytics. In composition, AI can autonomously generate musical elements (melodies, harmonies, rhythms), enabling musicians to create efficiently. For example, OpenAI’s \*MuseNet\* produces works spanning classical, pop, jazz, and rock genres, vastly expanding creative boundaries. In pedagogy, AI platforms offer personalized learning experiences tailored to individual needs.

#### 2.2 Elevating Universal Music Literacy

The democratization of AI music education lowers barriers to entry, allowing broader participation in music learning. High-quality resources are accessible anywhere with internet connectivity—empowering students in both urban and remote areas. This inclusive model cultivates musically literate individuals, driving the preservation and evolution of musical culture.

#### 2.3 Fostering Innovation in the Music Industry

Beyond transforming creation and teaching, AI music education spurs industry innovation. AI analyzes market trends and user preferences, providing data-driven insights for production, distribution, and promotion. Platforms also offer artists global visibility, connecting them with audiences worldwide and accelerating the globalization of music.

### 3. Integration of Traditional and AI Music

#### 3.1 The Necessity of Integration

Traditional music is an important part of human culture, carrying rich historical and cultural connotations. However, with the development of the times, traditional music faces the challenge of inheritance and innovation. The rise of AI music provides new opportunities for the inheritance and innovation of traditional music. By integrating traditional music with AI music, we can create music works that have both traditional cultural heritage

and modern technology to meet the aesthetic needs of modern people.

## 3.2 Pathways for Integration

### 3.2.1 Technical Layer: Establishing an AI Tool Evaluation Framework

At a time when AI music education is booming, it is particularly important to establish a scientific and comprehensive AI tool evaluation system. This system is not only related to the improvement of teaching quality, but also directly affects the physical and mental health and future development of students. The evaluation system should cover multiple dimensions, including but not limited to technical performance, user experience, data security and teaching ethics. In terms of technical performance, the stability, response speed and accuracy and innovation of the generated content of AI tools need to be evaluated; user experience focuses on the ease of use, interactivity and personalization of the tools; data security is the cornerstone of protecting user privacy and rights, and the compliance of data collection, storage and processing needs to be strictly reviewed; and teaching ethics is the core of the evaluation system, requiring AI tools to follow the laws of education when assisting teaching, respect students' personalities, and avoid over-reliance on technology and neglecting humanistic care. Through this evaluation system, we can screen out AI applications that truly meet teaching ethics and provide strong guarantees for the healthy development of AI music education.

### 3.2.2 Pedagogical Layer: Implementing the "Dual-Teacher Model" (Human + AI)

As an innovative hybrid teaching method, the "dual-teacher model" is gradually becoming a hot topic in the field of AI music education. This model integrates the professional knowledge of human teachers with the technical advantages of AI systems to optimize the allocation of teaching resources and significantly improve teaching results. Under the "dual-teacher model", human teachers are responsible for setting teaching goals, planning teaching content, and guiding students to think and explore, while the AI system undertakes

auxiliary work such as intelligent tutoring, personalized recommendations, and homework correction. This division of labor and cooperation not only reduces the workload of teachers, but also makes teaching more accurate and efficient. At the same time, the real-time feedback and data analysis functions of the AI system can help teachers understand students' learning status in a timely manner, adjust teaching strategies, and achieve teaching in accordance with their aptitude. In addition, the "dual-teacher model" also promotes in-depth interaction and emotional communication between teachers and students, creating a more harmonious and positive learning atmosphere.

### 3.2.3 Creative Layer: Pioneering "Human-AI Co-Creation"

In the field of AI music creation, "human-machine co-creation" is becoming a new creative paradigm. This paradigm emphasizes the deep cooperation and mutual inspiration between human creators and AI systems to jointly create music works that are both technological and humanistic. In the process of "human-machine co-creation", human creators are responsible for providing creative inspiration, grasping artistic direction, and injecting emotional core, while AI systems provide rich materials, diverse style choices and efficient creative tools for creation through intelligent algorithms and big data analysis. This form of cooperation not only broadens the boundaries of music creation, but also makes the works closer to the pulse of the times and meets the aesthetic needs of modern people. However, it is worth noting that while pursuing technological innovation, we must always adhere to the emotional core of artistic creation to ensure that the works can touch people's hearts and resonate. Only in this way can "human-machine co-creation" truly become a new driving force for the development of music art.

## 4. Integration as a Catalyst for Youth Development

### 4.1 Intelligent Guidance: Customized Learning Trajectories

The application of AI technology in the field of music teaching guidance is like equipping low-level learners with unique music tutors, who can provide accurate and personalized feedback. In traditional music

learning scenarios, it is difficult for teachers to provide feedback on each subject within a limited time, and to conduct a comprehensive and active analysis of the performance details of students. The AI system, with its powerful algorithms and data analysis capabilities, can quickly and accurately analyze students' performance skills, whether it is the use of fingering to evaluate or the overall performance style; the grasp of pitch, the smallest deviation in sound pitch; and the stability of rhythm, including changes in speed and the accuracy of beats.

Upon detecting performance issues, the AI system provides immediate feedback that not only pinpoints specific deficiencies but also offers detailed corrective guidance. For instance, when addressing pitch inaccuracies, the system quantifies deviations in cents ( $\pm$ ) with directional indicators (sharp/flat) and prescribes targeted remediation exercises. Similarly, for rhythmic instability, it identifies root causes such as inaccurate duration control for specific note values and recommends tailored rhythmic training protocols. This precision feedback mechanism significantly enhances learning efficiency by enabling rapid problem identification and resolution. Furthermore, the personalized methodology cultivates a psychologically safe learning environment where students can experiment without fear of criticism, freely explore musical expression, and ultimately maximize their latent artistic potential.

#### **4.2 Creative Convergence: Deepening Music Composition**

Musical composition has long been a profoundly challenging and creative endeavor, demanding composers to possess comprehensive theoretical knowledge, refined technical skills, and abundant artistic inspiration. However, the advent of artificial intelligence has injected new vitality into the creative landscape, democratizing access to music composition by lowering technical barriers, thereby enabling broader participation in musical creation.

AI technology provides unprecedented resources and powerful creative tools for musical composition. Through intelligent analysis and processing of vast musical datasets, AI can extract distinctive characteristics and patterns across genres, generating compositions spanning diverse styles. It adeptly emulates the stately elegance of classical music, the vibrant dynamism of pop, and the raw intensity of rock. For students, AI-generated melodies, harmonies, and even complete works serve as valuable inspirational sources and reference templates.

Advanced tools such as intelligent arrangement software and auto-accompaniment systems further streamline the creative process. These applications automatically generate sophisticated orchestrations and accompaniments based on simple melodic inputs or chord progressions provided by students. Learners can then refine these foundations through personalized modifications, incorporating their unique creative concepts to transform basic ideas into fully realized musical works. This collaborative approach significantly stimulates students' creativity and imagination, fostering continual exploration and innovation throughout their compositional journeys.

#### **4.3 Immersive Learning: Deepening Musical Understanding**

The deep teaching concept proposed by scholars such as Guo Yuanxiang emphasizes that students should, under the guidance of teachers, conduct progressive learning of the internal structure of knowledge, and immersive learning with deep participation and investment in the learning process, so as to realize the process value and practical attributes of learning. The application of AI technology in music education perfectly fits this concept, bringing students an immersive learning experience and effectively enhancing their understanding of music.

AI technology has powerful exploration and analysis capabilities. It can continuously and deeply ask questions based on a problem, and thoroughly explore

the internal logic and external phenomena of knowledge, so as to fully present the full picture of a problem. In music learning, students can use the guidance of AI systems to deeply explore the background, creative intentions, and evolution of musical styles of musical works. For example, when learning a classical music work, the AI system can provide information about the composer's era background and personal experience during creation, so as to help students better understand the connotation of the work.

With the help of advanced technologies such as virtual reality and augmented reality, students can also interact with virtual musicians in real time, as if they were in a real music scene. In this immersive learning environment, students can closely observe the performance postures and expression changes of virtual musicians, and feel the unique charm of different musical styles. They can freely explore different musical styles, from classical to modern, from Eastern to Western; and try various performance techniques, such as fast running of piano and vibrato of violin. Through interaction and imitation with virtual musicians, students can develop richer musical literacy and performance ability, and have a deeper understanding of music.

#### 4.4 Elevated Performance: AI-Enhanced Music Execution

In traditional music teaching, students often face many difficulties in music performance, such as inaccurate singing, unstable rhythm, and inadequate emotional expression. These problems not only affect students' learning effects, but also restrict their development in the field of music performance. Music teaching supported by artificial intelligence technology provides students and teachers with a new solution, bringing music performance to a new level.

Students can use singing recording software, music creation software and other tools to perform and create in real time. These tools can conduct a comprehensive and

accurate backstage evaluation of students' performances, analyze from multiple dimensions such as pitch, rhythm, timbre, and emotional expression, and give detailed evaluation results and suggestions. Students can adjust their performance methods in time based on these feedbacks and continuously improve their performance level.

At the same time, teachers can use artificial intelligence technology to conduct data analysis on students' music performance and creation process. By analyzing the data such as the range of pitch fluctuations, rhythm change rules, and the strength of emotional expression in students' performances, teachers can have a deep understanding of students' expression characteristics, expression difficulties, and expression weaknesses. Based on these data, teachers can develop personalized teaching plans for students and provide targeted help and guidance. For example, for students who are not good at expressing emotions, teachers can guide them to deeply understand the emotional connotation of musical works and improve their emotional expression ability through situational simulation, emotional experience, etc. With the assistance of AI technology, students can improve their music performance level more scientifically and efficiently and reach a new artistic realm.

#### 5. Conclusion and Outlook

AI music education profoundly reshapes creation, teaching, and industry innovation while elevating global music literacy. Its fusion with traditional music offers youth enriched learning experiences that cultivate creativity, aesthetics, and cross-cultural fluency. As AI technology evolves, it will further empower the preservation and evolution of humanity's musical heritage. We anticipate innovative AI-driven educational products and services that inject vitality into the future of music education.

## 音乐教育学术报告 Music Education Academic Report



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### AI遇见MUSIC·一场跨时空的艺术款语

2025年，在十四届全国人大三次会议上政府工作报告中提出，持续推进“人工智能+”行动，将数字技术与制造优势、市场优势更好结合起来，支持大模型广泛应用。

在“人工智能+”行动数字技术迅猛发展的新时代，人工智能（AI）正以前所未有的方式浸透全球人类社会、政治、经济、科技、军事、生活等的各个领域。在这个“剧烈变动的发展时期”，音乐艺术也在其中，AI+MUSIC的结合，如同一场跨时空的艺术款语，为音乐艺术创作、艺术传播与艺术欣赏带来了排山倒海的重大革命转变时期。

#### 一、AI+MUSIC奏响传统民族音乐新乐章

民间音乐、戏曲音乐是中华优秀传统文化的重要组成，是丰富音乐文化传统的重要载体。民歌作为其中的重要形式，承载着历史的记忆和人民对生活的热爱与向往。随着科技的发展，AI+MUSIC已经浸入在人们日常生活的各个领域。而传统文化，如山东民歌、戏曲等地方性非物质文化遗产，面临着传承和创新的三重挑战。将AI技术与山东民歌、戏曲进行结合，打造传统文化魅力与科技创新元素双呈现的视听体验。

当传统音乐碰上前沿的AI技术，一场震撼人心的音乐革命钟声正寂静无声的敲响。在音乐创作领域，AI技术能够为传统音乐注入新的生机与活力。

传统音乐的创作依赖的是音乐家积累的丰富经验和深厚的文化底蕴，其灵感创意比较简单的程序化、套路化、规范化。在创造过程中借助AI技术，创作者可以利用音乐生成模型，将特定的音乐风格、节奏或情感等相关指令输入后，能够迅速生成初稿与创新的思路。

当创作一首具有山东民歌特色作品时候，使用AI+MUSIC技术，AI能够根据“沂蒙山小调”等山东特色音调的歌词、旋律等特色进行大量的数据分析和整合，提供具有山东特色的旋律走向和歌词，为创作者提供丰富的灵感与启发，能够提高创作者的创作意识与思维效率。

AI技术的普遍应用，重塑了传统音乐的传播路径与媒介生态。借助AI技术智能算法的相关音乐平台，深度分析音乐用户的喜爱偏好和行为习惯等数据，给音乐用户提供个性化推送。于是，传统旋律突破了时间与空间的界限，走进了音乐用户的的生活。除此之外，音乐类的APP运用AI技术进行创新，打破了不同艺术门类的壁垒，将传统音乐与视觉艺术、表演艺术等艺术形式相融合。同时，媒介短视频传播方式，也将传统音乐的展现方式变得更加动态化，使音乐用户能够根据不同场景、不同区域，进行不同的沉浸式体验。利用AI技术，能够创新地延续音乐根脉，为传统音乐赋予全新的视听联觉效应，更能吸引大批现代年轻人的关注与喜爱，让传统音乐在数字化时代焕发新生。

随着AI技术与传统音乐的跨界融合不断深入，一系列亟待解决的挑战也随之浮现。一是AI技术创作的音乐作品在人文情感表达层面仍存在显著局限。传统音乐中所承载的深厚人文底蕴、细腻情感体验，源于创作者独特的人生阅历与文化积淀，这些是难以被AI技术单纯依靠算法和数据训练完全复刻。二是在版权管理组织中，AI参与创作的音乐作品归属、知识产权认定与现行版权体系尚未形成明确统一的评判标准。因此，为保障音乐艺术创作者的权益，维护音乐艺术的健康发展，是我们需要共同面对的挑战。然而，只要我们充分发挥人类的创造力与AI技术的优势，成为新时代音乐发展的强大动力，也必将在人工智能（AI）时代焕发新的生机，迈向更加广阔的未来。

## 二、AI+MUSIC与中国千年古乐、雅乐、韶乐的交融

当中国千年古乐、雅乐、韶乐遇见AI技术算法，一场跨越时空的艺术对话正在迅速上演。AI技术通过分析大量的民族音乐素材，深度解读中国钟、鼓、琴、瑟、阮、箫、笛等传统乐器与民族乐器演奏的独特韵律，将古琴的空灵温润含蓄典雅，箫的音色古朴淡雅、如空谷回响，二胡的委婉惆怅、细腻柔和，琵琶的大弦嘈嘈如急雨、小弦切切如私语优美与激昂转化为数据频谱，为千年古乐、雅乐、韶乐焕发新的活力与生机，以突出其神圣、肃穆、静雅的氛围。

借助AI技术的编曲软件，创作者可快速将《大成乐章》《霓裳羽衣曲》《阳关三叠》等乐曲的多声部结构与现代作曲技法融合，让古老旋律焕发出新潮流气息，让AI+MUSIC作曲系统还能根据古老的旋律走向，生成与新时代审美的跨界新思路的作品。

现今，在AI+MUSIC大潮的推动下，借助AI技术现代编曲软件成为连接传统与创新的桥梁。创作者通过AI+MUSIC，能够以古老旋律为蓝本，将《大成乐章》、《霓裳羽衣曲》等经典古乐的多声部结构进行数字智能化解析，并巧妙融入现代音乐创作技法，让千年古乐与当代AI+MUSIC新的技术旋法、节奏碰撞出全新的听觉感受。使中国千年古乐、雅乐、韶乐在人工智能+时代，演绎出具有历史底蕴、跨越时空时尚感更美好的音乐艺术华章。

## 三、AI赋能·奏响新时代音乐强音

人工智能(AI)赋能，正以独特的方式奏响新时代的音乐强音。从创作角度来看，AI为音乐的创作者带来了全新的尝试与探索。往日，音乐创作门槛较高，需要创作者具备深厚的乐理知识和丰富的创作艺术实践经验。而现在，AI音乐创作平台不断涌现，如Suno V3、SkyMusic、Udio|Ai music等。创作者只需输入简单的语言指令，像指定音乐风格为古典、传统、流行、情感基调是欢快、抒情等表情元素，AI便能依据海量音乐数据的学习成果，快速生成旋律、编排和弦，甚至完成整首歌曲的创作与演唱，大大缩短了创作周期，激发了更多创作灵感。

在音乐教育领域中，AI也将发挥着越来越重要的推动作用。AI教学系统能实时分析学生的演奏数据，精准指出音准、节奏等方面的问题，并给出针对性的改进建议。比如“乐悟成长”系统，通过增强现实技术投影纠正指法，让学生更直观地学习。制作环节中，AI音频处理工具能够智能混音、降噪，优化音质，大幅提升制作效率。AI驱动的音乐理论学习App，还能根据学生的知识掌握情况，推送定制化、规范化、正确化的学习路径，使学习过程效率更佳。

然而，在产业体系方面，由于众多人的认识程度受局限，高素质专业人才也较为缺乏。但只要不断完善产业制度、加强技术攻关、培养专业人才，AI+必将为音乐领域带来更多惊喜，让美妙的音乐在新时代焕发出更加绚丽的光彩。

## 四、当AI+MUSIC教育滋养青少年健康成长

在AI深度融入音乐教育的当今，它正以多元方式助力青少年健康成长。让青少年在旋律与节奏中感受文化遗产的力量，培养审美感知与文化认同感；激发青少年对音乐的探索欲，拓宽艺术视野，在创新表达中培养丰富的创造力与数字艺术素养。

一是用AI+MUSIC教育平台可通过生动案例和互动课程，向青少年普及版权法知识，让他们明白AI生成作品的版权归属、使用规范，培养尊重知识产权的意识，避免侵权行为。

二是在音乐课堂或实践活动里，用AI+MUSIC教育具备强大的个性化教学能力，人工智能系统能根据青少年的学习特点和兴趣，进行选择性的调整编排教学方案与内容，让每个孩子都能在适合自己的节奏中进步，从而提升自信心。在攻克技术难点的过程中建立自信，在传统音乐中传递家国情怀、道德故事，潜移默化地影响着青少年的美育价值观，助力品德塑造。AI+MUSIC还能通过虚拟音乐小组合作，锻炼青少年的团队协作与社交能力，其自主学习引导功能，能激发学生主动探索音乐艺术知识，培养提高自我思辨独立思考、自主判断意识与解决问题的能力。当传统与创新交织，音乐便不再只是声音的艺术，更是陪伴青少年成长的心灵导师，引导他们在文化浸润与创新实践中，成长为具有守护文化根脉和时代宏观视野的新一代。

三是AI+MUSIC的联结是每个时期注定的发展规律，它为千年古乐、雅乐、民族传统音乐带来了无限的可能性与新一轮的创意与创作空间。AI技术将与音乐艺术工作者们并肩，协同描绘音乐艺术革命的新的辉煌。青少年可以正确的在AI+MUSIC教育中学习过程中，得到知识滋养与能力，加强自身的音乐著作版权保护，以及音乐无限遐想的空间与独特的创意理念。让AI+MUSIC教育能够培养青少年的创新能力和攀登科技高峰的素养，使其推进音乐与新科技更好地联袂，创造出最具科学性、创新性、实用性新时代特色的音乐精品。同时，随着音乐著作版权保护法的观念逐步完善，AI+MUSIC的艺术生态也会更加良好稳定。用AI+MUSIC传递温暖与希望、为社会文化环境健康发展、为艺术与创新贡献力量，用AI+MUSIC全新的金声雅韵之音，传承和弘扬优秀传统文化，助推中华大乐文化走向世界。

# 音乐教育学术报告

## Music Education Academic Report



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## When AI Meets Music: An Interdisciplinary Discourse Across Temporal Dimensions

In 2025, the government work report at the third session of the 14th National People's Congress proposed to continue to promote the "artificial intelligence +" action, better combine digital technology with manufacturing advantages and market advantages, and support the widespread application of large models.

In the new era of rapid development of digital technology in the "artificial intelligence +" action, artificial intelligence (AI) is permeating all fields of global human society, politics, economy, science and technology, military, life, etc. in an unprecedented way. In this "period of drastic changes in development", music art is also in it. The combination of AI+MUSIC, like an artistic language across time and space, has brought a major revolutionary transformation period for music art creation, art communication and art appreciation.

### 1. AI+MUSIC plays a new chapter in traditional folk music

Folk music and opera music are important components of China's excellent culture and important carriers of rich musical and cultural traditions. Folk songs, as an important form, carry the memory of history and people's love and yearning for life. With the development of science and technology, AI+MUSIC has been immersed in all areas of people's daily life. Traditional culture, such as Shandong folk songs, operas and other local intangible cultural heritage, faces the dual challenges of inheritance and innovation. Combining AI technology with Shandong folk songs and operas to create an audio-visual experience that presents both the charm of traditional culture and technological innovation elements.

When traditional music meets cutting-edge AI technology, the bell of a shocking music revolution is ringing silently. In the field of music creation, AI technology can inject new vitality into traditional music.

The creation of traditional music relies on the rich experience and profound cultural heritage accumulated by musicians, and its inspiration and creativity are relatively simple, formulaic, and standardized. With the help of AI technology in the creative process, creators can use the music generation model to input relevant instructions such as specific music style, rhythm or emotion, and quickly generate a draft and innovative ideas.

When creating a work with the characteristics of Shandong folk songs, using AI+MUSIC technology, AI can perform a large amount of data analysis and integration based on the lyrics, melody and other characteristics of Shandong-style tunes such as "Yimeng Mountain Minor", provide melody trends and lyrics with Shandong characteristics, provide creators with rich inspiration and enlightenment, and improve creators' creative awareness and thinking efficiency.

The widespread application of AI technology has reshaped the dissemination path and media ecology of traditional music. With the help of relevant music platforms with AI technology intelligent algorithms, the data such as the favorite preferences and behavioral habits of music users are deeply analyzed to provide personalized push notifications to music users. As a result, traditional melodies have broken through the boundaries of time and space and entered the lives of music users. In addition, music apps use AI technology to innovate, break the barriers between different art categories, and integrate traditional music with art forms such as visual arts and performing arts. At the same time, the media short video dissemination method has also made the presentation of traditional music more dynamic, allowing music users to have different immersive experiences according to different scenes and regions. The use of AI technology can innovatively continue the roots of music, give traditional music a new audio-visual synesthesia effect, and attract the attention and love of a large number of modern young people, giving traditional music a new lease of life in the digital age.

As the cross-border integration of AI technology and traditional music continues to deepen, a series of challenges that need to be solved have also emerged. First, the music works created by AI technology still have significant limitations in the expression of humanistic emotions. The profound humanistic heritage and delicate emotional experience carried in traditional music originate from the unique life experience and cultural accumulation of the creators, which are difficult to be completely reproduced by AI technology simply relying on algorithms and data training. Second, in copyright management organizations, the ownership of music works created with the participation of AI, the recognition of intellectual property rights and the current copyright system have not yet formed a clear and unified evaluation standard. Therefore, in order to protect the rights and interests of music art creators and maintain the healthy development of music art, it is a challenge we need to face together. However, as long as we give full play to the creativity of human beings and the advantages of AI technology, and become a powerful driving force for the development of music in the new era, it will also be revitalized in the era of artificial intelligence (AI) and move towards a broader future.

## **2. The integration of AI+MUSIC and China's thousand-year-old ancient music, Ya music, and Shao music**

When China's thousand-year-old ancient music, Ya music, and Shao music meet AI technology algorithms, an artistic language that transcends time and space is rapidly unfolding. AI technology analyzes a large amount of folk music materials and deeply interprets the unique rhythm of traditional Chinese instruments such as bells, drums, qin, se, ruan, flute, and flute, and folk instruments. It converts the ethereal, warm, implicit and elegant guqin, the timbre of the flute, which is simple and elegant, like the echo of an empty valley, the euphemistic melancholy, delicate and soft erhu, the big strings of the pipa, which are noisy like heavy rain, and the small strings, which are as beautiful and passionate as whispers, into data spectra, giving new vitality and vitality to the thousand-year-old ancient music, Ya music, and Shao music, to highlight its sacred, solemn, and quiet atmosphere.

With the help of AI-based composition software, creators can quickly integrate the polyphonic structure of music such as “Dacheng Music”, “Nichang Yuyi Qu”, and “Yangguan Sandie” with modern composition techniques, allowing ancient melodies to glow with new trends. The AI+MUSIC composition system can also generate works with new cross-border ideas that are in line with the aesthetics of the new era based on the direction of ancient melodies.

Nowadays, driven by the AI+MUSIC trend, modern music arrangement software has become a bridge between tradition and innovation with the help of AI technology. Through AI+MUSIC, creators can use ancient melodies as a blueprint to digitally and intelligently analyze the polyphonic structure of classic ancient music such as “Dacheng Music” and “Nichang Yuyi Qu”, and cleverly integrate modern music creation techniques, so that the millennium ancient music and the new technical melodies and rhythms of contemporary AI+MUSIC collide to create a new auditory experience. In the era of artificial intelligence+, China’s millennium ancient music, elegant music, and Shao music have performed a more beautiful musical art chapter with historical heritage and a sense of fashion that transcends time and space.

### 3. AI empowerment plays the powerful music of the new era

Artificial intelligence (AI) empowerment is playing the powerful music of the new era in a unique way. From the perspective of creation, AI has brought new attempts and explorations to music creators. In the past, the threshold for music creation was high, requiring creators to have deep knowledge of music theory and rich experience in creative art practice. Now, AI music creation platforms are constantly emerging, such as Suno V3, SkyMusic, Udio | Ai music, etc. Creators only need to enter simple language instructions, such as specifying the music style as classical, traditional, popular, and the emotional tone as cheerful, lyrical and other expression elements. AI can quickly generate melodies, arrange chords, and even complete the creation and singing of the entire song based on the learning results of massive music data, greatly shortening the creation cycle and inspiring more creative inspiration.

In the field of music education, AI will also play an increasingly important role in promoting music education. The AI teaching system can analyze students’ performance data in real time, accurately point out problems in pitch, rhythm, etc., and give targeted suggestions for improvement. For example, the “Music Enlightenment Growth” system uses augmented reality technology to project and correct fingering, allowing students to learn more intuitively. In the production process, AI audio processing tools can intelligently mix, reduce noise, optimize sound quality, and greatly improve production efficiency. AI-driven music theory learning apps can also push customized, standardized, and correct learning paths based on students’ knowledge mastery, making the learning process more efficient. However, in terms of the industrial system, due to the limited understanding of many people, there is also a lack of high-quality professional talents. But as long as we continue to improve the industrial system, strengthen technical research, and cultivate professional talents, AI+ will surely bring more surprises to the music field, allowing wonderful music to shine more brilliantly in the new era.

However, in terms of the industry system, due to the limited understanding of many people, there is a lack of high-quality professional talents. But as long as we continue to improve the industry system, strengthen technical research, and cultivate professional talents, AI+ will surely bring more surprises to the music field and make the wonderful music shine more brilliantly in the new era.

## 4. When AI+MUSIC education nourishes the healthy growth of young people

In today's world where AI is deeply integrated into music education, it is helping young people grow up healthily in a variety of ways. Let young people feel the power of cultural heritage in melody and rhythm, cultivate aesthetic perception and cultural identity; stimulate young people's desire to explore music, broaden their artistic horizons, and cultivate rich creativity and digital art literacy in innovative expression.

First, the AI+MUSIC education platform can be used to popularize copyright law knowledge among young people through vivid cases and interactive courses, so that they can understand the copyright ownership and usage regulations of AI-generated works, cultivate awareness of respecting intellectual property rights, and avoid infringement.

Second, in music classes or practical activities, AI+MUSIC education has powerful personalized teaching capabilities. The artificial intelligence system can selectively adjust and classify teaching plans and content according to the learning characteristics and interests of young people, so that every child can make progress in a rhythm that suits them, thereby enhancing their self-confidence. Build confidence in the process of overcoming technical difficulties, convey family and country feelings and moral stories in traditional music, subtly influence the aesthetic values of young people, and help shape their moral character. AI+MUSIC can also train young people's teamwork and social skills through virtual music group cooperation. Its autonomous learning guidance function can inspire students to actively explore music art knowledge, cultivate and improve self-thinking, independent thinking, independent judgment awareness and problem-solving ability. When tradition and innovation are intertwined, music is no longer just the art of sound, but also a spiritual mentor who accompanies the growth of young people, guiding them to grow into a new generation with cultural roots and a macro perspective of the times in cultural immersion and innovative practice.

Third, the connection of AI+MUSIC is a development law destined for each period. It brings infinite possibilities and a new round of creativity and creation space to the thousand-year-old ancient music, elegant music, and traditional folk music. AI technology will work side by side with music artists to jointly depict the new glory of the music art revolution. Young people can correctly learn in the process of AI+MUSIC education, gain knowledge nourishment and ability, strengthen their own music copyright protection, as well as the space for unlimited music imagination and unique creative ideas. Let AI+MUSIC education cultivate young people's innovation ability and the quality of climbing the peak of science and technology, so that they can promote better integration of music and new technology, and create the most scientific, innovative, and practical new era music masterpieces. At the same time, as the concept of the copyright protection law of music works is gradually improved, the art ecology of AI+MUSIC will be better and more stable. Use AI+MUSIC to convey warmth and hope, contribute to the healthy development of the social and cultural environment, and contribute to art and innovation. Use AI+MUSIC's brand-new golden sound and elegant rhyme to inherit and promote excellent traditional culture and promote Chinese music culture to the world.

## 音乐教育学术报告 Music Education Academic Report



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### 共鸣与现实：AI与音乐教育， 是相辅相成，还是相互矛盾？

#### 技术的普及与创作自由

如今的青少年成长于科技与创意并行的时代。通过节奏编曲软件、AI配器工具甚至虚拟人声模拟，他们可以在没有传统训练的情况下，自由地创作音乐。技术的进步使音乐表达更具包容性，为新一代提供了前所未有的创作空间。

#### 专注与身体感的失衡

然而，技术的发展也带来了新的挑战。尤其是在疫情期间习惯了屏幕学习的一代学生，常常在音乐学习中忽略了身体的觉察与当下的专注。我曾指导一位高中声乐女生，在演唱过程中不断中断自我分析技巧，导致表达被打断，缺乏整体性与流动性。

#### 真实声音的独特力量

在此背景下，音乐教育展现出其不可替代的意义。特别是在现场、未经扩音的演出中（如歌剧、艺术歌曲、合唱作品或室内乐），人类的身体即是发声的乐器。声音由呼吸、空间与意图构建，并受到演出场地的声学环境和观众互动的影响而不断变化。

#### 生理共振的科学解释

这种过程不仅是声音传播，更是一种生理共鸣。生物磁学与神经心脏学研究表明：人体会发出电磁场。例如心电图（EKG）可检测心脏活动的电信号，这些信号在几米之外也可被感应（McCraty 等, 2009）。在现场演出中，表演者与观众之间会产生生理上的“同步”与“共振”效应（Chanda 与 Levitin, 2013）。

#### 技术与艺术的交汇

科技不是割裂人类经验的对立面，而是其延展。在我自身的音乐实践中，我也尝试将声音响应技术和动态视觉元素融入演出，使声响与数位技术之间形成新的和谐结构。

#### 教育的平衡使命

真正的教育目标，不应是划清界限，而是引导整合。让学生在科技赋能的同时，仍能通过音乐回归身体与呼吸的感知，这正是AI时代音乐教育的核心意义。



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## Resonance and Reality: Why Music Education Matters in the Age of AI

### Technology and Access

Today's teenagers are growing up in a world where music and technology are deeply intertwined. With beat-making apps, vocal simulators, and AI-generated orchestration tools, students can create music without formal training. These technologies have expanded access to artistic expression and empowered a new generation of creators to experiment freely.

### Presence and Embodiment

But as we embrace innovation, we must also consider embodiment. I've worked with students who are musically curious and technologically fluent, yet who struggle with sustained presence. One high school vocalist, shaped by remote learning during the pandemic, frequently interrupted her singing to analyze technique mid-phrase—so attuned to self-correction that the act of singing became fragmented.

### The Role of Unamplified Performance

This is where music education plays a vital role. In live, unamplified performance—such as opera, art song, choral or chamber music — the human body becomes the instrument. Sound is shaped by breath, space, and intention. It changes with the hall's acoustics, the performer's state, and the audience's presence.

### The Science of Resonance

We are not just making sound—we are generating resonance. Scientific studies in biomagnetism and neurocardiology show that our bodies emit electromagnetic fields. Tools like the electrocardiogram (EKG) measure heart-generated electrical signals that can be detected several feet from the body (McCraty et al., 2009). In performance, this shared field contributes to real-time physiological synchronization between performer and audience—what some researchers describe as entrainment or co-regulation (Chanda & Levitin, 2013).

### Integration, Not Opposition

Technology doesn't diminish this; it can enhance it. Increasingly, live performances incorporate responsive visuals and sound-reactive software—tools I've explored in my own work. When applied consciously, acoustic and digital elements together can deepen perception and enrich meaning.

### Final Thought

As educators, our responsibility is not to separate human from machine, but to teach integration. Music education, especially for today's generation, must help students stay rooted in their bodies, even as they engage with evolving tools. In this balance, they discover not only how to make music—but how to be fully present in the making.

## 音乐教育学术报告 Music Education Academic Report



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### AI音乐教育变革路径： 智能赋能下传统音乐文化与青少年多元培育探索

#### 摘要

在人工智能技术迅猛发展的大背景下，教育、医疗、艺术等多个领域均开启了跨界融合的进程。在音乐教育领域，AI技术不仅推动了教学模式的革新，也为传统音乐的创作与传承带来了新的可能。然而，传统音乐作为中华民族重要的文化要素，在当下青少年群体中正面临传播路径受限、传播渠道狭窄、学习模式单一以及文化认同感弱化等多重挑战。基于此，如何借助AI技术为传统音乐文化注入新的生命力，并通过教育赋能引领青少年的多元成长，已然成为当代教育与艺术领域亟待探讨和解决的重要议题。

本文聚焦两个核心问题：其一，AI技术如何参与并优化传统音乐的传承与教育？其二，AI音乐教育如何促进青少年的全面发展？此外，还将探讨人工智能音乐疗愈（Artificial Intelligence Music Therapy, AIMT）在文化教育与健康领域的潜能。研究旨在构建“技术—文化—教育”融合路径，为新时代背景下的音乐教育变革提供理论支持与实践方向。

关键词：人工智能 传统音乐教育 青少年成长 音乐疗愈 教育技术融合

#### 一、引言

在人工智能技术加速发展的背景下，教育、文化与科技的融合成为不可逆转的趋势，尤其在音乐教育领域，AI的引入正深刻改变着传统的教学模式与文化传播路径。近年来，已有学者从人工智能音乐生成、个性化教学平台与交互式学习系统等角度对AI音乐教育展开研究。音乐作为一种具有综合性的认知加工特点的艺术门类，对人类生活产生了极为重要的影响，主要表现在情绪调节、语言改善、沟通促进、运动改善和认知调节这五个方面

（Thomas, Anne & Volker, 2006）【2】，Aalbers等（2017）则验证了其心理健康的积极作用【3】。然而，关于AI如何有机嵌入传统音乐教育体系，促进青少年多维成长的综合性研究仍属空白。

为回应这一学术空缺，本文从“AI赋能传统音乐”、“AI促进青少年成长”与“AI音乐疗愈的文化融合”三方面系统探讨AI音乐教育的多维路径。研究旨在建构一套融合技术、文化与心理关怀的教育模型，以期在新时代背景下传统音乐的活化传承与青少年综合素养提升提供理论支持与实践借鉴。

#### 二、AI赋能传统音乐文化的三重路径：感知、交互与生成

AI赋能传统音乐文化，不应仅被视为传统乐器教学的“数字化辅助”，更是推动传统音乐实现“活态传承”的路径之一。具体来说，这种赋能体现在以下三个层面：

##### 一、感知层面：激活听觉记忆与文化体验

AI可通过语音识别、音色还原与演奏风格模拟等技术，实现传统音乐片段的采样、复现与风格迁移，重现具有代表性的民族音乐特征。例如，Fadr提供了先进的音频处理功能，包括多乐器分离、实时音乐分析等，帮助学生深入理解音乐作品的结构和元素。【4】学生可将古琴演奏风格在Fadr中进行音频处理，使其在平台中实现真实播放与个性化调节，提升青少年对“传统之声”的感知亲切度与文化记忆连接。

##### 二、交互层面：提供个性化与动态反馈的学习体验

AI教学平台常通过音高识别、节奏分析与自动伴奏技术，对学生演奏进行实时反馈。Roli Airwave是Roli公司推出的多功能设备，结合AI技术学生可借助Roli Airwave通过摄像头追踪手部动作，指导学生正确的指法和演奏技巧，提高自学效率【4】。这

种反馈不再依赖传统“师徒制”的面对面教学，使得学习更具开放性、针对性与延展性，促进学生传统音乐从“被动接收”走向“主动吸收”。

### 三、生成层面：重构传统音乐的创作与传播方式

AI的风格迁移、旋律生成与歌词编写功能，为传统音乐文化的再创造提供可能。人工智能虚拟艺术家（Artificial Intelligence Virtual Artist, AIVA）是专为作曲设计的AI工具，能够创作交响乐、电子乐等多种风格的音乐，帮助学生理解不同的作曲风格和技巧【4】。青少年可通过“AI+传统音乐”创作工具，尝试将戏曲与电子音乐结合、将民歌调式嵌入流行旋律，实现传统音乐的“当代表达”，使文化成为可体验、可演绎甚至可再生的内容，为传统音乐带来可延续的新路径。



AI赋能传统音乐文化，不仅重构了音乐教育的知识结构与教学流程，更打破了传统音乐“隔代失传”“难以入门”的传播困境，使传统音乐成为青少年触手可及、愿意探索、能够创造的文化内容。其教育意义也由此从“传授技艺”升华为“培养认同”，为传统音乐教育的复兴与时代对接提供了坚实基础。

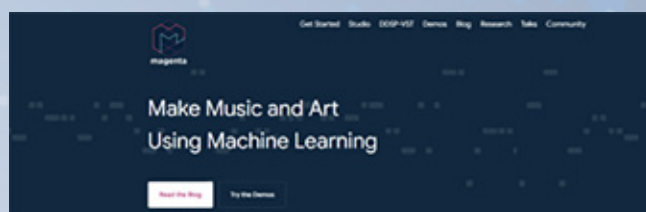
### 三、AI音乐教育对青少年多元发展的引领作用

相较于传统课堂教学，作为“数字原住民”的青少年更偏好互动性强、反馈即时、内容可视化的学习环境。人工智能音乐教育正是在这一趋势中应运而生，通过算法驱动、智能生成与个性化推荐，为青少年提供了契合时代特征的学习支持系统。

在传统教学中，学生常以“演奏者”身份被动参与，缺乏自主创作空间。而AI技术通过歌词生成、旋律构建、风格迁移等功能，使学生能在平台上快速完成音乐作品创作。例如，使用

Magenta（如图1）、音虫、MusicLM、Staccato等AI音乐创作平台，青少年可将传统调式与民族乐器音色融合于现代作品，实现从“使用者”到“创作者”的角色转变，有助于激发青少年的创造力与音乐表达能力。

图 1



AI平台可实现个性化学习路径与过程性反馈。借助学习者画像系统与数据分析功能，平台能动态识别学生能力与兴趣，推荐匹配曲目与资源。同时，系统会根据演奏数据生成报告与调整建议，帮助学生高效、自主地提升音乐技能。此外，AI技术还增强了青少年的审美理解与文化认知。传统音乐内容经过数字化处理后以可视化谱面、风格解构、文化对比等方式呈现，让学生在聆听中理解其背后的语境与美学。

由此可见，AI音乐教育不仅是一项技术应用，更是一种教育理念的创新与文化育人的实践。它打破时间与空间限制，融合音乐、技术与心理支持，为青少年提供开放、灵活、多维度的发展平台，未来将在促进综合素养与文化认同中发挥更大作用。

### 四、AI与音乐治疗的交汇：文化性与个体性的整合

随着心理健康干预模式的多元化发展，音乐治疗因其非侵入性、文化适配性和操作便捷性，在医疗与教育系统中展现出独特价值。人工智能技术的引入进一步推动音乐治疗向个性化、数据化、交互式方向演进。特别值得注意的是，当AI技术与中国传统音乐相结合时，不仅能够保持传统文化的特质，更能显著提升心理干预的精准性和有效性。以下通过临床医疗与高校教育两个典型案例，深入探讨AI赋能传统音乐在心理调节中的创新实践路径与显著成效。

## 案例一：中国传统音乐治疗在精神分裂症患者情绪调节中的临床研究【5】

由华中科技大学同济医学院附属精神卫生中心开展的研究，重点考察传统音乐治疗对精神分裂症患者改善认知功能及减轻阴性症状的疗效。研究团队选取了30例伴有显著阴性症状（SANS评分>60分）的患者作为研究对象。

在干预方案设计上，研究创新性地基于中医“五音-五脏-五志”理论框架，开发了靶向性音乐治疗方案：采用徵调式音乐（《百鸟朝凤》），其明亮热烈的特性对应“心-喜”的生理心理关联，通过提升心率变异性改善情绪低落状态。选用角调式乐曲（《姑苏行》），利用其舒缓悠扬的旋律特性，调节“肝-怒”的气机疏泄功能。组合宫调式（《春江花月夜》）与羽调式（《寒鸦戏水》）音乐，通过土水相生的五行关系，渐进式激活情感反应。

从研究结果看，慢性精神分裂症患者的认知功能得到了改善，其注意、记忆、理解能力得到提高。言语表达及情感交流能力增强，人际交往的被动性改善，且社交时的愉快体验增加。

## 案例二：AI交互式音乐疗愈平台在校园心理辅导中的创新应用

该项研究在上海中医药大学心理健康教育中心实施，针对大学生群体开发并应用“和小合”AI音乐疗愈平台。该平台深度融合传统音乐治疗理论与现代人工智能技术，构建数字化心理健康干预方案。

图 2



基于Deepseek大模型构建智能对话系统，集成语音情感识别算法和音乐生成引擎。建立包含200+首传统乐曲的数据库，按中医五音理论分类标注，如宫调式《春江花月夜》、角调式《姑苏行》等。并设置三大核心模块——智能情绪评估、个性化音乐推荐、线上团体疗愈课程。

结果显示，在使用平台的300名学生样本中，焦虑症状评分平均降低32.6%，抑郁症状改善率达41.2%。平台功能使用数据显示：日均主动求助交互量达85次，音乐疗愈课程完课率72.3%，夜间22-24点使用高峰占比38%。特别值得注意的是，87.5%的用户反馈“传统文化元素增强了疗愈体验的亲切感”。

本案例展示了传统文化与现代科技的创新融合，为高校心理健康教育提供了可推广的数字化解决方案，其可扩展性和文化适配性特征具有重要实践价值。

综上，两项研究分别验证了AI赋能传统音乐在专业治疗与校园教育中的实践成效。其共同特征体现为三方面：技术层面，AI实现情绪识别与音乐干预的精准联动；文化层面，传统音乐激活听觉记忆，强化民族认同；教育服务层面，平台介入增强了情绪支持的可达性与连续性。

## 五、结论与展望

随着人工智能技术的持续演进，音乐教育正逐步迈入一个融合智能化、交互性与文化深度的新阶段。本文以AI技术赋能传统音乐文化与青少年多元培育为主线，从三个维度展开探讨：其一，AI为传统音乐教育提供了数字化、智能化转型的可能，突破了传播与教学的瓶颈，实现了传统音乐的“活态化”传承；其二，AI音乐教育通过智能推荐、个性化学习与创作辅助等手段，有效促进了青少年在认知、审美、文化认同与创造力等多方面的成长；其三，AI音乐疗愈将音乐作为文化与情绪的中介，激活了民族音乐在心理调节与教育融合中的潜力，为教育提供了更具人文温度的支持路径。

总体来看，人工智能音乐教育不仅是技术层面的创新，更是教育理念、文化传承与学生发展方式的系统性变革。通过算法与情感的耦合、传统与未来的对话，AI音乐教育为传统音乐的当代表达与青少年的身心成长提供了桥梁，也为音乐教育领域的未来发展开辟了更加广阔的空间。然而，值得注意的是，AI音乐教育的进一步深化仍面临诸多挑战。例如，系统设计如何真正实现“以人为本”的教育逻辑？教师如何有效引导学生在技术平台之外保持人文思辨与审美判断？传统音乐内容如何在数字环境中既保持文化韵味，又增强交互性与亲和力？这些问题需要教育者、技术开发者与文化研究者共同参与、协同创新。

AI音乐教育的可持续发展应着重于以下三个方面：第一，平台建设方面应加强对传统音乐资源的系统化数字整理与文化语境建构；第二，课程体系设计应更加融合AI技术与民族艺术，以形成跨学科、跨媒介的教育结构；第三，师资队伍建设应注重“技术素养+文化意识”的双向提升，鼓励教师以科技为工具、以文化为核心、以学生为主体，推动真正意义上的音乐教育变革。

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# 音乐教育学术报告

## Music Education Academic Report



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## AI music education reform path: Exploration of traditional music culture and youth diversified cultivation under intelligent empowerment

Keywords: artificial intelligence, traditional music education, youth growth, music therapy, integration of educational technology

### 1. Introduction

Against the backdrop of the accelerated development of artificial intelligence technology, the integration of education, culture and technology has become an irreversible trend. Especially in the field of music education, the introduction of AI is profoundly changing the traditional teaching model and cultural communication path. In recent years, some scholars have conducted research on AI music education from the perspectives of AI music generation, personalized teaching platforms and interactive learning systems. As an art form with comprehensive cognitive processing characteristics, music has a very important impact on human life, mainly in the five aspects of emotion regulation, language improvement, communication promotion, motor improvement and cognitive regulation (Thomas, Anne & Volker, 2006) (2). Aalbers et al. (2017) verified its positive effect on mental health (3). However, there is still a lack of comprehensive research on how AI can be organically embedded in the traditional music education system to promote the multi-dimensional growth of adolescents.

In response to this academic gap, this paper systematically explores the multi-dimensional path of AI music education from three aspects: "AI empowers traditional music", "AI promotes adolescent growth" and "cultural integration of AI music therapy". The research aims to construct an educational model that integrates technology, culture and psychological care, in order to provide theoretical support and practical reference for

the revitalization and inheritance of traditional music and the improvement of the comprehensive quality of young people in the context of the new era.

### 2. AI empowers traditional music culture in three ways: perception, interaction and generation

AI empowers traditional music culture, which should not only be regarded as a "digital aid" for traditional instrument teaching, but also as one of the ways to promote the "living inheritance" of traditional music. Specifically, this empowerment is reflected in the following three aspects:

#### (1) Perceptual level: Activating auditory memory and cultural experience

AI can achieve the sampling, reproduction and style transfer of traditional music clips through technologies such as voice recognition, timbre restoration and performance style simulation, and reproduce representative national music characteristics. For example, Fadr provides advanced audio processing functions, including multi-instrument separation and real-time music analysis, to help students deeply understand the structure and elements of music works. Students can perform audio processing on the guqin performance style in Fadr, so that it can be played and adjusted in a personalized way on the platform, and enhance the perception of young people to the "traditional voice" and the connection with cultural memory.

#### (2) Interaction level: Providing personalized and dynamic feedback learning experience

AI teaching platforms often provide real-time feedback on students' performances through pitch recognition, rhythm analysis and automatic accompaniment technology. RoliAirwave is a multifunctional device

launched by Roli. Combined with AI technology, students can use Roli Airwave to track hand movements through the camera, guide students to correct fingering and playing techniques, and improve self-study efficiency (4). This kind of feedback no longer relies on traditional "apprenticeship" face-to-face teaching, making learning more open, targeted and extensible, and promoting students to move from "passive reception" to "active absorption" of traditional music.

### (3) Generation level: Reconstructing the creation and dissemination of traditional music

AI's style transfer, melody generation and lyrics writing functions provide possibilities for the re-creation of traditional music culture. Artificial Intelligence Virtual Artist (AIVA) is an AI tool designed specifically for composition. It can create music in various styles such as symphony and electronic music, helping students understand different composition styles and techniques (4). Young people can use the "AI + traditional music" creation tool to try to combine opera with electronic music and embed folk song modes into popular melodies to achieve the "contemporary expression" of traditional music, making culture something that can be experienced, performed and even reproduced, bringing a new path for the continuation of traditional music.



AI empowers traditional music culture, not only reconstructing the knowledge structure and teaching process of music education, but also breaking the dissemination dilemma of traditional music, which is "lost in the past generations" and "difficult to get started", making traditional music a cultural content that young people can reach, explore and create. Its educational significance has also been elevated from "teaching skills" to "cultivating identity", providing a solid foundation for the revival of traditional music education and its connection with the times.

### 3. The leading role of AI music education in the diversified development of young people

Compared with traditional classroom teaching, young people, as "digital natives", prefer a learning environment with strong interactivity, instant feedback, and visual content. Artificial intelligence music education came into being in this trend. Through algorithm-driven, intelligent

generation and personalized recommendation, it provides young people with a learning support system that fits the characteristics of the times.

In traditional teaching, students often participate passively as "performers" and lack space for independent creation. AI technology enables students to quickly create music works on the platform through functions such as lyrics generation, melody construction, and style transfer. For example, using AI music creation platforms such as Magenta (as shown in Figure 1), Yinchong, MusicLM, and Staccato, young people can integrate traditional modes and the timbre of national instruments into modern works, realizing the role transformation from "user" to "creator", which helps to stimulate young people's creativity and musical expression ability.

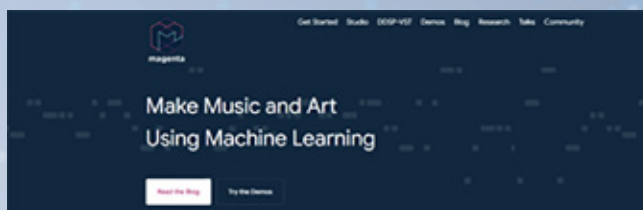


Figure 1

The AI platform can realize personalized learning paths and process feedback. With the help of the learner portrait system and data analysis functions, the platform can dynamically identify students' abilities and interests and recommend matching repertoires and resources. At the same time, the system will generate reports and adjustment suggestions based on performance data to help students improve their music skills efficiently and autonomously. In addition, AI technology has also enhanced young people's aesthetic understanding and cultural cognition. After digital processing, traditional music content is presented in the form of visual scores, style deconstruction, cultural comparison, etc., allowing students to understand the context and aesthetics behind it while listening.

It can be seen that AI music education is not only a technological application, but also an update of educational concepts and a practice of cultural education. It breaks the limitations of time and space, integrates music, technology and psychological support, and provides an open, flexible and multi-dimensional development platform for young people. In the future, it will play a greater role in promoting comprehensive literacy and cultural identity.

### 4. The intersection of AI and music therapy: the integration of culture and individuality

With the diversified development of mental health intervention models, music therapy has shown unique value in the medical and educational systems due to its non-

invasiveness, cultural adaptability and ease of operation. The introduction of artificial intelligence technology has further promoted the evolution of music therapy towards personalization, dataization and interactivity. It is particularly noteworthy that when AI technology is combined with traditional Chinese music, it can not only maintain the characteristics of traditional culture, but also significantly improve the accuracy and effectiveness of psychological intervention. The following uses two typical cases of clinical medicine and university education to explore in depth the innovative practice path and remarkable results of AI-enabled traditional music in psychological adjustment.

### Case 1: Clinical study on the effect of traditional Chinese music therapy on emotion regulation in schizophrenia patients (5)

The study conducted by the Mental Health Center affiliated to Tongji Medical College of Huazhong University of Science and Technology focused on the efficacy of traditional music therapy in improving cognitive function and alleviating negative symptoms in schizophrenia patients. The research team selected 30 patients with significant negative symptoms (SANS score > 60 points) as research subjects.

In terms of intervention program design, the study innovatively developed a targeted music therapy program based on the theoretical framework of "Five Sounds-Five Organs-Five Emotions" in traditional Chinese medicine: using music in the Zhi mode ("Hundred Birds Paying Homage to the Phoenix"), whose bright and warm characteristics correspond to the physiological and psychological relationship of "heart-joy", to improve the state of depression by improving heart rate variability. Selecting music in the Jiao mode ("A Journey to Suzhou"), using its soothing and melodious melody characteristics, to regulate the qi-discharging function of "liver-anger". Combining music in the Gong mode ("A Moonlit Night on the Spring River") and the Yu mode ("Crows Playing in the Water"), gradually activates emotional responses through the five-element relationship of earth and water.

According to the research results, the cognitive function of chronic schizophrenia patients has been improved, their attention, memory, and comprehension abilities have been improved, their verbal expression and emotional communication abilities have been enhanced, their passivity in interpersonal communication has been improved, and their pleasant experience in socializing has increased.

### Case 2: Innovative application of AI interactive music therapy platform in campus psychological counseling

This study was implemented at the Mental Health

Education Center of Shanghai University of Traditional Chinese Medicine, and the "He Xiaohu" AI music therapy platform was developed and applied for college students. The platform deeply integrates traditional music therapy theory with modern artificial intelligence technology to build a digital mental health intervention program.



An intelligent dialogue system was built based on the Deepseek big model, integrating speech emotion recognition algorithm and music generation engine. A database of more than 200 traditional music pieces was established, which were classified and annotated according to the five-tone theory of traditional Chinese medicine, such as the Gong mode "Spring River Moonlight Night" and the Jiao mode "Gusu Xing". Three core modules were set up: intelligent emotion assessment, personalized music recommendation, and online group healing courses.

The results showed that among the 300 student samples using the platform, the anxiety symptom scores decreased by an average of 32.6%, and the depression symptom improvement rate reached 41.2%. The platform function usage data showed that the average daily active help-seeking interaction reached 85 times, the completion rate of music therapy courses was 72.3%, and the peak usage between 22:00 and 24:00 at night accounted for 38%. It is particularly noteworthy that 87.5% of users reported that "traditional cultural elements enhanced the intimacy of the healing experience."

This case demonstrates the innovative integration of traditional culture and modern technology, and provides a scalable digital solution for mental health education in colleges and universities. Its scalability and cultural adaptability characteristics have important practical value.

In summary, the two studies have verified the practical effectiveness of AI-enabled traditional music in professional treatment and campus education. Their

common characteristics are reflected in three aspects: at the technical level, AI realizes the precise linkage between emotion recognition and music intervention; at the cultural level, traditional music activates auditory memory and strengthens national identity; at the educational service level, platform-based intervention enhances the accessibility and continuity of emotional support.

## 5. Conclusion and Outlook

With the continuous evolution of artificial intelligence technology, music education is gradually entering a new stage that integrates intelligence, interactivity and cultural depth. This paper takes AI technology to empower traditional music culture and the diversified cultivation of young people as the main line, and discusses it from three dimensions: First, AI provides the possibility of digital and intelligent transformation for traditional music education, breaks through the bottleneck of communication and teaching, and realizes the "living" inheritance of traditional music; second, AI music education effectively promotes the growth of young people in cognition, aesthetics, cultural identity and creativity through intelligent recommendation, personalized learning and creative assistance; third, AI music therapy uses music as a medium between culture and emotion, activates the potential of national music in the integration of psychological adjustment and education, and provides a more humanistic support path for education.

Overall, AI music education is not only an innovation at the technical level, but also a systematic change in educational concepts, cultural heritage, and student development methods. Through the coupling of algorithms and emotions, and the dialogue between tradition and the future, AI music education provides a bridge between the contemporary expression of traditional music and the physical and mental growth of young people, and also opens up a broader space for the future development of the field of music education. However, it is worth noting that the further deepening of AI music education still faces many challenges. For example, how can system design truly realize the "people-oriented" educational logic? How can teachers effectively guide students to maintain humanistic thinking and aesthetic judgment outside of the technology platform? How can traditional music content maintain cultural charm in a digital environment while enhancing interactivity and affinity? These issues require the joint participation and collaborative innovation of educators, technology developers, and cultural researchers.

The sustainable development of AI music education should focus on the following three aspects: First, platform construction should strengthen the systematic digital organization of traditional music resources and the

construction of cultural context; second, the curriculum system design should better integrate AI technology and national art to form an interdisciplinary and cross-media education structure; third, the construction of the teaching staff should focus on the two-way improvement of "technical literacy + cultural awareness", encourage teachers to use technology as a tool, culture as the core, and students as the main body to promote real music education reform.

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## 音乐教育学术报告 Music Education Academic Report



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## 人工智能与传统音乐：保护文化遗产，塑造未来

### 引言

在机器智能飞速发展的时代，音乐家、教育工作者和文化传承者都面临着一个紧迫的问题：人工智能能否在不侵蚀其所表达的身份认同的情况下，守护世界传统音乐文化？要回答这个问题，我们需要权衡人工智能作为无与伦比的存档、分析和教学工具的潜力，以及它抹平细微差别或强化主流声音的可能性。接下来的讨论将探讨这种矛盾，并探讨我们如何利用人工智能来服务——而非吞噬——全球音乐遗产鲜活的多样性。

### 人工智能与传统音乐

关于人工智能在音乐文化中的角色的争论，主要围绕其保存和转化的双重能力展开。一方面，人工智能拥有守护传统音乐遗产的潜力，有助于其代代传承。然而，它也存在风险，可能会改变这些传统，挑战其真实性和文化认同。这种保存与转化之间的张力，凸显了人工智能与文化音乐认同演变之间的复杂关系。

### 真实性与学习者关系

人工智能音乐教育的一个关键问题是，它如何改变学生与其文化音乐遗产的关系。当机器参与艺术创作时，围绕真实性和创造力的伦理问题便随之而来，这促使我们思考：与以人为本的教学方法相比，主要通过人工智能学习的学生是否会与自身传统建立根本不同的联系。这挑战了关于文化认同、代际传承以及真实地参与音乐的意义传统观念。

### 训练数据偏见的危害

评估人工智能在传统音乐教育中的作用的另一个关键维度在于训练数据的选择。任何人工智能系统最终都会受到其所接触材料的塑造——这些材料的选择往往基于对“传统”或“正宗”音乐构成未经检验的假设。这些选择很少是中立的；它们反映了普遍存在的文化偏见、历史误解和商业优先考虑。传统音乐的实践者和学者敏锐地意识到，所谓的“代表性”往往带有扭曲的成分：混合形式、商品化的模仿，或为迎合特定受众而定制的美化版本。

这一困境与贝拉·巴托克 (Béla Bartók) 在 20 世纪初努力发掘匈牙利真正的民间音乐的经历如出一辙——随着他所谓的“民间艺术音乐”或“通俗艺术歌曲”的兴起，这一任务变得愈发紧迫。“民间艺术音乐”与“农民民间音乐”截然不同。巴托克和他的朋友——著名作曲家兼语言学家佐尔坦·柯达伊 (Zoltán Kodály) 在乡村寻找并录制了这些音乐。巴托克观察到，许多被接受为国家民间传说的音乐，实际

上只是城市咖啡馆音乐、吉普赛娱乐，或李斯特和勃拉姆斯等作曲家的程序化改编。尽管他们的初衷是好的，但却受到有限接触和文化过滤的影响。

同样，除非仔细关注数据的来源和文化背景，否则人工智能系统也有可能延续和放大这种扭曲。因此，问题不仅在于人工智能如何教学，还在于它教什么以及它体现了谁的传统版本。

## 同质化与跨文化交流

人工智能接触全球音乐数据集呈现出一把双刃剑：它既有可能丰富跨文化音乐融合，拓展多元传统的接触，也引发了人们对同质化问题的担忧。一个反复出现的担忧是，如果不加以精心引导，人工智能可能会将不同的传统融合成一种全球通用的音乐，从而“扁平化”音乐的多样性，从而侵蚀地方认同。文化交流与文化稀释之间的这种紧张关系，反映了人们对技术全球化对音乐独特性保护影响的普遍担忧。

与此同时，重要的是要避免陷入某种纯粹主义——这种弊端常常威胁着那些致力于追寻任何文化现象根源的人，无论是社会、语言还是音乐。虽然保护传统原始本质的想法看似高尚，但历史表明，没有任何相关的音乐流派能够完全孤立地发展。融合、异花授粉和外部影响一直是创新和活力的重要驱动力。

结合我自身的文化和职业经历，我想到阿斯托尔·皮亚佐拉。他先是证明了自己是传统探戈大师，后来试图将其与源自斯特拉文斯基和拉威尔作品的新古典主义作曲元素以及爵士和声融合。为此，他受到了严厉的批评，在某些圈子里甚至遭到排斥。然而，如今，他的《新探戈》已成为当代探戈作曲家创作的基石。

然而，这种必要的开放态度并不能消除不加批判或带有偏见的全球人工智能训练所带来的真正危险。风险在于用算法驱动的标准化取代有机的文化交流——这种标准化可能更多地反映的是市场趋势或策展盲点，而非实际的社群价值观。因此，至关重要的是，人工智能与传统音乐的互动不应受便利性或规模化逻辑的引导，而应基于对其试图代表的文化生态系统的深刻理解。

## 文化守护与人为因素

人工智能在音乐教育中的作用与更广泛的文化保护、身份认同以及技术创造者的伦理责任等问题密不可分。随着人工智能越来越多地介入塑造音乐的教学、表演和理解方式，培养对文化多样性的高度敏感性至关重要——尤其是长期被主流文化和经济力量所掩盖的少数族裔文化和语言。如果没有经过深思熟虑且知情的干预，人工智能可能会加剧现有的不平衡，因为它会优先考虑全球主流曲目，同时边缘化那些鲜为人知的、丰富而脆弱的音乐传统。

为了应对这种情况，我们必须明确呼吁人工智能系统能够识别、尊重和传达文化背景——不仅仅是将声音作为抽象数据来处理，而是将音乐作为人性化、鲜活的社群表达来参与其中。这需要从根本上优先考虑文化包容性和公平性的伦理框架：基于多样化且具有文化代表性的数据集训练模型；在内容的设计和策划中融入民族音乐学家、传统传承者和社群的声音；并嵌入人为监督机制以保障真实性并防止扭曲。

1977年，旅行者1号和2号航天器将旅行者金唱片发射到深空，深刻地提醒了这种文化管理的重要性。这些12英寸镀金唱片被设计成一种时间胶囊——将人类的音乐信息装在瓶子里抛入深空的海洋。这个精心收集的全球音乐瑰宝不仅包括巴赫和莫扎特的经典作品，还包括保加利亚、塞内加尔、日本的传统歌曲、贝宁鼓乐、印度古典声乐、三角洲布鲁斯和摇滚乐。它不仅通过地球的主要声音，而且通过

其完整的复音，向宇宙描绘了一幅地球的肖像。这个全球合唱团中的每一个声音——无论是来自沙漠游牧民、乡村仪式还是城市布鲁斯歌手——都被选为我们物种的“名片”。它提醒我们，文化多样性的守护不仅仅是一种审美关怀，更是文明的责任。当我们训练机器协助音乐传播时，我们必须牢记：我们不仅仅是在策划播放列表——我们正在塑造子孙后代，甚至可能是遥远的智慧生命，所理解的人类音乐。

随着人工智能工具不断发展，它们越来越多地介入我们所听到、所教授和所记住的内容，我们肩负着确保任何声音都不会被抹去、任何语调都不会被压抑、任何文化都不会被遗忘的全部责任。至关重要的是，这一过程绝不能忽视人类教师不可替代的作用。任何机器，无论多么先进，都无法复制文化传承者或深谙传统的教育者所带来的具体知识、口头传承和个人权威。人类教师不仅仅是技术的传播者；他们是记忆、细微差别和生活文化体验的守护者。

任何关于人工智能在传统音乐教育中地位的设想都必须将其置于中心位置——不是作为进步的障碍，而是作为确保进步有意义的重要合作者。

## 前进之路：利用人工智能赋能文化活力

尽管前文强调了算法偏见和文化同质化的危害，但挑战并非在于人工智能本身，而在于我们人类对人工智能的管理。如果我们以批判性洞察力、道德决心以及与传统传承者的真诚合作来对待这些技术，人工智能就能成为传统音乐新黄金时代的催化剂——在这个时代，边缘曲目将获得前所未有的关注，代际传承将得到加强而非削弱。

因此，下一节将从诊断转向处方，概述精心设计的人工智能系统如何推进传统音乐的保护、教学和文化活力的具体途径。

## 人工智能如何助力传统音乐的保护和传播

人工智能在保护和传播传统音乐形式及文化遗产方面可以发挥重要作用，尤其是在拥有深厚音乐根基的国家。以下五个领域阐述了人工智能如何以具体的、文化相关的方式支持（而非取代）传统音乐的保护、教学和复兴，尤其是在设计时充分考虑年轻学习者和社区传承的需求：

### 文献记录与归档：

人工智能可以助力分析、分类和数字化海量传统音乐。例如，贝拉·巴托克的大量田野录音——布达佩斯音乐学院收藏了约1万首民间旋律——其中许多尚未完全转录。人工智能工具可以自动化转录过程，为子孙后代保存这些宝贵的录音和历史乐谱。这创建了全面、易于访问的档案，为研究、表演和保存工作提供了基础资源。图像重建：

人工智能可以利用古代文明（例如古埃及或欧洲中世纪）音乐家的图像表征。通过分析图像描绘，人工智能算法可以帮助重建这些文化的音乐实践和演奏技巧。这种创新方法补充了传统的历史和考古方法，为古代社会的音乐遗产提供了新的见解。

### 学习和分析工具：

人工智能工具可以通过对音乐结构、节奏、旋律、装饰音和调音系统进行详细且通常实时的分析，极大地促进传统音乐的学习和传承。许多音乐特征难以用传统的西方理论框架来记录或解码。人工智能可以分解口头传统、即兴演奏元素和特定文化表演实践的细微差别，并通过直观的工具将其呈现。尤其对于年龄较小的学习者，人工智能可以提供适合其年龄的可视化效果——例如颜色编码

的节奏循环或交互式装饰音图——使抽象或复杂的音乐特征更加直观和引人入胜。这在印度古典音乐等传统音乐中尤为重要，因为其中复杂的节奏循环（例如塔拉（tala）和孔纳科尔（konnakol））和微音旋律装饰（gamakas）对传统的教学方法构成了挑战。同样，在阿拉伯音乐中，人工智能可以帮助识别和教授木卡姆调式体系的精妙之处——这通常难以通过西方记谱法进行严格的分类或复制。人工智能的模式识别能力还可以进行跨表演的比较研究，帮助研究人员和学生识别传统音乐中的变奏、地域风格和不断发展的诠释。

## 跨文化交流（谨慎）：

虽然人工智能为跨越文化界限的受众接触传统音乐提供了前所未有的机会，但这一过程必须精心设计并保持文化敏感性。同质化的风险与生俱来——不同的音乐身份会因不加区分的算法融合而变得模糊或淡化。为了避免这种情况，人工智能系统必须接受特定文化音乐语法、美学和表演实践的训练，并致力于保留每种传统的完整性和独特性。

这种交流的一个重要维度在于语言。在中国和印度这样的多语言国家，以及边缘化或濒危语言的地区——例如拉丁美洲的原住民语言或希腊马其顿方言或阿罗马尼亚语等欧洲少数民族语言——人工智能可以成为强大的盟友。通过识别、处理和呈现传统音乐的原始语言语境，包括发音、重音和诗歌形式的细微差别，人工智能确保音乐传播忠实于其文化根源。这些语言上的微妙之处并非偶然——它们具有重要的音乐意义，通常与节奏、乐句和声调变化息息相关。

此外，人工智能可以帮助开发或恢复少数民族语言中缺乏规范的音乐概念的本土术语。这包括识别“调式”、“韵律”或“装饰音”等术语的本土对应词，从而使社区能够用自己的文化和语言来描述和教授音乐。

传统上，这种跨学科工作——融合语言学、音乐学、人类学和教育学——需要专家团队数十年的协调努力。人工智能可以显著加速这一进程，并通过直观的多语言平台将其成果提供给教育工作者和学生。

如此一来，人工智能不仅成为保存和传承的工具，更成为文化复兴的积极参与者。然而，当儿童和年轻学习者使用此类平台时，让父母、长辈和社区成员参与进来就变得至关重要——确保文化材料以适当的背景和尊重的态度呈现，并且学习者明白他们接触的是活生生的传统，而不是可互换的数字内容。

## 复兴努力：

人工智能通过协助重建残缺的乐曲、演奏实践，甚至整个音乐体系，在复兴濒危或部分失传的音乐传统方面发挥重要的作用。凭借复杂的模式识别——人工智能的核心优势之一——这些技术可以分析现存的音乐片段、记谱法体系和背景历史数据，从而提出对传统作品进行合理的重建方案。这对于因殖民化、现代化或政治动荡而遭受破坏、边缘化或彻底消亡的音乐文化尤为重要。

除此之外，人工智能还有潜力进行更具雄心的重建——例如重建失传已久的古代音乐文化，例如古埃及、苏美尔或古典希腊的音乐文化。正如人工智能曾被用于重建严重受损的古代文献（例如来自库姆兰的死海古卷）一样，它也可以接受训练，解读早期的音乐符号，例如希腊的纽姆音符或巴比伦的楔形文字音阶。通过分析重复出现的结构、比较语言学线索和影像学证据，人工智能可以帮助复兴沉寂了数千年的音乐曲目。

这样的重建不仅仅是历史珍品——它们可以成为现代国家强有力的文化复兴工具，帮助它们追溯其古老文明的传承。在此背景下，人工智能不仅仅是一种技术工具，更是一种恢复失落声音、将当代人与其深厚的文化历史重新联系起来的手段，为迄今为止仅存在于沉寂中的音乐注入活力。

# 音乐教育学术报告

## Music Education Academic Report



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## AI and Traditional Music: Preserving Heritage, Shaping Future Generations

### Introduction

In the age of rapidly evolving machine intelligence, a pressing question confronts musicians, educators, and culture bearers alike: Can artificial intelligence safeguard the world's traditional music cultures without eroding the very identities they express? Answering this requires us to weigh AI's promise as an unparalleled archiving, analytic, and teaching tool against its potential to flatten nuance or privilege dominant voices. The discussion that follows probes this tension and asks how we might harness AI to serve—not subsume—the living diversity of global musical heritage.

### AI and Traditional Music

The debate over AI's role in music cultures revolves around its dual capacity to preserve and transform. On one hand, AI offers potential as a guardian of traditional musical heritage, facilitating its transmission across generations. However, it also poses risks, potentially altering these traditions in ways that challenge their authenticity and cultural identity. This tension between preservation and transformation underscores the complex relationship between AI and the evolution of cultural musical identities.

### Authenticity and the Learner's Relationship

A key concern in AI-mediated music education is how it might alter students' relationships with their cultural musical heritage. Ethical questions surrounding authenticity and creativity arise when machines participate in artistic output, prompting reflection on whether students learning primarily through AI will form fundamentally different connections to their traditions compared to those taught through human-centered methods. This challenges conventional notions of cultural identity, intergenerational transmission, and what it means to engage authentically with music.

### The Peril of Biased Training Data

Another critical dimension in evaluating AI's role in traditional music education lies in the selection of training data. Any AI system is ultimately shaped by the material it is exposed to—material chosen based on often unexamined assumptions about what constitutes “traditional” or “authentic” music. These choices are rarely neutral; they reflect prevailing cultural biases, historical misconceptions, and commercial priorities. Practitioners and scholars of traditional music are acutely aware that what passes as “representative” is frequently layered with distortions: hybrid forms, commodified imitations, or sanitized versions tailored to appeal to specific audiences.

This predicament echoes Béla Bartók's early 20th-century struggle to uncover the genuine folk music of Hungary—a task made urgent by the proliferation of what he called *népies műzene* (“folksy art music” or “popular art song”), in contrast to *paraszti népzene* (“peasant folk music”), the material he and his friend—renowned composer and linguist Zoltán Kodály—sought and recorded in rural villages. Bartók observed that much of what had been accepted as national folklore was, in fact, urban café music, gypsy entertainment, or stylized adaptations by composers like Liszt and Brahms, whose efforts, though well-intentioned, were shaped by limited exposure and cultural filters.

In the same way, AI systems risk perpetuating and amplifying such distortions unless careful attention is paid to the provenance and cultural context of the data. Thus, the question is not only how AI teaches, but also what it teaches—and whose version of tradition it enshrines.

## Homogenization vs. Cross-Cultural Exchange

AI's exposure to global musical datasets presents a double-edged dynamic: while it offers the potential for enriching cross-cultural musical fusion and expanding exposure to diverse traditions, it also raises significant concerns about homogenization. A recurring worry is that AI, if not carefully guided, could "flatten" musical diversity by blending distinct traditions into a generic global sound, thereby eroding local identities. This tension between cultural exchange and cultural dilution reflects broader anxieties about the impact of technological globalism on the preservation of musical distinctiveness.

At the same time, it is important to avoid falling into a kind of purism—an affliction that often threatens those engaged in recovering the roots of any cultural phenomenon, whether social, linguistic, or musical. While the idea of preserving the pristine essence of a tradition may seem noble, history shows that no relevant musical genre has ever developed in complete isolation. Intermingling, cross-pollination, and external influence have been essential drivers of innovation and vitality.

Drawing from my own cultural and professional experience, I think of Astor Piazzolla, who, having first proved himself a master of traditional tango, sought to fuse it with neoclassical compositional elements drawn from the works of Stravinsky and Ravel, as well as jazz harmonies. For this, he was harshly criticized and, in some circles, ostracized. Yet today, his Nuevo Tango has become the foundation upon which contemporary tango composers build.

Still, this necessary openness to influence does not negate the real danger posed by uncritical or biased global AI training. The risk lies in replacing organic cultural exchange with algorithmically driven standardization—one that may reflect market trends or curatorial blind spots more than actual community values. It is therefore essential that AI's engagement with traditional music be guided not by the logic of convenience or scale, but by a deep understanding of the cultural ecosystems it seeks to represent.

## Cultural Stewardship and the Human Element

The role of AI in music education cannot be separated from broader questions of cultural preservation, identity, and the ethical responsibilities of technology creators. As AI becomes more involved in shaping how music is taught, performed, and understood, it is vital to cultivate a heightened sensitivity to cultural diversity—especially regarding minority cultures and languages that have long been overshadowed by dominant cultural and economic

forces. Without deliberate and informed intervention, AI risks reinforcing existing imbalances by privileging globally dominant repertoires while marginalizing the vast, fragile richness of lesser-known traditions.

To counter this, we must explicitly call for AI systems that are capable of recognizing, respecting, and conveying cultural context—not merely processing sound as abstract data, but engaging with music as a human, living expression of community. This requires ethical frameworks that prioritize cultural inclusion and equity from the ground up: training models on diverse and culturally representative datasets; involving ethnomusicologists, tradition bearers, and community voices in the design and curation of content; and embedding mechanisms of human oversight to safeguard authenticity and prevent distortion.

A poignant reminder of the importance of this cultural stewardship can be found in the Voyager Golden Records, launched into deep space in 1977 aboard the Voyager 1 and 2 spacecraft. These 12-inch gold-plated disks were created as a kind of time capsule—humanity's musical message in a bottle cast into the ocean of deep space. That carefully assembled collection of global musical treasures included not only canonical works by Bach and Mozart, but also traditional songs from Bulgaria, Senegal, Japan, Benin drumming, Indian classical vocals, Delta blues, and rock and roll. It offered the universe a portrait of Earth not through its dominant voices alone, but through its full polyphony. Every voice in that worldwide choir—whether from a desert nomad, a village ritual, or an urban bluesman—was chosen as part of the "calling card" of our species. It stands as a reminder that the stewardship of cultural diversity is not just an aesthetic concern, but a civilizational responsibility. As we train machines to assist in musical transmission, we must remember: we are not merely curating playlists—we are shaping what future generations, and perhaps distant intelligences, will understand as the music of humanity.

And as we move forward with AI-driven tools that increasingly mediate what is heard, taught, and remembered, we bear the full responsibility of ensuring that no voice is erased, no tone flattened, no culture left behind. Crucially, this process must not overlook the irreplaceable role of the human teacher. No machine, however advanced, can replicate the embodied knowledge, oral transmission, and personal authority that a culture-bearer or tradition-informed educator brings. Human teachers are not simply transmitters of technique; they are custodians of memory, nuance, and lived cultural experience.

Any vision for AI's place in traditional music education must place them at the center—not as obstacles to progress, but as vital collaborators in ensuring that progress is meaningful.

### **The Path Forward: Leveraging AI for Cultural Vitality**

Although the preceding paragraphs emphasize the hazards of algorithmic bias and cultural homogenization, the challenge is not AI itself but our human stewardship of it. If we approach these technologies with critical insight, ethical resolve, and genuine collaboration with tradition bearers, AI can become a catalyst for a new golden age of traditional music—one in which marginalized repertoires gain unprecedented visibility and intergenerational transmission is strengthened rather than weakened.

The next section therefore shifts from diagnosis to prescription, outlining concrete avenues through which thoughtfully designed AI systems can advance preservation, pedagogy, and cultural vitality.

### **Ways in which AI can contribute to Preserving and Disseminating Traditional Music**

AI can play a significant role in preserving and disseminating traditional music forms and cultural heritage, especially in countries with deep musical roots. The following five areas illustrate concrete, culturally informed ways AI can support—not supplant—the preservation, teaching, and regeneration of traditional music, especially when designed with the needs of younger learners and community transmission in mind:

#### **Documentation and Archiving:**

AI can be instrumental in analyzing, categorizing, and digitizing vast amounts of traditional music. For instance, consider Béla Bartók's extensive field recordings—an archive of some 10,000 folk melodies housed at the Budapest Institute of Musicology—many of which have yet to be fully transcribed. AI tools can automate transcription processes, preserving these invaluable recordings and historical scores for future generations. This creates comprehensive, accessible archives that serve as foundational resources for study, performance, and preservation efforts.

#### **Iconographic Reconstruction:**

AI can leverage iconographic representations of musicians from ancient civilizations, such as those from Ancient Egypt or the European Middle Ages. By analyzing pictorial depictions, AI algorithms can help reconstruct the musical practices and performance techniques of these cultures. This innovative approach supplements traditional historical and archaeological methods, providing new insights into the musical heritage of ancient societies.

#### **Learning and Analysis Tools:**

AI-powered tools can greatly enhance the learning and transmission of traditional music by offering detailed, often real-time analysis of musical structure, rhythm, melody, ornamentation, and tuning systems. Many of these musical features are difficult to notate or decode using conventional Western theoretical frameworks. AI can break down the nuances of oral traditions, improvisational elements, and culturally specific performance practices, and present them through intuitive tools. For younger learners in particular, AI can offer age-appropriate visualizations—such as color-coded rhythmic cycles or interactive ornament maps—that make abstract or complex musical features more intuitive and engaging. This becomes especially valuable in traditions such as Indian classical music, where intricate rhythmic cycles (such as tala and konnakol) and microtonal melodic ornamentations (gamakas) pose challenges for conventional pedagogical methods. Similarly, in Arabic music, AI can help identify and teach the subtleties of the maqam modal system—something that often defies rigid classification or replication through Western notation. AI's pattern recognition capacities also enable comparative studies across performances, helping researchers and students identify variations, regional styles, and evolving interpretations within a tradition.

#### **Interactive Learning Platforms:**

Building on the analytical capacities above, AI-driven learning platforms can go a step further by actively engaging users in the learning process. These systems can provide personalized instruction, adaptive feedback, and even real-time accompaniment—crucial in cultures where call-and-response or ensemble dynamics are central to musical learning. Such platforms can structure exercises around complex, culturally unique rhythmic and modal patterns, allowing students to interact with music that was previously difficult to access or replicate accurately. For example, a student learning the nuances of konnakol or maqam can receive instant feedback not just on rhythmic accuracy, but also on articulation, pitch inflection, or ornamentation.

To motivate children and young learners, these platforms can incorporate gamified modules—such as earnable badges for accurate microtonal intonation, or mastering a traditional phrase within its cultural context—encouraging engagement without trivializing the tradition.

Moreover, these platforms can help overcome the limitations of Western tuning systems and synthesizers, which—despite having developed certain models capable of performing Middle Eastern music with some degree of accuracy, such as the Korg Pa4X Oriental—still often fail to reproduce the pitch bends and microtonal

intervals essential to instruments like the guzheng, or sarangi. By using AI to model these pitch systems and inflections authentically, traditional music can be brought to life—not merely preserved in archives, but made experientially available through dynamic, culturally sensitive pedagogical tools.

In this way, interactive AI platforms serve as both educational environments and living extensions of the archival mission—bridging the gap between preservation and active cultural transmission.

### **Cross-Cultural Exchange (with caution):**

While AI offers unprecedented opportunities for exposing audiences to traditional music across cultural boundaries, this process must be approached with careful design and cultural sensitivity. There is an inherent risk of homogenization—where distinct musical identities are blurred or diluted through indiscriminate algorithmic blending. To avoid this, AI systems must be trained on culturally specific musical grammars, aesthetics, and performance practices, and designed to preserve the integrity and individuality of each tradition.

A vital dimension of this exchange lies in language. In multilingual countries such as China and India, and across regions with marginalized or endangered languages—like the aboriginal languages of Latin America or minority European tongues such as the Greek Macedonian dialect or Aromanian—AI can serve as a powerful ally. By recognizing, processing, and presenting traditional music within its original linguistic context, including the nuances of pronunciation, accent, and poetic form, AI ensures that musical transmission remains faithful to its cultural roots. These linguistic subtleties are not incidental—they are musically significant, often tied to rhythm, phrasing, and vocal inflection.

Moreover, AI can help develop or recover autochthonous terminologies for musical concepts that lack codification in minority languages. This includes identifying indigenous equivalents for terms like “mode,” “meter,” or “ornamentation,” and thereby empowering communities to describe and teach their music on their own cultural and linguistic terms.

Traditionally, this type of interdisciplinary work—combining linguistics, musicology, anthropology, and education—would take decades of coordinated effort by expert teams. AI can dramatically accelerate this process and make its outcomes accessible to educators and students via intuitive, multilingual platforms.

In doing so, AI becomes not just a tool for preservation and transmission, but an active participant in cultural revitalization. When such platforms are used by children and young learners, however, it becomes essential to involve parents, elders, and community members in the process—

ensuring that cultural material is presented with proper context and reverence, and that learners understand they are engaging with living traditions, not interchangeable digital content.

### **Revitalization Efforts:**

AI can play a vital role in the revitalization of endangered or partially lost musical traditions by assisting in the reconstruction of incomplete compositions, performance practices, and even entire musical systems. Through sophisticated pattern recognition—one of AI’s core strengths—these technologies can analyze surviving musical fragments, notational systems, and contextual historical data to propose informed reconstructions of traditional pieces. This is particularly significant for musical cultures that have suffered disruption, marginalization, or outright erasure due to colonization, modernization, or political upheaval.

Beyond this, AI holds the potential to engage in even more ambitious reconstructions—those of long-lost ancient musical cultures such as those of Ancient Egypt, Sumer, or classical Greece. In much the same way that AI has been employed to help reconstruct heavily damaged ancient texts—such as the Dead Sea Scrolls from Qumran—it can be trained to decipher early musical notations such as Greek neumes or the Babylonian cuneiform scales. By analyzing recurring structures, comparative linguistic clues, and iconographic evidence, AI can help revive musical repertoires that have lain dormant for millennia.

Such reconstructions are more than historical curiosities—they can serve as powerful tools of cultural reclamation for modern nations that trace their heritage to these ancient civilizations. In this context, AI becomes not merely a technological tool, but a means of restoring lost voices and reconnecting present generations with their deep cultural pasts, breathing life into music that, until now, existed only in silence.

### **Conclusion**

Ultimately, AI will reshape traditional music only to the extent that we allow it. By coupling technological innovation with rigorous cultural oversight, we can ensure that every community’s sonic inheritance remains vibrant, distinctive, and accessible—especially to the children and young people who will carry these traditions forward.

The stakes are high, but so is the reward: a world in which the full polyphony of human musical expression not only survives the digital era, but flourishes because of it.

A. D.  
Grand Forks, ND  
July 5, 2025

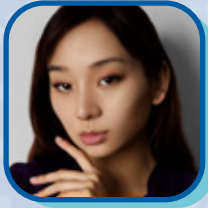
## 音乐教育学术报告 Music Education Academic Report



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## 谱写明日：人工智能世界中的音乐、 青年和未来的学习

### 引言：机器时代的音乐

人工智能在教育领域的快速发展引发了关于哪些学科至关重要、哪些学科可能会逐渐式微的新争论。音乐，通常被贴上「非必要」的标签，在追求自动化和效率的浪潮中，面临被边缘化的风险。然而，随着演算法的激增，像音乐这样以人为本、富有创造力的学科正变得越来越紧迫。音乐的参与能够培养自动化无法培养的特质：同理心、文化流畅性、情感深度和即兴思维。音乐教育非但没有被淘汰，反而正在成为未来领导者的重要基础。

在勋菲尔德国际音乐协会 (SIMS)，过去十年来接受指导的早期高中生榜样激发了人们对青少年教育的全新关注。这些学生并没有为了 STEM 而放弃艺术，而是将这两个领域融合在一起。他们将音乐与对科学、技术和设计的兴趣相结合的能力，反映了更广泛的跨学科学习趋势。这种融合不仅是个人选择，更是对未来教育的隐喻：艺术、创新和人类发展必须携手并进。

SIMS 的理念：音乐作为认同、身心健康及公共利益

SIMS 秉持着古典音乐是个人成长和社会连结的催化剂的信念，透过全球表演、指导和研究来推动音乐教育。我们的计划根植于这样的信念：音乐能够滋养心智和精神，尤其对于那些经常被忽视自身潜力的年轻人而言。

除了公共计划之外，SIMS 的管理人员在过去十年里还透过一对一辅导的方式，为学生提供初中和高中阶段的辅导、大学申请指导以及为青年领袖进入职场做好准备。这些密切而长期的合

作关系揭示了一个引人注目的趋势：如今的年轻人不再在艺术和技术之间做出选择，而是将两者融合在一起。学生以音乐训练为基础，探索神经科学、电脑科学、数位媒体和人工智慧等领域。音乐不再是一门独立的学科，而成为了一个跨学科的平台。

这些经验启发了即将推出的SIMS计划“X计划”，旨在推广基层导师制的经验。X计划将在北美推出，作为一项新一代项目，旨在将古典音乐教育重新构想为促进青少年发展、心理健康和领导力的工具。透过将文化响应式教学法与神经认知研究相结合，X计划提供了一个可复制的模式，以促进疗愈、归属感和未来准备。

### 跨文化与认知影响：为何选择古典音乐？

古典音乐常被贬低为精英主义或过时之物，但它对认知和情感的益处却是深远且有据可查的。研究表明，古典音乐训练可以增强记忆力、提高执行能力、培养自律性，并有助于情绪调节。这些影响在青少年时期尤其显著，因为青少年时期大脑发育迅速，心理健康的弱点也开始显现。

对于来自边缘家庭的年轻人来说，他们中的许多人缺乏稳定的学术或情感支持，古典音乐为他们提供了结构、表达和自我认同感。它需要持续的专注和耐心。它教导他们合作、关注细节和延迟满足。这些不仅是音乐技能，更是生活技能。

SIMS 视古典音乐为一种传承，而非遗物，是严谨、富有表

现力且蕴含丰富智慧的个人发展平台。在文化回应与包容的环境中，古典音乐的变革性影响显而易见。学生不只是成为音乐家，他们更将成为自信、善于反思、拥有领导韧性的思考者。

此外，古典音乐的普世性使其能够超越语言和地理的限制，促进跨文化理解。在这个充满焦虑、分心和孤独的数位时代，古典音乐沉浸式的模拟特性赋予了它一种罕见的特质：临场感。它帮助年轻人放慢脚步，专注于内心，并与自己和他人建立联系。

## 展望未来：以音乐引领青年

SIMS 的学员向我们展现，音乐教育并非通往音乐学院的狭窄通道，而是培养 21 世纪领导力的广阔基石。我们越来越常看到学生运用自身音乐特质，将所学应用于研究实验室、科技新创公司、医疗保健计划和社群媒体平台等各种领域，进行跨学科创新。我们与学术人才机构 Walnut St. 合作，甄选出数名在跨领域领域取得成功的学生。

一位学生受到古典音乐训练的启发，开始研究音乐疗法对神经系统疾病的认知影响。他们在退休中心表演，并创作教育内容，以提高人们对音乐治愈潜力的认识。

另一名学生则利用音乐来支持他的科学项目，举办表演，为灾难准备和复原工作筹集资金，透过创造性的同理心加深社区参与。

第三位学员探索了音乐的数位前沿：使用 Max MSP 和 Ableton Live 作曲，研究人工智能作曲的伦理问题，并开发辅助技术，让听障人士更容易接触音乐。

这些学生并非个案。他们体现了日益壮大的青年群体，他们将古典音乐视为一种创造性的出口和社交工具。这些学生展现了他们确实能够调整自己的技能、工具和才能，以应对快速变化的世界的需求和挑战。

## 在数位时代扩展类比艺术形式

这些学生告诉我们，古典音乐教育如果以动态而非教条的方式构建，其所能释放的远不止于卓越的演奏。它能够培养系统思考者，培养情绪智商、文化敏捷性和应对模糊性的创造性纪律；这些特质在科技饱和的未来日益重要。

SIMS 正在将这些见解融入 Project X 的设计中。该计划将把以导师指导为指导的策略扩展为一个更广泛、更具包容性的模式，将音乐、健康和跨学科探索交织在一起。Project X 不会取代音乐的模拟核心，而是会将其融入学校、社区和年轻人已经生活和学习的数位平台，从而扩大其影响力。

尽管人工智能正在重塑我们的教学方式和价值观，SIMS 坚信古典音乐仍然是挖掘人类潜能最有力的工具之一。透过 X 项目，我们的目标不仅是培养更多音乐家，更要培养更具韧性、求知欲强、善于沟通的领导者。

## 结论：音乐教育是一项人性技术

人工智能或许可以加速学习，但它无法取代意义和人类的同理心。演算法可以教导音阶、生成和声，甚至模仿情感，但它们无法複製人类透过音乐创造、连结和疗癒的体验。古典音乐所提供的：纪律、同理心、文化流畅性和想像力，正是未来世界所需要的。

接受过 SIMS 指导的学生体现了这个真理。他们表明，音乐不再只是一种艺术追求；它是创新、韧性和公共福祉的基础。在准备启动 X 计划之际，我们重申我们的信念：音乐教育并非与人工智能对立，而是重要的平衡。它以人性、社区和目标为中心。

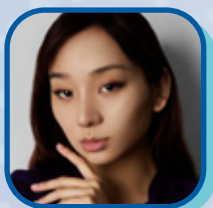
在新的篇章中，SIMS 不仅仅是在传承一种艺术形式。我们正在建构一个未来，让音乐成为子孙后代力量、认同和可能性的来源。

## 音乐教育学术报告 Music Education Academic Report



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## Composing Tomorrow: Music, Youth, and the Future of Learning in an AI World

### Introduction: Music in an Age of Machines

The meteoric rise of artificial intelligence in education has sparked new debates about which disciplines are essential, and which might fade. Music, often labeled “non-essential,” risks being sidelined in the rush toward automation and efficiency. Yet as algorithms proliferate, human-centered and creative disciplines like music gain new urgency. Music engagement cultivates what automations cannot: empathy, cultural fluency, emotional depth, and improvisational thinking. Rather than becoming obsolete, music education is emerging as a critical foundation for the leaders of tomorrow.

At the Schoenfeld International Music Society (SIMS), early examples of high school students mentored over the past decade have inspired a renewed commitment to youth education. These students aren’t abandoning the arts for STEM. Instead, they’re fusing the two fields. Their ability to integrate music with interests in science, technology, and design reflects a broader shift toward interdisciplinary learning. This fusion is more than a personal choice; it’s a metaphor for the future of education, where art, innovation, and human development must work together.

### The SIMS Approach: Music as Identity, Wellness, and Public Good

Founded on the belief that classical music is a catalyst for both personal growth and societal connection, SIMS promotes music education through global performance, mentorship, and research. Our programs are rooted in the conviction

that music nurtures both mind and spirit, particularly for youth navigating systems that often overlook their potential.

In addition to public programming, SIMS executives have spent the past decade mentoring students one-on-one by coaching them through middle and high school, guiding students through college applications, and preparing youth leaders to enter the workforce. These close, longitudinal relationships have revealed a compelling trend: today’s youth are not choosing between the arts and technology; they are blending them. Students are using musical training as a foundation to explore fields like neuroscience, computer science, digital media, and AI. Music is no longer a separate track. Rather, it has become an interdisciplinary launchpad.

These experiences have inspired Project X, a forthcoming SIMS initiative designed to scale the lessons of grassroots mentorship. Project X will launch in North America as a next-generation program that reimagines classical music education as a tool for youth development, mental health, and leadership. By integrating culturally responsive pedagogy with neurocognitive research, Project X offers a replicable model that promotes healing, belonging, and future-readiness.

### Cross-Cultural and Cognitive Impact: Why Classical Music?

Classical music is often dismissed as elitist or outdated, but its cognitive and emotional benefits are profound and well-documented. Studies show that classical training

enhances memory, sharpens executive function, builds discipline, and supports emotional regulation. These effects are especially impactful during adolescence, when brain development is rapid and mental health vulnerabilities begin to surface.

For youth from marginalized backgrounds, many of whom lack stable access to academic or emotional support, classical music provides structure, expression, and a sense of identity. It demands sustained focus and patience. It teaches collaboration, attention to detail, and delayed gratification. These are life skills, not just musical ones.

SIMS views classical music not as a relic, but as a rigorous, expressive, and intellectually rich platform for personal development. In culturally responsive and inclusive settings, its transformative impact is clear. Students don't just become musicians. They become confident, reflective thinkers with the resilience to lead.

Moreover, classical music's universality allows it to transcend language and geography, fostering cross-cultural understanding. In a digital age marked by anxiety, distraction, and isolation, classical music's immersive, analog nature offers something rare: presence. It helps young people slow down, focus inward, and connect outward with themselves, and with others.

## Looking Ahead: Youth Who Lead with Music

SIMS mentees show us that music education is not a narrow pipeline to conservatories, but a broad foundation for 21st-century leadership. Increasingly, we see students leverage their musical identities to innovate across disciplines by applying their training in settings as diverse as research labs, tech startups, healthcare initiatives, and social media platforms. In partnership with Walnut St., an academic talent agency, we have identified several students that have reached success in their interdisciplinary fields.

One student, inspired by classical training, began researching the cognitive effects of music therapy on neurological disorders. They led performances at retirement centers and created educational content to raise awareness about music's healing potential.

Another student used music to support his science projects, staging performances that doubled as fundraisers for disaster preparedness and recovery efforts, deepening community engagement through creative empathy.

A third mentee explored the digital frontier of music: composing with Max MSP and Ableton Live, researching the ethics of AI-generated composition, and developing

assistive technology to make music more accessible to the hearing-impaired.

These students are not exceptions. They reflect a growing movement of youth who see classical music as both a creative outlet and a social tool. These students serve as examples that they can indeed adapt their skill sets, tools, and talents to address the needs and challenges of a rapidly changing world.

## Scaling an Analog Artform in a Digital Age

What these students teach us is that classical music education, when framed as dynamic rather than dogmatic, unlocks far more than performance excellence. It builds systems thinkers. It cultivates emotional intelligence, cultural agility, and the creative discipline to navigate ambiguity; traits increasingly essential in a tech-saturated future.

SIMS is taking these insights into the design of Project X. The initiative will scale mentorship-informed strategies into a broader, inclusive model that weaves together music, wellness, and interdisciplinary exploration. Project X won't replace the analog heart of music. Rather, it will amplify its reach by embedding it in schools, communities, and digital platforms where young people already live and learn.

As AI reshapes how we teach and what we value, SIMS believes classical music remains one of the most powerful tools to cultivate human potential. Through Project X, we aim not just to create more musicians, but more resilient, curious, and connected leaders.

### Conclusion: Music Education Is a Human Technology

AI may accelerate learning, but it cannot replace meaning and human empathy. Algorithms can teach scales, generate harmonies, even mimic emotion, but they cannot replicate the human experience of creating, connecting, and healing through music. What classical music offers: discipline, empathy, cultural fluency, and imagination, is precisely what tomorrow's world needs.

The students that have experienced SIMS mentorship embody this truth. They show that music is no longer just an artistic pursuit; it is a foundation for innovation, resilience, and public good. As we prepare to launch Project X, we are reaffirming our belief that music education is not in opposition to AI, but a vital counterbalance. One that centers humanity, community, and purpose.

In this next chapter, SIMS is not just preserving an artform. We're building a future where music remains a source of strength, identity, and possibility for generations to come.

## 音乐教育学术报告 Music Education Academic Report



高栋阁  
Gao Dongge  
国家一级小号演奏员

### 融合与创新 期待与展望

在全球新技术飞速发展的大环境下，科学技术人工智能正在以前所未有的速度改变着我们的生活。人工智能时代的到来，为音乐生产注入了新的模式和新的生态，一些新兴技术对音乐的影响是巨大的，甚至是颠覆性的。音乐与人工智能的深度融合也是必然。“人工智能生成内容”（Artificial Intelligence Generated Content,简称AIGC）是指通过训练人工智能模型以生成（模拟）与原始训练数据相似的内容，将其成果运用在日常生活之中。如当下日益更新的音乐生成模型、手机语音转文本、语音克隆等，都是AIGC在音乐和现实生活中的实际应用。

#### 一、突破传统模式，构建“新文科”、“新艺科”融合理念

音乐求美，科技求新。面对新媒体时代的大环境，2019年教育部提出了“新文科”理念，意在突破传统文科、理科相对封闭的教学模式，打破文理科之间的学科壁垒，实现文理交融。在此背景下，艺术学界也积极响应，借鉴“新文科”的文理融合思想，提出了“新艺科”的设想。

长期以来，艺术学科以其各专业特点与众不同而独树一帜，各学科之间界限分明且相对封闭。“新艺科”是在新文科语境下的艺术学学科建设构想，它既要具备文理的交融性，又要顾及艺术学各学科的独特性，欲改变现状必须有新的突破点，使人工智能与音乐艺术相融合，运用现代科学技术为艺术教育数字化提供有力支撑，探索打造具有智性化的“新艺科”音乐课程。

#### 二、探索音乐与人工智能共生发展的新路径

近年来，全国高校正面临教育改革的新浪潮，培养复合型AI人才已经成为各类高校培养方案的标配，据全国高校人工智能与大数据创新联盟不完全统计，2025年全国已有621所高校开设了人工智能本科专业，覆盖双一流至“双非”、

专科类地方院校。构建智慧音乐教育体系，运用AIGC是音乐学研究及音乐教学正在面临着新定位、新挑战和新机遇。

音乐学习蕴含着丰富的学习价值和实践意义，发挥着启迪智慧、拓展视野，增强能力的关键作用。人类探索未知领域的脚步从未停歇。音乐始终与社会同步保持与时俱进的发展态势，AIGC为包括音乐在内的艺术创作与研究提供了全新的环境的空间，

2024年在北京举办了第11届全国声音与音乐技术会议，与会专家分别来自人工智能、计算机科学、电子工程、数学以及音乐学等领域，学者们积极响应教育部大力发展“新文科”的要求，拓展音乐教育理念、教学模式和教学手段，针对音乐学+计算机、民族乐器+计算机、声学+计算机等14个专题进行了交流与研讨。如“全天候”教学模式，运用视觉传达为学生提供便捷、高效的学习途径，同时也引发了更多关于教师创新的思维迭代。授课方式和教学内容是课堂教学的核心要素，二者不仅是确保教学质量和教学效果的关键因素，更是培养学生知识能力和综合素质的基石。

在新媒体时代人工智能+教育的全面布局中，创新和突破始终是焦点和难点。缺师资、缺经费、缺资源是当前高校在人工智能融合教育中普遍存在的问题。运用AIGC改变音乐教学模式和更新音乐教学内容，还需要从社会价值、学科价值、实践价值等维度进行深入探讨，未来可期，任重道远。

喜闻香港国际音乐节2026年即将举办第一届AIGC文化数字内容创作大赛，让我们张开双臂，插上AIGC翅膀，谱写出更加华美的乐章。



高栋阁  
Gao Dongge

National First-Class Trumpet Player

## Integration and Innovation Expectations and Prospects

In the context of the rapid development of new technologies around the world, science, technology and artificial intelligence are changing our lives at an unprecedented speed. The advent of the era of artificial intelligence has injected new models and new ecosystems into music production. The impact of some emerging technologies on music is huge, even subversive. The deep integration of music and artificial intelligence is also inevitable. "Artificial Intelligence Generated Content" (AIGC) refers to the use of AI models to train (simulate) content similar to the original training data and apply its results in daily life. For example, the increasingly updated music generation models, mobile phone voice-to-text, voice cloning, etc. are all practical applications of AIGC in music and real life.

### 1. Break through the traditional model and build the integration concept of "new liberal arts" and "new art"

Music seeks beauty, and technology seeks innovation. Facing the general environment of the new media era, the Ministry of Education proposed the concept of "new liberal arts" in 2019, aiming to break through the relatively closed teaching model of traditional liberal arts and science, break the disciplinary barriers between liberal arts and science, and achieve the integration of liberal arts and science. Against this background, the art community also responded positively, drawing on the idea of integrating liberal arts and science in the "new liberal arts", and proposed the idea of "new art".

For a long time, the art discipline has been unique for its distinctive professional characteristics, and the boundaries between disciplines are clear and relatively closed. "New art" is the concept of art discipline construction in the context of the new liberal arts. It must have the integration of liberal arts and science, and take into account the uniqueness of various disciplines in art. To change the status quo, there must be new breakthroughs, so that artificial intelligence and music art can be integrated, and modern science and technology can be used to provide strong support for the digitalization of art education, and explore and create an intelligent "new art" music course.

### 2. Explore new paths for the symbiotic development of music and artificial intelligence

In recent years, colleges and universities across the country are facing a new wave of education reform. Cultivating compound AI talents has become a standard feature of the training programs of various colleges and universities. According to incomplete statistics

from the National College Artificial Intelligence and Big Data Innovation Alliance, by 2025, 621 colleges and universities across the country will have opened undergraduate majors in artificial intelligence, covering double first-class to "double non-" and junior college local colleges. Building a smart music education system and using AIGC in musicology research and music teaching are facing new positioning, new challenges and new opportunities.

Music learning contains rich learning value and practical significance, and plays a key role in enlightening wisdom, broadening horizons and enhancing capabilities. Human exploration of unknown areas has never stopped. Music has always kept pace with the society and kept pace with the times. AIGC provides a new environment for artistic creation and research, including music.

The 11th National Sound and Music Technology Conference was held in Beijing in 2024. Experts from the fields of artificial intelligence, computer science, electronic engineering, mathematics and musicology attended the conference. Scholars actively responded to the requirements of the Ministry of Education to vigorously develop the "new liberal arts", expand the concept of music education, teaching mode and teaching methods, and exchange and discuss 14 topics such as musicology + computer, national musical instruments + computer, acoustics + computer, etc. For example, the "all-weather" teaching mode uses visual communication to provide students with a convenient and efficient learning path, and also triggers more thinking iterations about teacher innovation. Teaching methods and teaching content are the core elements of classroom teaching. The two are not only the key factors to ensure the quality and effectiveness of teaching, but also the cornerstone of cultivating students' knowledge, ability and comprehensive quality.

In the comprehensive layout of artificial intelligence + education in the new media era, innovation and breakthroughs have always been the focus and difficulty. Lack of teachers, funds and resources are common problems in the current artificial intelligence integrated education in colleges and universities. Using AIGC to change the music teaching model and update the music teaching content, it is also necessary to conduct in-depth discussions from the dimensions of social value, subject value and practical value. The future is promising and there is a long way to go.

I am delighted to hear that the Hong Kong International Music Festival will hold the first AIGC Cultural Digital Content Creation Competition in 2026. Let us open our arms, put on the wings of AIGC, and compose a more magnificent piece of music.

## 音乐教育学术报告 Music Education Academic Report



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### 乐以载道，智启未来

在这个人工智能飞速发展的时代，音乐的形式正在发生巨大变化。传统音乐承载了千年的文化与情感，具有深厚底蕴，而AI音乐则带来了前所未有的创新和便利。

音乐与教育，不仅是文化的本体，更是文化传承的桥梁与纽带。大量研究与实践表明，传统音乐学习在青少年音乐教育体系中必不可少。传统音乐的学习需要持久的练习和记忆，尤其对于器乐演奏，学生需要进行成百上千次的练习，才能达到较为完美的效果，并且一些程度较深的曲子长达七到八分钟，学生的体力、耐心和记忆力都将得到极大的锻炼。传统音乐作品不仅仅是音符的组合，更是一个个带有温度的故事，承载了丰富的文化内涵和民族精神，并通过不同风格的节奏旋律传递出浓烈的情感。如中国古琴音乐中“清微淡远”哲学展现了中国古人内敛沉稳的品格，而西方古典音乐中，贝多芬的作品展现出不屈服于命运的抗争精神。青少年学习传统音乐可以了解不同民族的文化，拓宽知识面，增强文化自信。在聆听传统音乐时，青少年不仅仅是在感受音符，更是在体会他人的悲欢离合，从而培养更加深厚的同理心，强化情绪管理能力。

近年来，AI技术的快速发展使AI音乐市场规模逐渐扩大，AI音乐的跨界融合特性拓展了创作可能。如有音乐爱好者与专业人士合作进行了大胆尝试，将歌剧《弄臣》中部分咏叹调与电子音乐融合改编，拉近了大众与美声的距离，赢得了广泛好评。通过AI，青少年可以轻松尝试将电子音乐与传统音乐相结合，或借助AI创作出带有个人特色的音乐，提高了音乐创作的效率，也提高了青少年的创新能力，拓宽音乐视野和思维空间。同时，AI技术为青少年学习音乐提供了平台和资源，智能化教学系统打破了时空限制，音乐在线学习平台为音乐教学提供便利。编曲软件中提供大量乐器采样，为青少年学习和创新提供资源。网络世界给青少年提供了交流平台，让他们与志同道合的学习者交流心得。

但需要注意的是，科技是帮助我们提高效率的工具，而并非代替我们思考的大脑，作品的质量如何最终取决于使用工具的人，只依靠算法生成的音乐终究是缺乏灵魂的。对于心智尚不成熟的青少年来说，过度依赖AI可能导致内心浮躁，只停留在表层，丧失了对音乐的深入理解和思考。因此，如何在音乐教育中合理运用AI，如何在传统音乐与AI音乐之中找到平衡，这仍然需要我们去探索。

随着新时代我国素质教育的深入推进与全面发展教育理念的贯彻落实，音乐教育作为美育核心载体和素质教育的关键环节，在促进青少年健康成长过程中发挥着不可替代的独特作用。《礼

记·乐记》有云：“乐者，德之华也”，这一流传千年的教育智慧深刻揭示了音乐艺术与道德培养的内在联系。作为最具感染力的听觉艺术形式，音乐通过声音直接作用于人的情感中枢，引发人们心灵深处的共鸣。优秀音乐作品所蕴含的真善美价值取向，通过持续的音乐审美体验，能够在潜移默化中完成对青少年价值观的塑造与升华。这种教化过程呈现三个显著特征：一、具有渐进性，如古典音乐严谨的结构美感需要反复聆听才能充分领悟，并且随着个人成长经历增加，在不同年龄段会对音乐有不同的感悟；二、具有渗透性，民族音乐中的文化基因会不自觉地融入听者的精神世界，增强文化认同感；三、具有持久性，童年时期接触的音乐记忆往往影响终身。通过音乐教育，青少年的品德将在潜移默化中得到提升。

音乐是艺术，而艺术定有观众，音乐作为人类情感表达的艺术形式，其本质具有鲜明的社会属性。任何音乐实践——无论是个人演出还是集体演出——都必然发生在特定的社会文化环境之中。音乐演出为青少年提供了渐进式的自信培养路径。当学习者从琴房练习走向舞台表演时，需要完成从技术掌握到艺术表达的关键跨越。对技术的逐渐掌控、主动地向观众传达情绪、从观众处接收到的情绪反馈都能使青少年更加自信。在社交能力发展方面，音乐活动给青少年提供了成长空间。合奏、合唱等集体音乐形式要求参与者展现交流能力：这种能力不仅限于语言交流，演奏者需要通过眼神、呼吸等微小的信号实现默契配合；还要在团队中学会合作，面临不同的想法，学会解决冲突，提高协调与合作的能力。

音乐学习还能够提高青少年的自主学习能力。在学习作品时，学习者会根据自己的能力来对作品进行拆解，将宏大目标拆解成易执行、高效率的小目标，且音乐练习的时长安排通常较为模块化，学习者对自己的时间安排能力也强于同龄人。将这些能力迁移到文化课等其他方面的学习中，学习音乐的青少年将展现出较同龄人更强的自主性。

综上所述，青少年可通过学习音乐提升自信、品德、社交能力以及自主学习能力。在人工智能与传统音乐交融的新时代，音乐教育正站在传承与创新的交汇点。传统音乐深厚的文化底蕴与AI技术的前沿创新并非对立，我们需要坚守传统音乐中的人文精神与审美内核，通过经典作品的研习培养青少年的文化认同与品德修养，也要善用AI技术拓展音乐教育的广度和深度，激发创新思维与实践能力。教育者需要把握技术应用的“度”，使AI成为拓展艺术可能性的工具而非替代艺术本质的桎梏，让青少年既获得传统文化的滋养，又掌握面向未来的创新能力，最终实现“以美育人、以文化人”的教育目标。

# 音乐教育学术报告

## Music Education Academic Report



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南京师范大学音乐学院  
Nanjing Normal University School of Music

## Music carries the truth, wisdom opens the future

In this era of rapid development of artificial intelligence, the form of music is undergoing tremendous changes. Traditional music carries thousands of years of culture and emotions, and has a profound foundation, while AI music brings unprecedented innovation and convenience.

Music and education are not only the body of culture, but also the bridge and bond of cultural inheritance. A large number of studies and practices have shown that traditional music learning is indispensable in the youth music education system. The study of traditional music requires persistent practice and memory, especially for instrumental performance. Students need to practice hundreds or thousands of times to achieve a relatively perfect effect, and some deeper songs are as long as seven to eight minutes. Students' physical strength, patience and memory will be greatly exercised. Traditional music works are not just a combination of notes, but also a story with warmth, carrying rich cultural connotations and national spirit, and conveying strong emotions through rhythms and melodies of different styles. For example, the philosophy of "clear and distant" in Chinese guqin music shows the introverted and calm character of ancient Chinese people, while Beethoven's works in Western classical music show the spirit of resistance to fate. Young people can learn about the culture of different ethnic groups, broaden their knowledge and enhance their cultural confidence by learning traditional music. When listening to traditional music, young people are not only feeling the notes, but also experiencing the joys and sorrows of others, thereby cultivating deeper empathy and strengthening their emotional management ability.

The rapid development of AI technology in recent years has gradually expanded the scale of the AI music market. The cross-border integration characteristics of AI music have expanded the possibility of creation. For example, music lovers have cooperated with professionals to make bold attempts to integrate some arias in the opera "Rigoletto" with electronic music, which has narrowed the distance between the public and the beautiful voice and won wide acclaim. Through AI, young people can easily try to combine electronic music with traditional music, or use AI to create music with personal characteristics, which improves the efficiency of music creation, improves the innovation ability of young people, and broadens their musical vision and thinking space. At the same time, AI technology provides a platform and resources for young people to learn music, the intelligent teaching system breaks the limitations of time and space, and the music online learning platform provides convenience for music teaching. The arrangement software provides a large number of instrument samples to provide resources for young people to learn and innovate. The online world provides a communication platform for young people to exchange experiences with like-minded learners.

However, it should be noted that technology is a tool to help us improve efficiency, not a brain that replaces our thinking. The quality of the work ultimately depends on the person who uses the tool. Music generated only by algorithms is ultimately soulless. For young people whose minds are not yet mature, over-reliance on AI may lead to inner impetuosity, staying only on the surface, and losing the in-depth understanding and thinking of music.

Therefore, how to reasonably use AI in music education and how to find a balance between traditional music and AI music still need us to explore.

With the in-depth promotion of quality education in my country in the new era and the implementation of the concept of all-round development education, music education, as the core carrier of aesthetic education and the key link of quality education, plays an irreplaceable and unique role in promoting the healthy growth of young people. "The Book of Rites The Book of Music" says: "Music is the flower of virtue." This educational wisdom that has been passed down for thousands of years deeply reveals the inherent connection between music art and moral cultivation. As the most infectious auditory art form, music directly acts on people's emotional center through sound, triggering resonance in people's hearts. The value orientation of truth, goodness and beauty contained in excellent music works can subtly shape and sublimate the values of young people through continuous music aesthetic experience. This education process presents three significant characteristics: First, it is gradual, such as the rigorous structural beauty of classical music needs to be listened to repeatedly to fully understand, and as personal growth experience increases, people will have different perceptions of music at different ages; second, it is permeable, and the cultural genes in folk music will unconsciously integrate into the spiritual world of the listener, enhancing cultural identity; third, it is persistent, and the music memory in childhood often affects life. Through music education, the morality of young people will be improved subtly.

Music is art, and art must have an audience. As an art form of human emotional expression, music has distinct social attributes in its essence. Any music practice - whether it is a personal performance or a collective performance - must take place in a specific social and cultural environment. Music performances provide young people with a gradual path to cultivate confidence. When learners move from piano room practice to stage performance, they need to complete the key leap from technical mastery to artistic expression. Gradually mastering technology, actively conveying emotions to the audience, and receiving emotional feedback from the audience can make teenagers more confident. In

terms of social skills development, music activities provide teenagers with room for growth. Collective music forms such as ensembles and choruses require participants to demonstrate communication skills: this ability is not limited to language communication. Performers need to achieve tacit cooperation through small signals such as eye contact and breathing; they must also learn to cooperate in the team, face different ideas, learn to resolve conflicts, and improve negotiation skills.

Music learning can also improve teenagers' autonomous learning ability. When learning a work, learners will disassemble the work according to their own abilities, breaking down the grand goals into small goals that are easy to implement and efficient, and the duration of music practice is usually more modular, and learners are better at arranging their own time than their peers. By transferring these abilities to other aspects of learning such as cultural courses, teenagers who learn music will show greater autonomy than their peers.

In summary, teenagers can improve their self-confidence, morality, social skills and autonomous learning ability through learning music. In the new era of the integration of artificial intelligence and traditional music, music education is standing at the intersection of inheritance and innovation. The profound cultural heritage of traditional music is not in conflict with the cutting-edge innovation of AI technology. We need to adhere to the humanistic spirit and aesthetic core of traditional music, and cultivate the cultural identity and moral cultivation of young people through the study of classic works; we should also make good use of AI technology to expand the breadth and depth of music education and stimulate innovative thinking and practical ability. Educators need to grasp the "degree" of technology application, so that AI can become a tool to expand artistic possibilities rather than a shackle that replaces the essence of art, so that young people can not only be nourished by traditional culture, but also master the innovation ability for the future, and finally achieve the educational goal of "educating people with beauty and culture".

Author: Chen Jie, Professor of the School of Music, Nanjing Normal University, and Director of the Vocal Music Department

## 音乐教育学术报告 Music Education Academic Report



何兰卿  
He Lan Qing

国家一级演奏员  
上海音乐学院外聘大提琴教授

### AIGC赋能教育变革与创新

尊敬的各位专家、各界同仁：

大家好！今天我非常荣幸代表浙江赛区，围绕“人工智能音乐教育对人类未来的影响”这一主题，与大家分享AIGC赋能教育在首届香港文化数字创作大赛中的基层实践。

我们通过赛事带动教学革新，以AI技术为桥梁，将课堂变成创意孵化器，让学生在“人机协同”的创作中生成音乐、点燃想象、塑造核心素养。这不仅是一次比赛，更是一次面向未来教育的探索试验。接下来，我将从三个维度展开：时代意义、浙江经验、以及未来远景。

一、人工智能音乐教育的时代价值与未来趋势

#### 1. 激发创造力：重塑学习范式

AI正在推动教育从“知识传递”向“灵感激发”跃迁。在浙江赛区，我们调研发现：92%的中小学生在在使用AI创作音乐、美术作品后，对原本被动接受的课程产生浓厚兴趣。这印证了联合国教科文组织提出的AI教育“黄金三角”：工具普及（Tool）、思维培养（Mindset）、伦理建设（Ethics）三者缺一不可。

#### 2. 打破资源壁垒：破解教育公平难题

AI音乐创作工具有效降低了教育资源获取门槛。例如，在杭州绿城学校，外来务工子女通过AI虚拟画廊和音乐创作平台DALL-E 3、AIVA等，不仅实现了艺术表达，还荣获省级大奖——这正是AIGC赋能的“资源平权效应”：

- 学生无需昂贵器材即可生成交响乐
- 乡村与城市学校间的艺术教育成本差异减少80%
- 特殊儿童通过语音输入或脑波控制完成创作，与健全学生在同一舞台展示成果

浙江赛区设立“助困直通车”，特别支持困难群体入围香港赛，真正让人工智能成为教育公平的“加速器”。

#### 3. 锚定未来核心能力：培养人机协同创造力

麦肯锡报告指出：到2030年，全球将新增1.5亿数字创意岗位。我们的使命不只是教会学生使用AI，更是引导他们理解创作背后的协同逻辑。例如，“第九行星交响曲”项目中，六年级学生使用Orb Composer与脑波合成器即兴编曲，从“贝多芬再世”中体验创造力的边界与融合。

## 二、浙江赛区创新路径：从实践到标准

我们依托杭州绿城育华亲亲学校等基地，形成“赛事 + 课堂 + 节庆”三位一体模式，开辟一条具有中国特色、基层可复制的AI音乐教育路径。

亮点1：课程化推进——打造“AI创作能力图谱”

- 分层设计任务，从旋律生成到即兴创作
- 将AI音乐作品纳入期末成绩评价，衡量人机分工
- 建立技术与创意双维度学习路径，推动音乐教学结构性转型

亮点2：沉浸式场景——元宇宙实验教学空间

国际文化节设置三大区域：人类创作区、AI协作区、融合实验区。包含：

- AIVA生成文化风格交响
- 手势控制修改画风
- 脑波驱动情绪旋律交互
- 超现实画作+旋律娃娃机体验等

累计单日体验人次破千，家长参与率同比提升45%，形成“教育+社会参与”的新格局。

亮点3：赛事生态闭环——构建人才成长通道

通过“三级火箭”机制：

1. 校内选拔（海选）→
2. 优选生成NFT数字藏品，入驻“浙里成长档案”→
3. 特殊学生绿色通道直达香港赛——实现“每个孩子都能站上舞台”的教育愿景。

## 三、未来蓝海与发展预期

1. 建设“教育公平新基建”。

让每所学校都能接入AI创作平台，艺术学习不再受制于设备和场地。

2. 打造“个性化学习引擎”。

将脑波、手势等交互技术引入课堂，开创“交互式创作课程”

3. 推动“产教融合新生态”。

与多家音乐科技公司（如杭州强脑科技）合作，共同打造创意孵化器与实践基地。

## 四、大赛愿景：让AI照亮每一个不可能的灵魂

我们期望未来在浙江建立：

- 长三角AIGC教育联盟：2026年前实现三省一市课程资源共享

- AI创作能力护照：创意+技术双认证，链接政府与科创企业

- 教育公益新标准：聚焦助困助贫助特校，推动教育公平化普及当孩子们用AI谱写本民族的音乐，当听障学生用脑波生成交响乐，我们看到的不是“技术的冰冷”，而是“人性与创造的温度”。

浙江赛区愿与香港音乐节组委会携手，共同书写“东方硅谷”的教育新篇章！

# 音乐教育学术报告

## Music Education Academic Report



何兰卿

He Lan Qing

National first-class performer

Cello Professor at Shanghai Conservatory of Music

## AIGC empowers educational reform and innovation

Dear experts and colleagues from all walks of life:

Hello everyone! Today, I am very honored to represent the Zhejiang competition area and share with you the grassroots practice of AIGC empowering education in the first Hong Kong Cultural Digital Creation Competition around the theme of "The Impact of Artificial Intelligence Music Education on the Future of Humanity".

We drive teaching innovation through competitions, use AI technology as a bridge, turn the classroom into a creative incubator, and let students generate music, ignite imagination, and shape core literacy in the creation of "human-computer collaboration". This is not only a competition, but also an exploratory experiment for future education. Next, I will start from three dimensions: the significance of the times, the Zhejiang experience, and the future vision.

### 1. The contemporary value and future trends of AI music education

(1) Stimulate creativity: reshape the learning paradigm

AI is driving education to shift from "knowledge transfer" to "inspiration". In the Zhejiang region, we found that 92% of primary and secondary school students developed a strong interest in the courses they originally passively accepted after using AI to create music and art works. This confirms the "golden triangle" of AI education proposed by UNESCO: tool popularization (Tool), mindset cultivation (Mindset), and ethics construction (Ethics).

(2) Breaking down resource barriers: Solving the problem of educational equity

AI music creation tools have effectively lowered the threshold for obtaining educational resources. For example, in Hangzhou Greentown School, migrant workers' children not only achieved artistic expression through AI virtual galleries and music creation platforms DALL·E 3, AIVA, etc., but also won provincial awards - this is the "resource equality effect" enabled by AIGC:

- Students can generate symphonies without expensive equipment
- The difference in art education costs between rural and urban schools has been reduced by 80%
- Children with special needs complete their creations through voice input or brainwave control, and display their results on the same stage with healthy students

The Zhejiang competition area has set up a "help through train" to specifically support disadvantaged groups to enter the Hong Kong competition, truly making artificial intelligence an "accelerator" for educational equity.

(3) Anchoring future core capabilities: Cultivating human-machine collaborative creativity

A McKinsey report pointed out that by 2030, there will be 150 million new digital creative jobs worldwide. Our mission is not only to teach students how to use AI, but also to guide them to understand the collaborative logic behind creation. For example, in the "Ninth Planet Symphony"

project, sixth-grade students used Orb Composer and brainwave synthesizer to improvise music and experience the boundaries and integration of creativity from “Beethoven Reborn”.

## 2. Zhejiang Division Innovation Path: From Practice to Standards

Relying on bases such as Hangzhou Greentown Yuhua Qinqin School, we have formed a “competition + classroom + festival” trinity model, opening up an AI music education path with Chinese characteristics and replicable at the grassroots level.

Highlight 1: Curriculum promotion - creating an “AI creative ability map”

- Layered design tasks, from melody generation to improvisation.
- Incorporate AI music works into the final grade evaluation to measure the division of labor between man and machine.
- Establish a dual-dimensional learning path of technology and creativity to promote the structural transformation of music teaching.

Highlight 2: Immersive scene - Metaverse experimental teaching space

The International Cultural Festival has three major areas: human creation area, AI collaboration area, and integrated experimental area. Including:

- AIVA generates cultural style symphony
- Gesture control to modify painting style
- Brainwave drives emotional melody interaction
- Surreal paintings + melody claw machine experience, etc.

The cumulative number of people who experienced it in a single day exceeded 1,000, and the parent participation rate increased by 45% year-on-year, forming a new pattern of “education + social participation”.

Highlight 3: Closed loop of competition ecology - building a talent growth channel

Through the “three-stage rocket” mechanism:

- (1) School selection (open audition)
- (2) Optimize the generation of NFT digital collections and enter the “Zheli Growth File”
- (3) Special students go directly to the Hong Kong competition through the green channel - realizing the educational vision of “every child can stand on the stage”.

## 3. Future Blue Ocean and Development Expectations

(1) Build “New Infrastructure for Educational Equity”

Let every school have access to the AI creation platform, and art learning is no longer restricted by equipment and venues.

(2) Create a “personalized learning engine”

Introduce interactive technologies such as brain waves and gestures into the classroom to create an “interactive creative course”.

(3) Promote a “new ecosystem of industry-education integration”

Cooperate with a number of music technology companies (such as Hangzhou Qiangnao Technology) to jointly create a creative incubator and practice base.

4. Competition Vision: Let AI illuminate every impossible soul

We hope to establish in Zhejiang in the future:

- Yangtze River Delta AIGC Education Alliance: Achieve curriculum resource sharing among three provinces and one city by 2026
- AI Creative Ability Passport: Dual certification of creativity + technology, linking the government and scientific and technological enterprises.
- New standards for educational charity: focus on helping the poor and special schools, and promote equal access to education. When children use AI to compose their own music, and when hearing-impaired students use brain waves to generate symphonies, what we see is not the “coldness of technology” but the “warmth of humanity and creativity.”

The Zhejiang competition area is willing to work hand in hand with the Hong Kong Music Festival Organizing Committee to jointly write a new chapter in the education of the “Silicon Valley of the East”!

# 音乐教育学术报告

## Music Education Academic Report



Ariel Lin

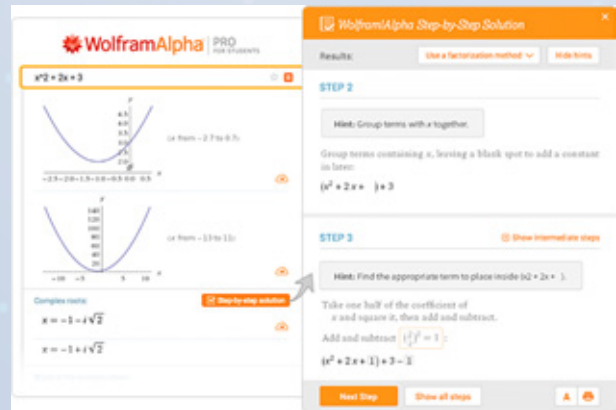
学生

中国台湾少年击剑运动员

## 心重于硬件：为何音乐和运动仍需人性化

你知道吗？人工智能现在可以谱写完整的交响乐，或是逐帧分析篮球投篮，其精确度甚至超越人类教练。人工智能正在迅速改变教育。截至2024年，美国超过60%的学校正在将人工智能工具融入辅导、评分和教学设计中。从自适应测验平台到论文生成聊天机器人，人工智能已成为主流课堂的强大力量。然而，它在音乐和体育教育中的作用仍未得到充分探索。这些学科不仅依赖知识，还依赖情感、韧性和创造力，而这些质量是机器尚不能够令人信服地复制的。尽管如此，人工智能正开始进入音乐厅和训练中心，不仅潜移默化地重塑着我们的学习方式，也重塑着我们的表演、比赛和创造方式。

人工智能在主流教育中蓬勃发展，尤其是在注重知识和解决问题的领域。像ChatGPT这样的工具可以帮助学生撰写论文和进行头脑风暴，而像Wolfram Alpha这样的平台则可以逐步分解复杂的方程式，提供实时的数学辅导和科学辅导。像多邻国这样的语言学习应用程序可以适应学习者的学习进度，根据学习者的学习表现和重复次数提供个性化反馈。这些工具擅长结构化、基于分析学习的答案——这类任务以逻辑和对错结果为主导。然而，音乐和体育教育则截然不同。这些领域的专业知识不仅需要准确性，还需要情感、时间和身体上的投入。你不可能仅仅点击A、B或C就能赢得击剑比赛或表演《致艾丽斯》。这些学科的创造性和即兴性意味着许多传统的人工智能工具都显得力不从心。所以，人工智能开始寻找自己的定位。在体育教育中，人工智能系统正被用于透过分析生物力学数据和识别风险因素来预防运动伤害。正如布莱恩·科尔博士所指出的，这些见解使教练能够定制个性化的训练计划，这是将人工智能融入物理、基于技能的学习环境的重要一步。



(Wolfram Alpha 不仅提供逐步解决方案，还能提供有用的提示，以便您可以先尝试自己解决问题。)



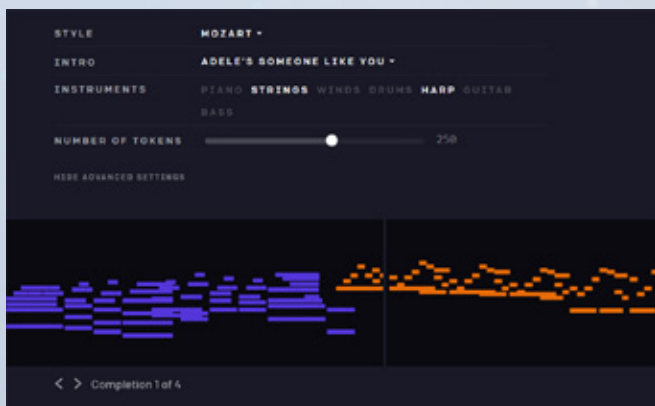
(Duolingo 会在练习时间发送提醒，帮助你保持学习进度。)

在音乐教育中，人工智能不仅扮演导师的角色，更扮演创意伙伴的角色。像 AIVA (人工智能虚拟艺术家) 这样的工具可以帮助学生根据音乐理论和历史规律创作原创的古典风格乐曲以及探索作曲。学生不再仅仅透过乐谱或模仿来学习，而是可以分析 AIVA 的作品，以更动态的方式理解结构、和声和风格。同样，由 OpenAI 开发的 MuseNet 允许学习者尝试融合爵士、摇滚、古典和电子等多种音乐风格的多乐器编曲。这些工具鼓励学生进行音乐探索和创造，就像虚拟

导师一样。学生可以看到改变一个音乐元素如何改变乐曲的氛围或平衡，从而对作曲和风格有更深入、更实际的理解。这种回馈形式不在于对错，而是发现哪些方法有效，以及不同的风格如何协同工作。在体育教育中，人工智能专注于提高身体机能、预防伤害和提升策略智慧。HomeCourt 是一款专为篮球运动员设计的应用程序，它利用计算机视觉技术分析运动员的脚步动作和投篮技巧。只需一个智能型手机镜头，该应用程序就能提供敏捷性、平衡性和投篮一致性的实时指标，而这些回馈过去需要专业教练或全动作捕捉实验室才能获得。这使得运动员，尤其是那些无法使用顶级设施的年轻运动员，能够追踪进度并根据情况调整自己的技术。对于上肢运动表现，尤其是在击剑等运动中，Athlete Analyzer 等平台使用视讯分析和传感器数据来监测运动模式，并提供个人化建议以优化击剑技巧。在策略方面，i-Football 和 Xiaoice 等东方平台使用海量数据集模拟比赛场景，帮助运动员在压力下训练快速决策和模式识别能力。这些工具不仅教授技术，还教导你如何思考、适应和规划，帮助运动员在心理和身体层面上做好充分的准备。



( HomeCourt 是一款出色的应用程序，可以获得专业级别的回馈，尤其是因为它是 NBA 的官方合作伙伴。 )



( MuseNet 可以让你融合不同的旋律和音乐风格，创造出独特而富有创意的组合。 )

人工智能能够并且将会改变我们的教学和训练方式。想象一下，个性化的练习计划、实时的表现分析和进度跟踪，而无需教练全天候陪在你身边。它节省时间，提供客观性，并允许在任何地方获得高水平的回馈。然而，即使你的动作

看起来很完美，人工智能也无法判断你何时感到沮丧或精神疲惫。它不会因为无意中听到你在学校度过了不愉快的一天而调整你的练习。它不会在你几个月都无法做到之后，在听到你展现出高水平时与你击掌庆祝。它无法理解你赛前的焦虑。它不知道即使双腿麻木，也要坚持完成最后一次动作是什么感觉。运动和音乐中人性的一面，那些混乱、感性和美丽的部分，对机器来说仍然遥不可及。有些人工智能工具甚至不考虑运动员或音乐家的风格，忽略他们的创造力，只教他们算法认为的「理想」风格。即便如此，人工智能仍在快速进步。未来的系统或许能够学会透过语音或脸部表情辨识情绪线索。最好的未来或许不是人工智能取代人类，而是人工智能与人类携手合作，在赛场和音乐厅里充分发挥我们的潜力。

人工智能将重塑音乐和体育教育，使学习更快、更聪明、更个人化。即便如此，它也无法取代与乐团一起即兴演奏的感觉、现场比赛的喧嚣，以及队友或教练之间的默契。它永远无法感受到疲惫。然而，它会像教练或队友一样激励你。失误、紧张、击掌？这些正是培养毅力的秘诀。任何算法，无论多么先进，都无法真正理解用心表演的力量。人工智能可以提供支持，但它永远无法取代运动或歌曲的灵魂。

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# 音乐教育学术报告

## Music Education Academic Report



**Ariel Lin**

Grade 9 student  
Junior Fencer, Taiwan

## Title: Heart Over Hardware: Why Music and Sports Still Need the Human Touch

Did you know artificial intelligence can now compose a full symphony or analyze a basketball shot frame-by-frame with better accuracy than a human coach? AI is rapidly transforming education. As of 2024, more than 60% of schools in the United States are merging AI tools into tutoring, grading, and instructional design. From adaptive test platforms to essay-generating chatbots, AI has become a powerful force in mainstream classrooms. Yet, its presence in music and sports education remains unexplored. These disciplines rely not only on knowledge but also on emotion, resilience, and creativity, qualities that machines have yet to replicate convincingly. Still, AI is beginning to make its way into concert halls and training centers, subtly reshaping not only how we learn, but also how we perform, compete, and create.

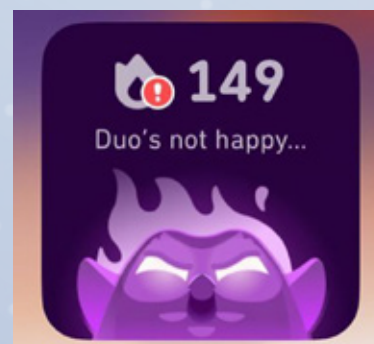
Artificial intelligence is booming in mainstream education, particularly in areas focused on knowledge and problem-solving. Tools like ChatGPT assist with essay writing and brainstorming, while platforms such as Wolfram Alpha break down complex equations step by step, offering real-time tutoring in math and science. Language-learning apps like Duolingo adapt to a learner's pace, providing personalized feedback based on performance and repetition. These tools excel at structured, answer-based learning – tasks where logic and right-or-wrong outcomes dominate. However, music and sports education operate on a different frequency. Expertise in these fields requires not just accuracy, but emotion, timing, and physical presence. You can't win a fencing bout or perform Für Elise just by clicking A, B, or C. The creative and improvisational nature of these disciplines means that many traditional AI tools fall short. That said, artificial intelligence is starting to find its place. In sports education, for instance, AI systems are being used to prevent injuries by analyzing biomechanical data and identifying risk factors. As Dr. Brian Cole notes, these insights allow coaches to design individualized training plans, an important step in integrating AI into

physical, skill-based learning environments.



(Wolfram Alpha not only provides step-by-step solutions, but also offers helpful hints so you can try solving the problem on your own first.)

(Duolingo sends reminders when it's time to practice, helping you stay on track with your learning.)



In music education, AI is beginning to act not just as a tutor, but as a creative partner. Tools like AIVA (Artificial Intelligence Virtual Artist) help students explore composition by generating original classical-style pieces based on music theory and historical patterns. Instead of only learning through sheet music or imitation, students can now dissect AIVA's compositions to understand structure, harmony, and style in a more dynamic way. Similarly, MuseNet, developed by OpenAI, allows learners to experiment with multi-instrument arrangements that blend genres, from jazz and rock to classical and electronic. These tools

encourage musical exploration and creativity, acting as a virtual mentor. Students can see how changing one musical element alters the mood or balance of a piece, allowing for deeper, hands-on understanding of the composition and style. This form of feedback isn't about right or wrong, it's about discovering what works, and how different styles work together. In sports education, AI focuses on enhancing physical performance, injury prevention, and strategic intelligence. Tools like HomeCourt, an app designed for basketball players, use computer vision to analyze an athlete's footwork and shooting mechanics. With just a smartphone camera, the app can deliver real-time metrics on agility, balance, and shot consistency, feedback that used to require a professional coach or a full-motion capture lab. This empowers athletes, especially young ones without access to elite facilities, to track progress and make informed adjustments to their technique. For upper body performance, particularly in sports like fencing, platforms such as Athlete Analyzer use video analysis and sensor data to monitor movement patterns, offering personalized insights to optimize bladework. On the strategic side, Eastern platforms like i-Football and Xiaoice simulate in-game scenarios using massive datasets, helping players train quick decision-making and pattern recognition under pressure. These tools don't just teach technique, they teach you how to think, adapt, and plan, preparing athletes for the mental side of performance as much as the physical.



(HomeCourt is a great app for getting professional-level feedback, especially since it's an official partner of the NBA.)



(MuseNet lets you blend different melodies and musical styles, creating unique and creative combinations.)

AI can and will change the way we teach and train. Imagine personalized practice plans, instant performance analysis, and progress tracking without needing a coach by your side 24/7. It saves time, offers objectivity, and gives access to high-level feedback anywhere. However, AI

can't tell when you're frustrated or mentally drained even if your form looks perfect. It won't adjust your practice because it overheard you had a rough day at school. It won't high-five you once it heard you hit that one note after months and months of not being able to get it. It doesn't understand the anxiety you feel before competitions. It doesn't know what it feels like to push through that final rep even when your legs feel like tofu. The human side of sports and music, the messy, emotional, and beautiful part is still out of reach for machines. Some AI tools don't even consider the athlete's or musician's style, ignoring their creativity and teaching them what the algorithms think is "ideal." That said, AI is still improving fast. Future systems might learn to recognize emotional cues through voice or facial expressions. The best future might not be AI instead of humans, but AI with humans, working together to bring out our full potential in both field and concert hall.

AI will reshape music and sports education, making learning faster, smarter, and more personalized. Even so, it can never replace the feeling of jamming with your band, the chaos of a live match, or the chemistry between your teammates or coaches. It can never feel the exhaustion. Nevertheless, it pushes you through it like your coach or teammates do. Mistakes, nerves, and high-fives? That's what builds grit. And no algorithm, no matter how advanced, can truly understand the power of performing with your heart. AI is here to support, but it can never replace the soul of the sport or the song.

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## 音樂教育學術報告 Music Education Academic Report



陈秋荣  
John Chan

香港國際音樂節秘書長

### 在人工智慧時代，音樂的持久力量

我想邀請大家一起思考，在科技不斷進步、人工智慧迅速擴張的時代，我們如何維持人性化的青少年音樂教育？

#### 一、音樂是需要人類的情感表達

當我們無法用語言表達悲傷時，我們會唱出旋律；當我們感到快樂時，我們用節奏來慶祝。音樂是人類最深層的情感語言，它能穿越文化、語言和世代的隔閡。演奏音樂時，我們的情緒被放大、被理解、也被分享——這是任何機器無法真正做到的。

#### 二、合奏功能讓我們相連

團體音樂創作不只是音符的交錯，更是一種心靈的交流。在合奏中，每一個人都不只是個體，而是一個更大能量的一部分。無論是管弦樂團的和聲、還是校園裡的小型樂隊，那份協調與默契都能帶來前所未有的歸屬感。研究也顯示，參與音樂活動能提升學生的學習動力與心理健康，這些是每個人——尤其是年輕人——在成長過程中不可或缺的資源。

#### 三、人工智慧可以幫助創作，但不能給表達者感受

誠然，AI 現在可以作曲，甚至模仿著名作曲家的風格。但它無法真正「感受」旋律背後的情感，也無法在舞台上感知觀眾的呼吸與期待。音樂教育的核心，是引導人們探索自己的內心世界——這是任何演算法都無法取代的旅程。AI 可以是工具，但人類的情感和即興，才是音樂的靈魂。

#### 四、互動的音樂是人類存在已久的生活之一

在未來更高科技、可能更孤立的世界中，我們更需要音樂作為情感的出口與社會的連結。無論年齡、背景或能力，每個人都應該有機會接觸音樂、一起互動互感；學生的培訓、青少年的合奏或 ka la okay，共創作音樂，感受音樂的美。這不只是藝術的保存，更是一種人性的堅持。

#### 結語：讓音樂繼續唱出人類的故事

朋友們，讓我們重視音樂教育，不只是培養技術，更是守護我們作為人的感受力與共鳴力。在 AI 代替部分工作的今天，音樂提醒我們：人類的價值，遠超過效率與演算法。我們的聲音值得被聽見，我們的故事值得被歌唱。

謝謝大家。



陈秋荣

John Chan

Secretary General of Hong Kong International Music Festival

## Title: Heart Over Hardware: Why Music and Sports Still Need the Human Touch

### 1. Music is coming from Human Emotion

When words fail to express our sorrow, we turn to melody. When joy fills our hearts, rhythm becomes our celebration. Music is the deepest language of human emotion—it crosses cultures, generations, and tongues. As we play, our feelings are magnified, understood, and shared. No machine can truly replicate this experience.

### 2. Playing Music together connects us

Group music-making is more than overlapping notes—it's a shared emotional journey. In an ensemble, each musician becomes part of something larger, something alive. From the rich harmonies of an orchestra to a student band's spontaneous energy, that connection fosters a powerful sense of belonging. Studies show that participating in music boosts motivation and mental well-being—crucial elements for every young person's growth.

### 3. AI can help create Music, but it can't feel it

Yes, AI can now compose and even imitate the styles of famous composers. But it cannot feel the emotions behind the music, nor can it sense the anticipation of an audience waiting in silence before the first note. The heart of music education is helping people explore their inner worlds—something no algorithm can replace. AI might be a tool, but human emotion and improvisation are the soul of music.

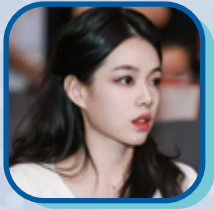
### 4. Interactive Music is one of humanity's oldest joys

In a future filled with technology and digital isolation, music becomes even more vital—a way to connect and express our emotions. No matter your age, background, or ability, everyone deserves to experience music and share it with others. Whether it's students training, teens in ensembles, or karaoke nights, making music together is more than preserving art—it's affirming our humanity.

### Let Music keep telling our stories

Let's protect and promote music education—not just to hone technique, but to nurture empathy and emotional resonance. As AI takes on more tasks in our world, music reminds us that human value lies far beyond efficiency and algorithms. Our voices deserve to be heard. Our stories deserve to be sung.

## 音乐教育学术报告 Music Education Academic Report



陈雪怡

Chen Xueyi

新加坡音乐剧演艺中心声乐指导

### 中国音乐剧发展：契机、前景与挑战

近年来，中国音乐剧产业呈现加速发展态势，本土原创探索与国际经典本土化改编并行推进。其发展动力与未来走向可从以下关键维度进行解析：

#### 一、发展契机

##### 1. 文化消费升级

伴随人均收入增长及年轻群体成为消费主力，现场娱乐需求持续扩张。音乐剧集艺术性与娱乐性于一体，高度契合都市青年对“沉浸式体验”的追求。

一线城市（如上海、北京）剧场设施日趋完善，二三线城市文化场馆建设加速推进，为剧目巡演提供了坚实的硬件基础。

##### 2. 政策支持与产业融合

国家“文旅融合”战略及《“十四五”文化产业发展规划》等政策，积极鼓励演艺产业发展，音乐剧作为跨界艺术形式获得显著政策倾斜。

影视IP改编音乐剧（如《隐秘的角落》《沉默的真相》）有效实现流量转化，形成“影剧联动”的协同效应，吸引更广泛受众。

##### 3. 国际经验本土化

海外经典音乐剧中文版（如《剧院魅影》《汉密尔顿》）的引进与制作，不仅培养了稳定的观众基础，也促进了本土制作与运营标准的提升。

国际创作团队合作（如英国导演执导《赵氏孤儿》）引入先进创作理念与方法论，推动了本土

创作思维的革新。

##### 4. 数字化传播助力破圈

短视频平台（抖音、B站）广泛传播音乐剧精彩片段（如阿云嘎、郑云龙的演出片段），成功触达并吸引大量非传统剧场观众。

线上直播形式（如“2023华语音乐剧演唱会”吸引超千万观看）有效突破了地域限制，极大扩展了剧目的受众覆盖面。

#### 二、前景与挑战

##### 积极趋势

##### 1. 原创能力提升

本土题材的深度挖掘（如《敦煌》《聂小倩与宁采臣》）逐渐摆脱对西方叙事模式的简单模仿，开始形成具有中国文化特质的艺术风格与辨识度。

专业音乐剧教育的普及（如中央戏剧学院、上海音乐学院设立相关专业）为行业持续输送人才，夯实发展基础。

##### 2. 商业模式多元化

衍生品开发（原声专辑、周边产品）、会员订阅制（如“一台好戏”会员体系）等创新模式拓展了收入来源，增强盈利能力。

沉浸式小剧场模式（如环境式音乐剧《阿波罗尼亚》的成功）降低了制作与运营成本，同时提升了观众粘性与复购率。

### 3. 区域市场下沉

成都、西安等新一线城市涌现本土音乐剧制作公司，区域化制作模式兴起，有效减少了大规模巡演的成本压力。

#### 潜在挑战

##### 1. 创作瓶颈

剧本质量参差不齐，部分作品过度依赖明星效应或流量IP，叙事逻辑与艺术完整性有待加强。

音乐创作存在同质化倾向，缺乏如《剧院魅影》《狮子王》般具有全球影响力的标志性旋律和音乐篇章。

##### 2. 产业链不成熟

专业音乐剧演员储备不足，大量依赖影视演员跨界，兼具唱、跳、演能力的复合型表演人才稀缺。

行业投资回报周期长，中小型制作公司抗市场风险能力较弱，生存压力大。

##### 3. 观众培养仍需时间

票价相对较高（一线城市平均票价300-800元），构成大众普及的客观壁垒。

观剧消费习惯尚未广泛形成，音乐剧需在激烈的娱乐市场竞争（如演唱会、电影）中争取观众时间和消费意愿。

### 三、未来方向

#### 1. 科技赋能体验革新

探索虚拟偶像（如洛天依）参演、应用XR（扩展现实）技术增强舞台沉浸感与表现力，吸引Z世代年轻观众。

#### 2. 深化跨界合作

与游戏、国风音乐（如《原神》音乐会模式）等领域进行IP联动开发，拓展内容价值边界与影响力。

#### 3. 探索国际输出路径

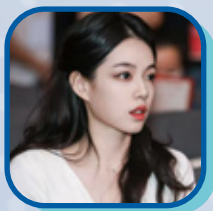
凭借文化相近性，亚洲市场（日韩、东南亚）有望成为中文原创音乐剧出海的首站，逐步打开国际市场。

#### 结论

中国音乐剧产业正处于从“引进消化”向“原创输出”的关键转型期。未来5-10年，若能在内容创作上平衡艺术价值与商业诉求，在产业运营上构建可持续的成熟产业链，则有望形成区别于欧美、日韩的独特“中国流派”。短期需警惕资本过热可能引发的市场泡沫，长期发展则更依赖系统性专业人才培养和持续深入的大众审美教育。

# 音乐教育学术报告

## Music Education Academic Report



陈雪怡

Chen Xueyi

Musical Performing Training Center, Singapore

## The Development of Chinese Musical Theatre: Opportunities, Prospects, and Challenges

In recent years, China's musical theatre industry has demonstrated accelerated development, with simultaneous advancements in local original creations and the localization of international classics. The driving forces and future trajectory of this development can be analyzed through the following key dimensions:

### I. Development Opportunities

#### 1. Upgrading Cultural Consumption

With rising per capita income and younger demographics becoming the main consumer force, demand for live entertainment continues to expand. Musical theatre, integrating artistry and entertainment, aligns perfectly with urban youth's pursuit of "immersive experiences."

Theatre infrastructure in first-tier cities (e.g., Shanghai, Beijing) is increasingly sophisticated, while cultural venue construction in second- and third-tier cities is accelerating, providing a solid hardware foundation for touring productions.

#### 2. Policy Support and Industry Integration

National strategies like "Cultural and Tourism Integration" and policies such as the "14th Five-Year Plan" for Cultural Industries Development actively encourage the performing arts industry. As a cross-disciplinary art form, musical theatre has received significant policy support.

Adaptations of film/TV IPs into musicals (e.g., *The Bad Kids*, *The Long Night*) effectively achieve audience crossover, creating a synergistic "screen-to-stage linkage" effect that attracts a broader audience.

#### 3. Localization of International Expertise

The introduction and production of Chinese-language versions of international classics (e.g., *The Phantom of the Opera*, *Hamilton*) have cultivated a stable audience base while elevating local production and operational standards.

Collaborations with international creative teams (e.g., a British director for *The Orphan of Zhao*) introduce advanced creative concepts and methodologies, fostering innovation in local creative thinking.

#### 4. Digital Dissemination Breaking Through Niches

Short-video platforms (e.g., Douyin, Bilibili) widely disseminate highlights (e.g., performances by Ayanga, Yunlong Zheng), successfully reaching and attracting large numbers of non-traditional theatregoers.

Online live streaming (e.g., the "2023 Chinese Musical Concert" attracting over 10 million viewers) effectively breaks geographical barriers, significantly expanding the audience reach for productions.

### II. Prospects and Challenges

#### Positive Trends

##### 1. Enhanced Original Capabilities

Deep exploration of local themes (e.g., *Dunhuang*, *Nie Xiaoqian & Ning Caichen*) is gradually moving beyond simple imitation of Western narrative models, beginning to form an artistic style and distinctiveness imbued with Chinese cultural characteristics.

The proliferation of professional musical theatre education (e.g., programs established at the Central Academy of Drama, Shanghai Conservatory of Music) provides a continuous talent pipeline, strengthening the industry's foundation.

##### 2. Diversified Business Models

Innovative models like derivative development (original soundtracks, merchandise) and membership subscriptions (e.g., the "One Show" membership system) expand revenue streams and enhance profitability.

Immersive small-theatre formats (e.g., the success of environmental musical *Apollonia*) reduce production and operational costs while increasing audience loyalty and repeat attendance.

### 3. Market Penetration into Lower-Tier Cities

Local musical production companies are emerging in new first-tier cities like Chengdu and Xi'an. The rise of regionalized production models effectively reduces the cost pressures associated with large-scale touring.

#### Potential Challenges

#### 1. Creative Bottlenecks

Script quality is inconsistent; some productions over-rely on star power or trending IPs, with narrative logic and artistic integrity needing strengthening.

Musical composition shows homogenization tendencies, lacking globally influential iconic melodies and musical pieces akin to *The Phantom of the Opera* or *The Lion King*.

#### 2. Immature Industry Chain

There is an insufficient reserve of professional musical theatre actors, with heavy reliance on cross-over film/TV actors. Scarce are "triple-threat" performers excelling in singing, dancing, and acting.

The industry's return on investment period is long. Small and medium-sized production companies have weak resilience against market risks, facing significant survival pressure.

#### 3. Audience Cultivation Requires Time

Relatively high ticket prices (average ¥300-¥800 / ~\$40-\$110 USD in first-tier cities) pose an objective barrier to mass-market accessibility.

Theatre-going habits are not yet widely established. Musicals must compete fiercely for audience time and spending willingness within the broader entertainment market (e.g., concerts, movies).

### III. Future Directions

#### 1. Tech-Enabled Experience Innovation

Explore the participation of virtual idols (e.g., Luo Tianyi) and apply XR (Extended Reality) technologies to enhance stage immersion and expressiveness, attracting Gen Z audiences.

#### 2. Deepening Cross-Industry Collaboration

Develop IP co-creations and linkages with sectors like gaming and traditional Chinese-style music (e.g., the *Genshin Impact* concert model), expanding content value boundaries and influence.

#### 3. Exploring International Export Pathways

Leveraging cultural proximity, the Asian market (Japan, South Korea, Southeast Asia) holds promise as the first stop for exporting original Chinese-language musicals, gradually opening the international market.

#### Conclusion

China's musical theatre industry is currently in a critical transition phase from "import and assimilation" to "original creation and export." Over the next 5-10 years, if it can balance artistic value with commercial imperatives in content creation and build a sustainable, mature industrial chain in operations, it holds the potential to form a distinctive "Chinese school" of musical theatre, differentiated from Euro-American, Japanese, or Korean models. In the short term, vigilance is needed against potential market bubbles triggered by overheated capital investment. Long-term development, however, depends more fundamentally on systematic professional talent cultivation and continuous, in-depth public aesthetic education.

## 音乐教育学术报告 Music Education Academic Report



麦金雪

MAI KIM TUYEN

专业钢琴教师

“明雪音乐中心”创始人

### 传统共鸣与人工智能： 音乐作为滋养青少年心灵的旅程

我曾以为音乐只是声音——是雨夜回荡的旋律，或是周一清晨大喇叭里的广播。但随着年岁增长，当我的心开始为一支古老民谣隐隐作痛，或在一段无词旋律前陷入静默时，我忽然明白：音乐是有灵魂的。它能安抚、滋养、唤醒并放大我们身上最人性的部分——尤其对正在成长的少年而言。

#### 传统音乐——根脉深处的召唤。

我仍清晰记得在村社祠堂初听《quan họ》（越南官贺民歌）的震撼。那些未经修饰的质朴音调，没有和声伴奏，只是纯粹的人声——如水晶般清透又直击心灵——仿佛能穿透记忆长河。对如今许多年轻人来说，传统音乐或许陌生甚至陈旧。但若你以沉静之心聆听，会听见它在诉说教科书永远无法传授的土地、生活方式与情感。

传统音乐不仅是声波振动。它是历史的脉搏，是先人的智慧，是世代传承的民族精魂。当少年学会唱改良戏（cải lương）或弹奏独弦琴（đàn bầu）时，他们不仅在掌握技艺——更是在连接血脉根基，习得耐心，内化共情，发现质朴中静默的美。奇妙的是，这个过程会让他们变得更自信、沉稳且富有尊严。

#### AI与音乐——唤醒无限可能。

然而世界不止于怀旧。我们正身处技术革命的时代——人工智能正在颠覆知识获取的方式。在音乐领域，AI并非取代灵魂，而是拓宽入口，让更多人得以踏入声音的魔法之境。

我曾见证越北山区少年仅凭免费手机APP流畅演奏古典钢琴曲。他从未上过正规音乐课，但AI引导着他，鼓励着他，让他得以一个音符一个音符地发现自己的热爱。这正是善用科技的神奇之处：它不剥夺性，而是解放人性。

AI让年轻学习者能以适合自己的节奏学习音乐——摆脱僵化框架、同辈压力或横向比较。这对常怀不安与自我怀疑的青少年尤为重要。当学习方式与其自身节奏共鸣时，他们会在音乐乃至生活中变得更有自信、毅力与主见。

## 音乐——成长心灵的庇护所。

于我而言，青春期是美丽而脆弱的阶段。情感在尚未被命名时便已绽放。这里有静默的压力、无形的伤痕，以及来自家庭、社会和自我的期待重负。而用心对待的音乐，正是这些成长中心灵的庇护所。

当少年学会歌唱、演奏或深度聆听时，他们便获得了强大的表达工具。音乐成为无需被评判的故事语言，赋予他们一种未必响亮却足以证明自己存在的发声方式。

通过合唱、乐队等集体演出，青少年更学会倾听、协作与共赴目标。这些社交能力的基石，将成为他们未来驾驭成人世界的关键。

bridging 传统与现代——守护灵魂，开辟路径。我们无需在传统音乐与AI间二选一。最美好的可能是二者共存——共同滋养青少年的全面成长。

我曾遇见将官贺民谣混搭电子节拍的学生。意外的是无人指摘，反觉传统正以不失本真的姿态走进年轻人的世界。

我们应当鼓励年轻人用AI学习箏琴 ( đàn tranh )，为嘲剧 ( ca trù ) 制作MV，或将民间摇篮曲改编成交响乐。只要怀着对文化根源的尊重与情感理解，创意就该被拥抱。

## 结语：音乐是灵魂的镜子

音乐不教我们成为他人——它帮助我们更真实地成为自己：更本真，更坚韧，更有人性。在这个充满噪音与脆弱的时代，让青少年接触传统与现代音乐，正是我们守护未来心灵的方式。

终有一天，当某个孩子唱起歌，奏响温柔旋律，或静静聆听古老乐音时，我们会知道：他们正在成长——不止身体，还有灵魂。

# 音乐教育学术报告

## Music Education Academic Report



麦金雪

MAI KIM TUYEN

Professional piano coach

Founder of "Minh Tuyen Music Center"

## BETWEEN TRADITIONAL VIBRATIONS AND ARTIFICIAL INTELLIGENCE: MUSIC AS A JOURNEY TO NURTURE THE SPIRIT OF ADOLESCENTS

There was a time when I believed music was just sound—melodies echoing on a rainy evening, or the voice from a public loudspeaker every Monday morning. But as I grew older, as my heart began to ache over an old folk tune or fall silent in front of a wordless melody, I realized something: music is a soul. It can comfort, nurture, awaken, and magnify the most human parts of us—especially in growing souls: teenagers.

Traditional music – the voice calling from deep within our roots I still vividly remember the first time I heard a Quan họ folk song performed in a village communal house. The simple tones, unharmonized and unaccompanied, just pure voices—crystal clear and poignant—seemed to reach into memory itself. To many young people today, traditional music may feel unfamiliar, even outdated. But if you truly listen with a quiet heart, you'll hear it whispering about a land, a way of life, and emotions that no textbook or lecture could ever teach.

Traditional music is not merely sound. It is the heartbeat of history, the wisdom of our ancestors, and the soul of a nation passed down through generations. When a teenager learns to sing *cải lương* or play the *đàn bầu*, they are not just acquiring a skill—they are connecting with their roots, learning patience, absorbing empathy, and discovering the quiet beauty of simplicity. Strangely enough, this process makes them more confident, more grounded, and more dignified.

AI and music – awakening limitless possibilities Yet the world doesn't stop at nostalgia. We are living in an era where technology—especially Artificial Intelligence—is transforming the way we access knowledge. In music, AI doesn't replace the soul; it broadens the doorway so more people can step into the magical realm of sound.

I once witnessed a young boy from a mountainous region in northern Vietnam learn to play classical piano fluently—using only a free mobile app. He had never attended a formal music class. But thanks to AI, he was guided, encouraged, and empowered to discover his passion note by note. That is the wonder of technology used wisely: it does not replace humanity—it releases it.

AI enables young learners to study music in a way that suits their individual rhythm—free from rigid structures, peer pressure, or comparison. This is especially meaningful for adolescents, who often carry insecurities and self-doubt. When allowed to learn in a way that resonates with their own pace and style, they become more confident, persistent, and independent—not just in music, but in life.

Music – a safe haven for growing hearts Adolescence, to me, is a beautiful yet fragile stage. Emotions bloom before they can be named. There are silent pressures, unseen wounds, and the weight of expectations—from family, society, and often, the self. Music—when approached with care—is a sanctuary for these growing hearts.

When a teenager learns to sing, to play an instrument, or simply to listen deeply, they gain a powerful tool for expression. Music becomes a language through which they can tell their stories without judgment. It gives them a voice—not necessarily loud, but one that assures them they are not invisible.

Moreover, through group performances, choir, or playing in bands, teenagers learn how to listen, how to collaborate, and how to work toward a shared goal. These are the foundations of social skills—crucial for navigating adult life and relationships.

Bridging tradition and modernity – preserving soul, opening paths We do not have to choose between traditional music and AI. The most beautiful possibility is when both coexist—nurturing and supporting the holistic growth of adolescents.

I once met a student who remixed a Quan họ melody with electronic beats. Surprisingly, no one criticized it. On the contrary, it felt like tradition walking into the world of youth—without losing its identity.

We can and should encourage young people to use AI to learn the đàn tranh, to produce music videos for ca trù, or to transform a folk lullaby into an orchestral arrangement. As long as there is respect and emotional understanding of the cultural roots, creativity should be welcomed.

### **Conclusion: Music as a mirror of the soul**

Music doesn't teach us to become someone else—it helps us become more truly ourselves: more authentic, more resilient, more human. In a world full of noise and fragility, giving teenagers access to music—both traditional and modern—is how we care for the future of the spirit.

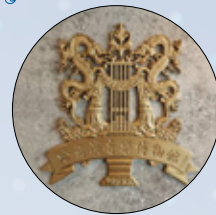
So that one day, when a child sings, or plays a gentle melody, or simply listens deeply to a piece of ancient music, we will know: they are growing—not just in body, but in soul.

## 音乐教育学术报告 Music Education Academic Report



苗笛  
Miao Di

哈尔滨音乐博物馆馆长  
哈尔滨音乐学院特聘教授



哈尔滨音乐博物馆  
Harbin Music Museum

### 《探索AI在音乐创作中的潜能与应用》

我们今天所处的时代，是科技飞速发展、知识大爆炸的时代。人工智能技术（AI）的出现，令许多行业感到震惊和措手不及，似乎预感到许多工种要被取代。就AI在音乐创作领域中的潜能与应用问题，我谈几点初步的认识……

首先从什么是AI说起；AI是现代人类发明的一种高度智能的、通过计算机将储备的大量数据进行编排、合成的工具。这种工具的出现，极大的帮助了人类在重复性、机械性和逻辑性等方面节约了劳动时间和劳动成本。在音乐创作中，配器中的合成、重复等创作手法运用AI技术，将在一定程度上方便了作曲家的的工作，提高了工作效率。

但是AI毕竟是一种工具，无法替代的是情感的原创。音乐创作最可贵的想象力、感性思维和情感深度的表述，这些AI都是无法生成的。音乐是人类情感表达的巅峰形式，经典的音乐作品创作都是源于生活的，是创作者灵魂的写照，不可替代、不可复制。在音乐创作方面，AI只能是机械性的模仿。同样，在合唱队员与乐队演奏员排演方面，那种对来自心灵深处的默契所产生的艺术效果，用AI技术也是达不到原声效果的。

**从艺术创作的本质上讲，真正的魅力就在于不可复制性。**

面对“来势汹汹”的AI产业，从音乐创作的角度看，我们要充分利用好这门科学技术，将自己的情感、创意尽情发挥，与AI技术达到完美的结合。科学和艺术的发展永无止境，科学与艺术的完美结合具有广泛的发展空间，跨界创意、独创审美、精神、艺术与技术的完美结合，是人类社会发展的必然趋势。



苗笛  
Miao Di

Curator of Harbin Music Museum

Distinguished professor at Harbin Conservatory of Music



哈尔滨音乐博物馆  
Harbin Music Museum

## Exploring the Potential and Applications of AI in Musical Composition

We live in an era marked by rapid technological progress and an explosion of knowledge. The emergence of artificial intelligence (AI) has taken many industries by surprise, as professionals anticipate the potential displacement of traditional roles. Regarding the potential and application of AI in the field of music composition, I would like to offer a few preliminary reflections.

To begin, it is essential to clarify what AI entails: artificial intelligence is a highly advanced tool developed by modern humanity that utilizes computer systems to compile and synthesize vast data reserves. The introduction of such tools has significantly reduced labor time and cost in areas that involve repetition, mechanical operations, and logical reasoning. In musical composition, AI technology streamlines methods such as synthesis and repetition in orchestration, thereby facilitating the composer's workflow and improving efficiency.

Nevertheless, it must be emphasized that AI remains a tool, and what it cannot replicate is the originality of human emotion. The most valuable aspects of musical creation—imaginative insight, emotional sensitivity, and the depth of affective expression—are beyond the scope of AI generation. Music represents the pinnacle of human emotional articulation; classic musical works are derived from lived experience and reflect the artist's inner world. They are irreplaceable and unreplicable. In terms of artistic creation, AI can only engage in mechanical imitation. Similarly, in choral and orchestral rehearsals, the subtle interpersonal resonance that emerges from deep emotional attunement cannot be reproduced by AI technologies, nor can AI achieve the nuances of acoustic authenticity.

**From the standpoint of artistic essence, the true charm of creation lies precisely in its irreplicability.**

Faced with the formidable rise of the AI industry, we must, from a music composition perspective, harness this scientific advancement thoughtfully. By fully expressing our own emotions and creative impulses, we may achieve an optimal integration with AI technology. The evolution of science and art is boundless, and their symbiotic fusion promises vast developmental potential. The confluence of interdisciplinary creativity, aesthetic originality, spirituality, and technological artistry constitutes a necessary trajectory in the future development of human society.

## 音乐教育学术报告

### Music Education Academic Report



LUONG MINH HUYEN

专业钢琴导师

Mihu Art有限公司创始人兼首席执行官

## 音乐——生命的奇迹！

音乐——无论是传统的还是现代的，人造的还是天然的——都蕴含着治愈的力量，能够促进自我发现，连接人与人，并构建更美好的社群。对于青少年来说，这是一个从童年走向成年的过渡阶段，他们开始通过尝试不同的价值观、风格、个人爱好和友谊来探索和定义自己的身份。青少年拥有无限的好奇心和自我表达的渴望，他们常常发现普通的语言无法捕捉到他们真实的情感。在这样的时刻，艺术就成为了一个非凡的工具。

关于这个话题，我非常幸运地接触到了特里西娅·坦斯托尔的《觉醒笔记》，这本书讲述了委内瑞拉免费公共音乐教育项目El Sistema 35年的历程。该项目帮助来自贫困家庭的儿童和青少年不仅在音乐方面，而且在生活的其他方面都得到了全面发展。当食物和衣服等基本需求都匮乏时，艺术仍然重要吗？35年来的事实证明，负责任、自信、自尊的音乐家和公民的数量有所增加，同时青少年参与帮派的人数也显著减少。对于那些摆脱贫困和绝望的年轻人来说，El Sistema简直就是一个奇迹，为他们的生活带来了希望、激情和活力。

更幸运的是，在我的祖国越南，像钢琴家陈贞这样充满奉献精神的艺术家长们，通过“奇迹合唱团和管弦乐队”项目，将El Sistema的魔力带给了SOS儿童村的孤儿和弱势儿童。我毫不犹豫地加入了这个项目，亲身体验并见证了音乐对这些孩子们的改变力量。看到他们天真烂漫的脸庞，看到他们在演出前试穿鞋子和校服时眼中闪烁的喜悦，看到他们腼腆却充满希望的歌声，都让我感到温暖。看到他们在寒冷中紧握着皲裂的双手，看到他们深情地拥抱着在一起，也让我感到一丝悲伤。但当他们一起唱歌时，仿佛世间所有的悲伤都消失了。

这就是我选择成为一名艺术教育工作者的原因——一个充满热情、全心投入、致力于让孩子们的生活充满色彩和欢乐的教育工作者。

过去，我教钢琴的方式和别人教我的一样：听、练、演。但我注意到有些学生打哈欠！在外部中心学习非专业艺术教育的五年里，数百名跟我学习的学生因为缺乏天赋、难度大、无聊或失去动力而退学。在随后五年的专业艺术学校，15名通过入学考试的学生中只有6人毕业。

这促使我运用我在心理学方面学到的一切，通过游戏、新教案、原创旋律和创意奖励等各种方法进行教学。人工智能（AI）成为我实现目标的宝贵工具。我制作了关于肖邦和贝多芬等著名作曲家童年的动画电影，并用人工智能来描绘缪斯女神等艺术动作，使课堂比枯燥的教科书讲座更令人难忘。在线课程、训练节奏感和反应能力的音乐游戏以及其他创新技术，使教学对我和学生来说都更具吸引力和乐趣。

七年前，我创办了MiHu Art，我的学生们——有些从小小年纪就开始学习，如今已长大成人，超越了老师——在包括香港国际音乐节这样的国际舞台上，始终洋溢着自信的笑容。看到一个曾经躲在父母身后求学的害羞孩子，如今在国际舞台上像明星一样闪耀，不再是遥不可及的梦想。这是我们共同努力、不懈奋斗的结果。

我们衷心感谢香港国际音乐节的主办方，感谢他们不仅创造了一项国际赛事，更让每一位参赛者、他们的家人和老师都留下了珍贵的回忆。

我们祝愿香港国际音乐节继续蓬勃发展，取得圆满成功！



## LUONG MINH HUYEN

Professional piano coach  
 Founder & CEO MiHu Art Co., Ltd

# Exploring the Potential and Applications of AI in Musical Composition

Music - whether traditional or modern, artificial or natural—carries the power to heal, foster self-discovery, connect people, and build a better community. For adolescents, a transitional phase from childhood to adulthood, it is a time when they begin to explore and define their identity through experimenting with values, styles, personal passions, and friendships. Teenagers, with their boundless curiosity and desire for self-expression, often find that ordinary language falls short in capturing their true emotions. In such moments, art becomes a remarkable tool.

On this topic, I feel incredibly fortunate to come across the book “Awakening Notes” by Tricia Tunstall, which shares stories from the 35-year journey of El Sistema, a free public music education program in Venezuela. This initiative has enabled children and teenagers from disadvantaged backgrounds to develop holistically, not only in music but also in other aspects of life. When basic needs like food and clothing are scarce, does art still matter? The reality, proven over 35 years, shows an increase in responsible, confident, and self-respecting musicians and citizens, alongside a significant reduction in youth involvement in gangs. For those young people rescued from poverty and despair, El Sistema has been nothing short of a miracle, bringing hope, passion, and vibrant energy to their lives.

Even more fortunately, in my country, Vietnam, dedicated artists like Pianist Trang Trinh have brought the magic of El Sistema to orphaned and disadvantaged children at SOS Children’s Villages through the “Miracle Choir & Orchestra” project. Without hesitation, I joined this initiative, experiencing and witnessing firsthand the transformative power of music for these children. It was heartwarming to see their innocent faces eagerly awaiting weekend music lessons, their eyes sparkling with joy as they tried on shoes and uniforms before performances, and their shy yet hopeful voices singing. There was also a pang of sadness seeing their chapped hands clasped together in the cold or their long, heartfelt hugs. But when they sang together, it felt as though all the sadness in the world vanished.

This is why I chose to become an arts educator—a passionate, dedicated one who strives to fill children’s lives with color and joy.

In the past, I taught piano the way I was taught: listen, practice, perform. But I noticed some students yawning! Over five years of studying in non-professional art education at external centers, hundreds of students who studied with me dropped out for reasons like lack of talent, difficulty, boredom, or loss of motivation. In the following five years at a professional arts school, only 6 out of 15 students who passed the entrance exam graduated.

This led me to apply everything I learned in psychology, teaching through various methods like games, new lesson plans, original melodies, and creative rewards. Artificial Intelligence (AI) became an invaluable tool in achieving my goals. I created animated films about the childhoods of famous composers like Chopin and Beethoven, and used AI to illustrate art movements, such as muses, to make lessons more memorable than dry textbook lectures. Online lessons, music games to train rhythm and reflexes, and other innovations made teaching and learning more engaging and enjoyable for both my students and me.

At MiHu Art, the arts education system I founded seven years ago, my students—some of whom started as tiny tots and have now outgrown their teachers—consistently radiate smiles and confidence on major stages, including international platforms like the Hong Kong International Music Festival. Seeing a shy child, who once hid behind their parents when asking to join, now shining like a star on an international stage is no longer a distant dream. It is the result of our collective, relentless efforts to grow.

We are deeply grateful and extend our heartfelt thanks to the organizers of the Hong Kong International Music Festival for creating not just an international competition but a cherished memory in the lives of every participant, their families, and their teachers.

We wish the Hong Kong International Music Festival continued growth and resounding success!

## 音乐教育学术报告 Music Education Academic Report



弓孙钰琪  
Gigi Gong

琪钰艺术学堂主理人

### 如何善用音乐教育引领儿童及青少年

**摘要：**本文深入且全面地探讨了音乐教育对于儿童及青少年的重大意义、当前的实际状况以及存在的突出问题，并针对性地提出了一系列切实可行的应对策略。通过详尽阐述音乐教育在推动智力进步、培育情感认知与表达能力、提升审美水平等多方面的关键作用，深度剖析了当下社会音乐教育机构的发展态势以及家庭对音乐教育的重视程度。针对社会音乐教育质量参差不齐和家庭音乐教育存在缺失的现状，明确提出了规范社会音乐教育和强化家庭音乐教育的有效举措，旨在为更有效地借助音乐教育引领儿童及青少年实现全方位发展提供具有建设性的参考和指导。

**关键词：**音乐教育；儿童；青少年

#### 一、引言

音乐，作为一种跨越语言和文化的艺术形式，拥有着触动心灵、启迪智慧的独特魅力。对于儿童及青少年而言，音乐教育不仅仅是音符与旋律的传授，更是塑造其性格、培养其创造力和审美能力的重要途径。在当今社会，随着人们对素质教育的日益重视，音乐教育在儿童及青少年成长过程中的地位愈发凸显。然而，如何充分发挥音乐教育的积极作用，使其成为引领孩子们走向美好未来的有力向导，仍然是一个值得深入思考和探索的重要课题。

#### 二、音乐教育对儿童及青少年的重要性

##### （一）促进智力发展

音乐教育对于儿童及青少年的智力发展具有不可低估的促进作用。学习音乐的过程涉及到多个认知领域的协同运作，包括感知觉、注意力、记忆力、想象力和思维能力等。例如，学习乐器演奏需要孩子们精准地感知音符的高低、长短和强弱，同时协调手指的动作，这有助于提高他们的听觉敏感度和身体协调性。在演奏过程中，孩子们需要记住乐谱、把握节奏、理解音乐的结构和情感内涵，这对于锻炼他们的记忆力和逻辑思维能力具有显著效果。研究表明，长期接受音乐训练的儿童在空间认知、数学推理和语言学习等方面表现出更强的能力。例如，学习钢琴可以帮助儿童更好地理解空间关系，提高他们的空间想象力；参与合唱团的排练能够增强儿童的团队协作能力和沟通能力，这些能力在解决数学问题和语言表达时同样发挥着重要作用。此外，音乐创作活动能够激发孩子们的创造力和想象力，让他们学会用独特的方式表达自己的想法和感受，为日后的创新思维和问题解决能力奠定基础。

##### （二）培养情感认知和表达

音乐作为一种情感的语言，能够为儿童及青少年提供一个安全而有效的情感表达渠道。不同风格和情感色彩的音乐作品能够引发孩子们内心深处各种细腻的情感体验。欢快的旋律可能让他们感受到喜悦和活

力，悲伤的曲调则可能引发他们的同情和共鸣。通过欣赏和参与音乐表演，孩子们逐渐学会识别和理解自己以及他人的情感状态，从而增强情感的敏感度和同理心。音乐教育还能够帮助儿童及青少年学会用恰当的方式表达自己的情感。无论是通过歌唱、演奏乐器还是创作音乐，孩子们都能够将内心复杂的情感转化为具体的声音形式。这种情感表达的能力不仅有助于他们释放压力、调节情绪，还有利于培养他们积极乐观的心态和健康的人格。例如，当一个孩子在经历挫折或困难时，通过弹奏一首激昂的乐曲来宣泄内心的沮丧和愤怒，能够帮助他们更快地从负面情绪中走出来，重新找回自信和勇气。

### （三）提升审美能力

审美能力是个体对美的感知、欣赏和评价的能力，对于儿童及青少年的全面发展至关重要。音乐教育作为一种艺术教育形式，能够在提升孩子们审美能力方面发挥独特的作用。通过接触各种类型的音乐作品，如古典音乐、民间音乐、流行音乐等，孩子们能够领略到不同风格音乐所蕴含的独特魅力，从而拓宽审美视野，丰富审美经验。在欣赏音乐的过程中，孩子们学会分辨优美的旋律、和谐的和声、丰富的节奏以及细腻的演奏技巧等，逐渐形成自己对音乐美的判断标准和欣赏品味。同时，参与音乐创作和表演活动能够让孩子们亲身体验美的创造过程，进一步提高他们对美的感知和表达能力。良好的审美能力不仅能够让孩子们在音乐领域中获得更深层次的艺术享受，还能够影响他们对生活中其他艺术形式以及美好事物的感知和欣赏，培养他们对生活的热爱和对美的追求。

## 三、音乐教育的现状

### （一）社会音乐教育机构的发展状况

近年来，随着社会经济的发展和人们对素质教育需求的不断增长，社会音乐教育机构呈现出蓬勃发展的态势。这些机构在满足广大儿童及青少年音乐学习需求的同时，也为推动音乐教育的普及和发展做出了积极贡献。然而，在快速发展的过程中，社会音乐教育机构也面临着一系列问题和挑战。一方面，市场竞争的加剧导致部分机构为了追求短期利益而忽视教学质量。一些机构在招生宣传时夸大其词，实际教学过程中却无法提供与宣传相符的优质课程和师资。另一方面，师资队伍的整体水平参差不齐。虽然有部分具有专业背景和丰富教学经验的教师，但也存在一些未经系统培训、教学能力不足的从业人员。此外，教学内容和方法的同质化现象较为严重，缺乏创新和个性化，难以满足不同学生的学习需求。

### （二）家庭对音乐教育的重视程度

家庭作为孩子成长的第一环境，对音乐教育的重视程度直接影响着孩子的音乐学习态度和效果。目前，家庭对音乐教育的重视程度呈现出明显的差异。一部分家庭充分认识到音乐教育对孩子综合素质提升的重要性，积极为孩子创造良好的音乐学习条件。他们不仅为孩子购买乐器、报名参加音乐培训课程，还会在日常生活中营造浓厚的音乐氛围，鼓励孩子参与音乐活动。这些家庭通常注重培养孩子的音乐兴趣和爱好，尊重孩子的个性发展，将音乐教育视为孩子全面发展的重要组成部分。另一部分家庭对音乐教育的重视程度相对较低。他们可能认为音乐教育对孩子的未来发展影响不大，更关注孩子的学业成绩和升学考试。在这些家庭中，音乐教育往往被视为一种课外的消遣活动，缺乏系统的规划和投入。还有一些家庭虽然意识到音乐教育的重要性，但由于自身经济条件或教育观念的限制，无法为孩子提供足够的支持和引导。

## 四、音乐教育存在的问题

### (一) 社会音乐教育质量参差不齐

1. 缺乏统一的教学标准和课程体系。目前，社会音乐教育市场缺乏统一的教学标准和规范的课程体系。各机构自行制定教学内容和教学进度，导致教学质量难以衡量和比较。有些机构为了迎合家长的需求，过于追求短期的教学成果，如让孩子快速通过等级考试，而忽视了音乐素养和综合能力的培养。

2. 师资队伍建设和有待加强。社会音乐教育机构的师资来源广泛，部分教师缺乏专业的音乐教育背景和系统的教学培训。一些兼职教师可能由于工作时间不稳定，无法全身心投入教学工作，影响教学质量。此外，教师的教学方法和理念也存在差异，部分教师仍然采用传统的灌输式教学方法，缺乏对学生个性和兴趣的关注。

3. 教学设施和教材选用不规范。部分社会音乐教育机构在教学设施的配备上存在不足，如教学场地狭小、乐器设备陈旧等。同时，教材的选用也较为随意，有些机构使用未经权威认证的自编教材，内容缺乏科学性和系统性，无法为学生提供优质的学习资源。

### (二) 家庭音乐教育的缺失

#### 1. 家长对音乐教育的认识不足

部分家长对音乐教育的理解存在偏差，认为学习音乐只是为了培养一项特长或获得等级证书，而忽视了音乐对孩子情感、智力和审美发展的重要作用。有些家长将自己未实现的音乐梦想强加给孩子，导致孩子在学习过程中产生抵触情绪。

#### 2. 缺乏家庭音乐氛围的营造

在许多家庭中，音乐活动的开展非常有限，缺乏日常的音乐欣赏和交流。家长没有为孩子创造一个充满音乐元素的生活环境，使得孩子无法在潜移默化中感受音乐的魅力。

3. 家长无法给予有效的指导和支持由于家长自身音乐素养的限制，在孩子学习音乐的过程中，无法提供专业的指导和帮助。当孩子遇到困难或挫折时，家长也难以给予正确的引导和鼓励，导致孩子容易失去学习音乐的信心和兴趣。

## 五、善用音乐教育引领儿童及青少年的对策

### (一) 规范社会音乐教育

#### 1. 建立健全行业规范和监管机制

政府相关部门应加强对社会音乐教育行业的规范和管理，制定明确的准入标准和监管制度。加强对机构资质、师资队伍、教学设施等方面的审核和监督，确保机构的合法性和规范性。同时，建立投诉举报渠道，加强对违规机构的查处力度，维护市场秩序。

#### 2. 推动教学标准化和课程体系建设

组织音乐教育专家和一线教师共同研究制定统一的教学标准和课程体系，明确教学目标、教学内容和教学方法。鼓励机构根据自身特点和学生需求进行适当的创新和调整，但要确保教学质量符合标准要求。定期对机构的教学质量进行评估和认证，促进教学水平的整体提升。

### 3.加强师资队伍建设

提高社会音乐教育师资的准入门槛，要求教师具备相应的专业学历和教学资质。建立师资培训机制，定期组织教师参加专业培训和教学研讨活动，不断更新教学理念和方法。鼓励教师开展教学研究，探索适合儿童及青少年特点的教学模式和方法。

## (二) 强化家庭音乐教育

### 1.提高家长对音乐教育的认识

通过举办家长学校、专题讲座等形式，向家长普及音乐教育的重要性和科学方法。帮助家长树立正确的教育观念，认识到音乐教育对孩子全面发展的积极影响。引导家长尊重孩子的兴趣和个性，避免将自己的意愿强加给孩子。

### 2.营造良好的家庭音乐氛围

家长可以在家中经常播放优美的音乐作品，让孩子在日常生活中自然地接触音乐。鼓励家庭成员一起参与音乐活动，如唱歌、演奏乐器等，增进亲子关系的同时培养孩子对音乐的兴趣。还可以带孩子参加音乐会、音乐展览等活动，拓宽孩子的音乐视野。

### 3.加强与学校和社会音乐教育机构的合作

家长应积极与学校和社会音乐教育机构沟通交流，了解孩子的学习情况，共同制定个性化的音乐教育计划。学校和机构可以为家长提供专业的指导和建议，帮助家长更好地支持孩子的音乐学习。同时，家长也可以参与学校和机构组织的音乐教育活动，为孩子树立榜样。

## 六、结论

音乐教育作为一种富有感染力和创造力的教育形式，对于儿童及青少年的成长具有深远的影响。通过促进智力发展、培养情感认知和表达能力、提升审美水平等方面的作用，音乐教育为孩子们打开了一扇通向美好未来的窗户。然而，当前音乐教育在社会和家庭层面仍存在诸多问题，如社会音乐教育质量参差不齐、家庭音乐教育的缺失等。为了充分发挥音乐教育的引领作用，我们需要采取一系列措施加以改进和完善。规范社会音乐教育，建立健全行业规范和监管机制，推动教学标准化和课程体系建设，加强师资队伍建设，能够提高社会音乐教育的整体质量，为儿童及青少年提供更加优质、专业的音乐教育服务。同时，强化家庭音乐教育，提高家长对音乐教育的认识，营造良好的家庭音乐氛围，加强与学校和社会音乐教育机构的合作，能够为孩子们创造一个更加有利于音乐学习和成长的环境。总之，善用音乐教育引领儿童及青少年需要社会各界的共同努力。只有政府、学校、家庭和社会音乐教育机构携手合作，形成合力，才能为孩子们搭建起一个充满音乐魅力的成长舞台，让他们在音乐的陪伴下茁壮成长，成为具有创新精神、审美素养和健全人格的新时代人才。

# 音乐教育学术报告

## Music Education Academic Report



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## How to Effectively Utilize Music Education to Guide Children and Adolescents

### Abstract:

This paper comprehensively explores the significant importance of music education for children and adolescents, its current status, and existing challenges, while proposing a series of practical countermeasures. By elaborating on the critical role of music education in promoting intellectual development, cultivating emotional cognition and expression, and enhancing aesthetic abilities, it deeply analyzes the developmental trends of social music education institutions and the level of family emphasis on music education. In response to the uneven quality of social music education and the lack of family music education, specific measures are proposed to standardize social music education and strengthen family music education. The aim is to provide constructive references and guidance for more effectively leveraging music education to guide the holistic development of children and adolescents.

Keywords: music education; children; adolescents

### 1. Introduction

Music, as an art form that transcends language and culture, possesses a unique charm that touches the soul and enlightens the mind. For children and adolescents, music education is not merely the transmission of notes and melodies but also an essential pathway to shaping their character, nurturing creativity, and fostering aesthetic abilities. In contemporary society, with the increasing emphasis on quality education, the role of music education in the growth of children and adolescents has become more prominent. However, how to fully leverage the positive effects of music education and make it a powerful guide for children toward a brighter future remains an important topic worthy of in-depth reflection and exploration.

### 2. The Importance of Music Education for Children and Adolescents

#### 2.1 Promoting Intellectual Development

Music education plays a significant role in promoting the intellectual development of children and adolescents. The process of learning music involves the coordinated operation of multiple cognitive domains, including perception, attention, memory, imagination, and thinking. For example, learning to play a musical instrument requires children to accurately perceive pitch, duration, and dynamics while coordinating finger movements, which enhances their auditory sensitivity and physical coordination. During performance, children must memorize sheet music, grasp rhythm, and understand the structure and emotional connotations of music, all of which significantly improve their memory and logical thinking skills.

Research indicates that children who receive long-term music training demonstrate stronger abilities in spatial cognition, mathematical reasoning, and language learning. For instance, learning the piano can help children better understand spatial relationships and enhance their spatial imagination, while participating in choir rehearsals can improve teamwork and communication skills, which are equally beneficial in solving mathematical problems and language expression. Additionally, music composition

activities stimulate children's creativity and imagination, enabling them to express their thoughts and feelings in unique ways, thereby laying the foundation for future innovative thinking and problem-solving abilities.

## 2.2 Cultivating Emotional Cognition and Expression

As a language of emotion, music provides children and adolescents with a safe and effective channel for emotional expression. Music works of different styles and emotional tones can evoke a wide range of delicate emotional experiences in children. Joyful melodies may make them feel happiness and vitality, while sorrowful tunes may evoke empathy and resonance. Through listening to and participating in musical performances, children gradually learn to recognize and understand their own and others' emotional states, thereby enhancing emotional sensitivity and empathy.

Music education also helps children and adolescents learn appropriate ways to express their emotions. Whether through singing, playing instruments, or composing music, children can transform complex inner emotions into concrete sound forms. This ability to express emotions not only helps them release stress and regulate mood but also fosters a positive and optimistic attitude and healthy personality. For example, when a child experiences setbacks or difficulties, playing an uplifting piece of music to vent frustration and anger can help them recover more quickly from negative emotions and regain confidence and courage.

## 2.3 Enhancing Aesthetic Abilities

Aesthetic ability, which refers to the capacity to perceive, appreciate, and evaluate beauty, is crucial for the holistic development of children and adolescents. As a form of art education, music education plays a unique role in enhancing children's aesthetic abilities. By exposing children to various types of music, such as classical, folk, and popular music, they can appreciate the unique charm of different musical styles, thereby broadening their aesthetic horizons and enriching their aesthetic experiences.

During the process of music appreciation, children learn to distinguish beautiful melodies, harmonious chords, rich rhythms, and delicate performance techniques, gradually forming their own standards for judging and appreciating musical beauty. At the same time, participating in music creation and performance allows children to personally experience the process of creating beauty, further enhancing their perception and expression of beauty. A well-developed aesthetic ability not only enables children to derive deeper artistic enjoyment from music but also influences their perception and appreciation of other art forms and beautiful aspects of life, cultivating their love for life and pursuit of beauty.

## 3. Current Status of Music Education

### 3.1 Development of Social Music Education Institutions

In recent years, with socioeconomic development and the growing demand for quality education, social music education institutions have experienced rapid growth. While meeting the music learning needs of children and adolescents, these institutions have also contributed to the popularization and development of music education. However, during this rapid expansion, social music education institutions face a series of challenges.

On one hand, intensified market competition has led some institutions to prioritize short-term profits over teaching quality. Some institutions exaggerate their capabilities in promotional materials but fail to deliver high-quality courses and instruction in practice. On the other hand, the overall quality of teaching staff is uneven. While some teachers have professional backgrounds and extensive teaching experience, others lack systematic training and adequate teaching skills. Additionally, homogenization of teaching content and methods is a common issue, with a lack of innovation and personalization, making it difficult to meet the diverse learning needs of students.

## 3.2 Family Emphasis on Music Education

As the primary environment for children's growth, families play a crucial role in shaping children's attitudes and outcomes in music education. Currently, the level of family emphasis on music education varies significantly.

Some families fully recognize the importance of music education in enhancing children's overall development and actively create favorable conditions for their music learning. They not only purchase instruments and enroll their children in music courses but also foster a music-rich environment at home and encourage participation in musical activities. These families typically focus on cultivating children's musical interests and hobbies, respect their individuality, and regard music education as an integral part of holistic development.

Other families place less emphasis on music education, viewing it as less critical for children's future success compared to academic performance and standardized testing. In these households, music education is often treated as a casual extracurricular activity, lacking systematic planning and investment. Some families recognize the importance of music education but are unable to provide adequate support and guidance due to financial constraints or limited educational awareness.

## 4. Challenges in Music Education

### 4.1 Uneven Quality of Social Music Education

#### 1. Lack of Unified Teaching Standards and Curriculum Systems

The social music education market lacks standardized teaching guidelines and curricula. Institutions independently design teaching content and progress, making it difficult to assess and compare teaching quality. Some institutions prioritize short-term outcomes, such as helping children quickly pass proficiency exams, at the expense of cultivating musical literacy and comprehensive abilities.

#### 2. Need for Strengthening Teaching Staff:

The sources of teachers in social music education institutions are diverse, with some lacking professional music education backgrounds and systematic teaching training. Part-time teachers may struggle to fully commit to teaching due to unstable schedules, affecting teaching quality. Moreover, teaching methods and philosophies vary, with some teachers still relying on traditional rote-learning approaches and neglecting students' individuality and interests.

#### 3. Irregular Teaching Facilities and Materials:

Some institutions lack adequate teaching facilities, such as cramped spaces and outdated instruments. The selection of teaching materials is also arbitrary, with some institutions using self-compiled materials that lack scientific rigor and systematic structure, failing to provide students with high-quality learning resources.

### 4.2 Deficiencies in Family Music Education

#### 1. Limited Parental Understanding of Music Education:

Some parents hold misconceptions about music education, viewing it merely as a means to cultivate a hobby or obtain certificates while overlooking its role in emotional, intellectual, and aesthetic development. Others impose their unfulfilled musical aspirations on their children, leading to resistance and disinterest.

#### 2. Lack of a Music-Rich Home Environment:

In many households, musical activities are scarce, with little daily exposure to music appreciation or interaction. Parents fail to create a musically stimulating environment, depriving children of opportunities to experience music's charm organically.

#### 3. Insufficient Parental Guidance and Support:

Due to their own limited musical literacy, parents often cannot provide professional guidance or support when their children encounter difficulties in music learning. Without proper encouragement, children may lose confidence and interest in music.

## 5. Strategies to Leverage Music Education for Guiding Children and Adolescents

### 5.1 Standardizing Social Music Education

#### 1. Establishing Industry Regulations and Supervision Mechanisms:

Government authorities should strengthen the regulation of social music education by setting clear entry standards and oversight systems. Institutions should be evaluated for qualifications, teaching staff, and facilities to ensure compliance. Complaint channels should be established to address violations and maintain market order.

#### 2. Promoting Teaching Standardization and Curriculum Development:

Music education experts and practitioners should collaborate to develop unified teaching standards and curricula, clarifying objectives, content, and methodologies. Institutions should be encouraged to innovate while ensuring teaching quality meets benchmarks. Regular evaluations and certifications can help improve overall teaching standards.

#### 3. Enhancing Teaching Staff Quality:

Entry requirements for music educators should be raised, mandating professional qualifications and teaching credentials. Regular training and workshops should be organized to update teaching philosophies and methods. Teachers should be encouraged to engage in research and explore student-centered approaches.

### 5.2 Strengthening Family Music Education

#### 1. Raising Parental Awareness:

Workshops and seminars can educate parents about the significance and methods of music education. Parents should be guided to adopt correct educational attitudes, recognizing music's role in holistic development while respecting their children's interests and individuality.

#### 2. Creating a Music-Friendly Home Environment:

Parents can play high-quality music at home to naturally expose children to music. Family music activities, such as singing or playing instruments together, can strengthen bonds and foster musical interest. Attending concerts and exhibitions can also broaden children's musical horizons.

#### 3. Collaborating with Schools and Institutions:

Parents should communicate with schools and music institutions to understand their children's progress and co-design personalized learning plans. Schools and institutions can offer professional advice to help parents support their children's musical development. Parental participation in school music activities can also set positive examples.

## 6. Conclusion

Music education, as an expressive and creative form of learning, profoundly influences the growth of children and adolescents. By promoting intellectual development, emotional cognition, expression, and aesthetic abilities, it opens a window to a brighter future. However, challenges such as uneven social music education quality and deficiencies in family music education persist.

To maximize music education's guiding role, measures must be taken to standardize social music education through regulations, curricula, and teacher training. Simultaneously, family music education should be strengthened by raising parental awareness, fostering music-rich environments, and enhancing collaboration with schools and institutions.

In summary, leveraging music education to guide children and adolescents requires collective efforts from all sectors of society. Only through cooperation among governments, schools, families, and institutions can we build a vibrant platform for musical growth, enabling children to thrive with creativity, aesthetic appreciation, and well-rounded personalities in the new era.

## 音乐教育学术报告 Music Education Academic Report



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### 上海音乐学院人工智能音乐疗愈舱设计与应用前景

摘要：针对现代社会日益突出的心理健康问题，本研究设计并开发了全球首款人工智能音乐疗愈舱。该系统集成了WFS (Wave Field Synthesis) 波场合成全息声空间音频技术、生物反馈监测系统和人工智能音乐生成算法，构建了“监测-评估-生成-体验-反馈”的闭环疗愈体系。通过密集扬声器阵列实现声场物理重构，结合实时生理数据监测与AIGC技术，系统能够动态生成个性化的三维空间音频疗愈内容。该疗愈舱在睡眠障碍、抑郁情绪管理、神经退行性疾病康复、早产儿护理、罕见病干预及老年健康管理等多个领域展现出应用潜力。研究成果实现了音乐疗愈从经验医学向精准医学的转型，为构建多层次心理健康服务体系提供了创新解决方案，对推动音乐疗愈技术产业化发展具有重要意义。

关键词：人工智能；音乐疗愈；WFS波场合成；空间音频

世界卫生组织统计，全球约有超过3亿人患有抑郁症，焦虑、情绪障碍等问题也呈现上升趋势，我国老年人、青少年及特殊职业人群对心理疗愈的需求尤为迫切。音乐疗愈作为一种非药物干预方式，虽已在医疗康复、情绪调节和压力管理等领域得到应用，但现有技术产品仍存在沉浸感不足、智能化程度低等局限。本研究旨在通过空间音频全息声技术与音乐疗愈内容创制，打造沉浸式音乐疗愈系统，为医疗康复中心、心理疗愈机构及康养场景提供创新解决方案，对推动音乐疗愈技术创新、提升心理健康服务质量具有重要意义。

#### 2. 人工智能音乐疗愈舱的设计理念

上海音乐学院人工智能音乐疗愈重点实验室研发全球首款“上海音乐学院人工智能音乐疗愈舱”，集智能音乐生成、生物反馈调节与沉浸式环境干预于一体，致力于打造沉浸式疗愈空间。在疗愈舱内覆盖减压、睡眠、音药协同等核心场景，实现“精准匹配、动态优化、跨界融合”三大突破。

作为人工智能与音乐疗愈的交叉研究成果，该疗愈舱在技术上取得三大突破：首创基于生理数据的智能音乐匹配算法，开发动态优化的个性化疗愈方案，并实现声学工程、生物传感与人工智能技术的深度融合。其核心系统可实时监测用户生理指标，通过机器学习算法生成适配的声波频率与环境参数，形成“监测-生成-干预”的闭环疗愈体系。

上海音乐学院人工智能音乐疗愈舱还将WFS技术与波场合成算法结合，搭建了“人工智能神经声学”技术矩阵。通过实时声场分析与空间音频算法，可生成三维全息声场，使声波精确覆盖用户听觉感知区域，WFS空间音频系统将音乐内容转化为具有空间方位感的声波刺激，实现声波频率与脑



上图为WFS波场合成全息声空间音频人工智能音乐疗愈舱

#### 1. 引言

现代社会生活节奏加快，心理健康问题日益突出。据世

波的精准共振调节，形成“声-生理”协同干预机制。这种声场重构能力使得音乐疗愈从传统听觉体验升级为多维度感知干预。

### 3. 应用场景分析

上海音乐学院人工智能音乐疗愈重点实验室基于当前社会心理健康服务需求的多元化趋势，构建了覆盖多种疾病类型和特殊人群的音乐疗愈应用体系。该系统通过人工智能技术与音乐疗愈的深度融合，针对不同应用场景开发了专门的干预方案。

在睡眠障碍干预方面，系统运用音乐人工智能生成技术，根据个体睡眠生理数据动态调整音乐参数，在医院睡眠中心和社区健康管理机构得到应用。针对抑郁情绪管理，特别是中小学生学习心理健康监测需求，疗愈舱通过情绪映射技术实现情绪状态的实时评估与音乐干预，为校园心理健康室提供了标准化的筛查和干预工具。

对于神经退行性疾病患者，系统为阿尔茨海默症、帕金森病等患者设计了认知刺激和运动协调的音乐疗愈方案，在养老院和康复中心形成了系统化的应用模式。早产儿音乐疗愈（CMT）模块采用特定频率和节奏的音乐，辅助新生儿重症监护室的临床护理。针对罕见病群体，包括自闭症谱系障碍、注意缺陷多动障碍（ADHD）以及原发性和继发性癫痫（特别是儿童癫痫），系统通过多模态融合技术，整合视觉、听觉和触觉刺激，构建个性化的感知觉统合训练环境。

在老年人健康管理领域，疗愈舱不仅提供日常的情绪调节和认知训练功能，还特别开发了临终关怀声音场域模块，通过营造舒缓、安详的声音环境，为临终患者及其家属提供心理支持。这种沉浸式个性化的音乐疗愈环境，结合WFS波场合成全息声空间音频技术，实现了精准的声场控制和个体化的听觉体验。

通过上述多场景应用，人工智能音乐疗愈舱不仅为医疗

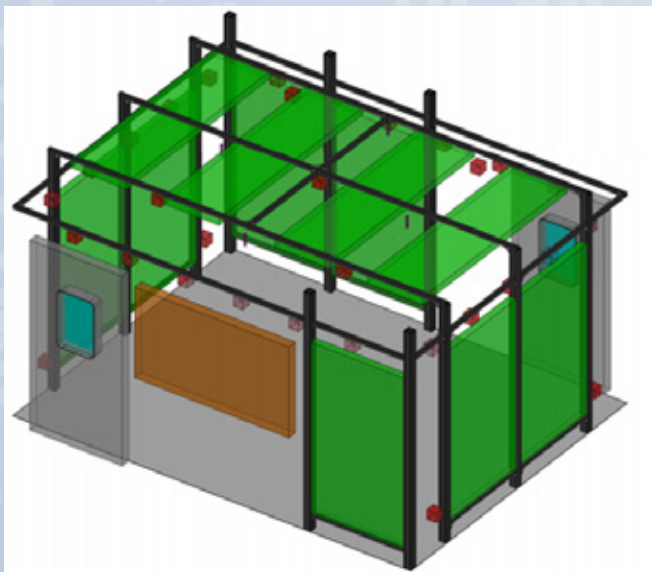
机构、教育机构、养老机构等提供了创新的健康管理工具，也为音乐疗愈的循证研究提供了标准化的实验平台，推动了音乐疗愈从经验医学向精准医学的转型。

### 4. 工作机理与脑波音乐技术

人工智能音乐疗愈舱的工作机理构建了一个完整的“监测-评估-生成-体验-反馈”闭环系统。系统首先通过高精度的生理指标捕捉设备进行多维度监测，包括脑电帽对 $\delta$ 波（0.5-4Hz）和 $\theta$ 波（4-7Hz）等脑波活动的实时追踪，以及HRV（心率变异性）和血氧饱和度的持续监测，全面掌握受试者的生理状态。在疗愈开始前，系统采用专门研发的“人工智能音乐疗愈舱体验前评估量表”（Artificial Intelligence Music Therapy Pod Pre-assessment Scale Test），对受试者的心理状态、音乐偏好、健康需求等进行综合评估，建立个性化的用户画像。

基于评估结果和实时生理数据，系统运用音乐人工智能AIGC技术，结合WFS波场合成全息声空间音频算法，实时生成针对每位受试者的个性化空间音频疗愈内容。AIGC系统通过深度学习分析海量音乐疗愈数据，理解不同音乐元素对人体身心的影响规律，动态调整节奏、音色、和声等参数，而WFS技术则将这些音乐内容以三维空间音频形式呈现，创造环绕流动的沉浸式声场。

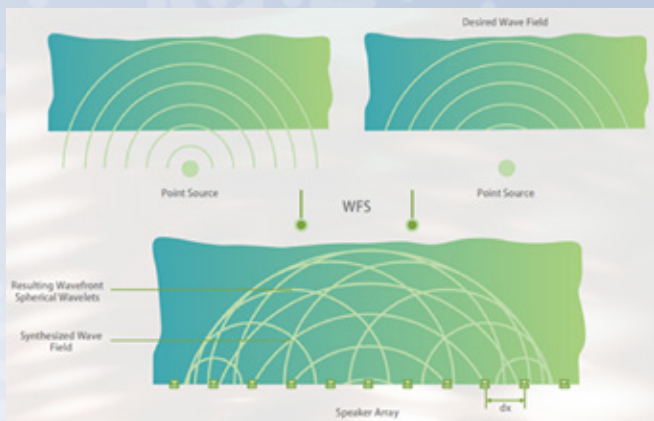
受试者躺卧在专门设计的零重力座椅上，该座椅参考航天技术，让人体处于最放松的姿态，促进深度冥想状态的达成。在这种状态下，空间音频如同无形之手对大脑和心灵进行温柔“抚摸”，声波从多个方向以不同强度和频率包围受试者，通过听觉、骨传导和体感振动等多种途径作用于身心系统。整个过程中，系统持续监测生理指标变化并形成动态反馈：当检测到 $\theta$ 波增强等放松信号时，音乐相应调整为更舒缓的模式；若 $\beta$ 波过强暗示紧张状态，则通过渐进式节奏调整 and 低频增强等技术引导放松。这种实时响应的闭环机制确保疗愈始终保持最佳效果，每次体验都根据受试者的即时反应进行优化，真正实现了个性化、智能化的音乐疗愈体验。



上图为WFS波场合成全息声空间音频人工智能音乐疗愈舱设计模型

## 5. WFS波场合成全息声空间音频技术原理与应用创新

WFS ( Wave Field Synthesis ) 波场合成技术是基于惠更斯原理的革命性空间音频重构技术。该原理指出，波前上的每一点都可视为新的子波源，这些子波的包络面构成了新的波前。在声学应用中，WFS通过密集排列的扬声器阵列，每个扬声器作为独立的子波源，通过精确控制各扬声器的延时和振幅，在三维空间中重构目标声场的物理结构。



上图为WFS波场合成技术原理图

从声波传播的物理学角度，自然界中的声波主要以球面波和平面波两种形式存在。点声源产生的球面波随距离增加而衰减，而平面波则保持恒定振幅传播。WFS技术的核心创新在于，通过扬声器阵列的协同工作，能够在有限空间内精确模拟这两种波型，甚至重构复杂声场中任意位置的声波物理结构。这种技术突破了传统立体声和环绕声系统的局限，实现了声场的物理重构而非心理声学近似。

在人工智能音乐疗愈舱的应用中，WFS技术展现出三个关键优势。首先，虚拟声场实时重构能力使疗愈舱能够模拟森林、海洋、山谷等自然声景环境，以及音乐厅、教堂等特定声学空间，为不同疗愈需求提供最适宜的声场环境。其次，通过上中下三层式扬声器阵列设计，实现了声场的均匀分布和精准的方向性控制，每个聆听位置都能获得一致的空间音频体验，克服了传统音响系统的“皇帝位”限制。第三，WFS的声像定位精度极高，能够创造声音在三维空间中自由移动的轨迹，实现真正的沉浸式体验。

该技术在音乐疗愈中的创新性体现在其“靶向性”干预能力。通过实时计算和调整声波参数，系统能够让特定频率的声音从特定方向作用于受试者，实现对大脑不同区域的定向刺激。这种精准的声学控制为神经音乐疗法提供了前所未有的干预精度。

WFS技术的不可替代性源于其物理声场重构的本质。与基于心理声学的虚拟环绕声不同，WFS重建的是真实的声波物理结构，不依赖于听者的位置和听觉心理模型。这种客观的声场重构确保了疗愈效果的稳定性和可重复性，为音乐疗愈的标准化和循证研究提供了可靠的技术基础。结合人工智能算法的实时优化，该系统能够根据生理反馈动态调整声场参数，实现真正的个性化精准音乐疗愈，代表了音乐疗愈技术发展的前沿方向。

## 6. 线下体验的疗愈舱空间音频内容

WFS波场合成全息声空间音频技术的核心优势在于其线下体验的不可替代性，这一特性决定了疗愈舱必须采用实体空间的呈现方式。与传统耳机技术、线上平台或多声道系统相比，波场合成技术通过精确控制声波的物理传播路径，在三维空间中重构完整的声场，使受试者能够感知到声源的精准定位、距离感和空间包围感，这种沉浸式体验是其他技术手段无法实现的。基于这一技术特性，疗愈舱的内容设计围绕三个核心维度展开。首先，自然声景模块通过高度虚拟现实仿真技术，可用于构建涵盖中国声音地图和世界声音地图的声景数据语料库，如将不同地域的声场特性——从西双版纳的热带雨林到北欧的极地冰川——进行高保真还原，让受试者在声音空间中实现跨越时空的情感共鸣。



上图为WFS波场合成智能声音对象追踪控制技术

其次，大师疗愈模块采用空间音频录音艺术手段，专门录制古琴、琵琶、古筝等中华传统乐器的非遗版权音乐，将“讲好中国故事，展现中国精神”的文化理念融入音乐疗愈实践，同时创新性地引入戏曲疗愈元素，拓展了传统音乐疗愈的边界。

人工智能脑波音乐模块代表了技术创新的前沿方向，通过持续训练高质量的版权音乐语料库，结合深度学习算法分析受试者的脑电波特征，实时生成个性化的疗愈音乐，实现了从“标准化疗愈”向“精准化干预”的范式转移。

这三个维度的有机结合，使得疗愈舱不仅是一个技术产品，更是融合了文化遗产、科技创新和商业模式创新的综合性解决方案，为音乐疗愈领域开辟了新的发展路径。

## 7. 结语与发展前瞻

人工智能音乐疗愈舱作为音乐疗愈技术的创新成果，展现出广阔的发展前景。在社会价值层面，该技术将为我国构建多层次心理健康服务体系提供重要支撑，特别是在老龄化社会背景下，为认知障碍防治、慢病康复管理贡献新路径。在经济价值方面，音乐疗愈舱有望催生千亿级健康产业新赛道，通过“设备制造+内容生产+服务运营”的全产业链模式，带动音乐版权、医疗器械、健康管理等相关产业协同发展，为数字经济与健康产业深度融合探索新模式。

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上海设计100+获奖设计师

上海市多媒体行业协会理事

# 音乐教育学术报告

## Music Education Academic Report



徐真德

Zhende Xu

Shanghai Conservatory of Music Key Laboratory of AI Music Therapy, Specially Appointed Expert

Chief Recording Engineer

## Design and Application Prospects of the Artificial Intelligence Music Therapy Pod at Shanghai Conservatory of Music

**Abstract:** In response to the increasingly prominent mental health issues in modern society, this research has designed and developed the world's first artificial intelligence music therapy pod which integrates WFS (Wave Field Synthesis) holographic spatial audio technology, biofeedback monitoring systems, and artificial intelligence music generation algorithms, establishing a closed-loop therapeutic system of "monitoring-assessment-generation-experience-feedback". Through speaker arrays achieving physical sound field reconstruction, combined with real-time physiological data monitoring and AIGC technology, the system can dynamically generate personalized three-dimensional spatial audio therapeutic content. The therapy pod demonstrates application potential in multiple fields including sleep disorders, depression management, neurodegenerative disease rehabilitation, premature infant care, rare disease intervention, and elderly health management. The research outcomes have achieved the transformation of music therapy from empirical medicine to precision medicine, providing innovative solutions for building a multi-level mental health service system and holding significant importance for promoting the industrialization of music therapy technology.

**Keywords:** artificial intelligence; music therapy; WFS wave field synthesis; spatial audio

Figure 1: Artificial Intelligence Music Therapy Pod by SHCM

### 1. Introduction

In modern society, the accelerated pace of life has led to a growing prominence of mental health issues. According to statistics from the World Health Organization, over 300 million individuals globally suffer from depression, with rising trends in anxiety and emotional disorders. In China, the demand for mental health therapy is particularly urgent among the elderly, adolescents, and special occupational groups. While music therapy has already found applications in medical rehabilitation, emotional regulation, and stress management as a non-pharmacological intervention, existing technological products face limitations such as insufficient immersion and low levels of intelligence. This study aims to utilize Spatial Audio and Full Dimension Spatial Audio technologies alongside the creation of music therapy content to develop an immersive music therapy system. By providing innovative solutions to medical rehabilitation centers, mental health therapy institutions, and wellness settings, it seeks to advance music therapy technology innovation and enhance the quality of mental health services.



## 2. Design Concept of Artificial Intelligence Music Therapy Pod

The Artificial Intelligence Music Therapy Pod by SHCM, developed by the key laboratory of Artificial Intelligence Music Therapy at SHCM, is the world's first of its kind, integrating intelligent music generation, biofeedback regulation, and immersive environmental intervention to create an immersive therapeutic space. Within the pod, core scenarios such as stress reduction, sleep enhancement, and sound therapy synergy are facilitated, achieving breakthroughs in "precise matching, dynamic optimization, and cross-disciplinary integration."

As an interdisciplinary achievement in artificial intelligence and music therapy, the therapy pod introduces three major technological breakthroughs: the pioneering of an intelligent music-matching algorithm based on physiological data, the development of dynamically optimized personalized therapy solutions, and the deep integration of acoustic engineering, biosensing, and artificial intelligence technologies. Its core system can monitor user physiological parameters in real-time and utilize machine learning algorithms to generate suitable sound frequencies and environmental parameters, forming a monitoring-generation-intervention closed-loop therapeutic system.

The Artificial Intelligence Music Therapy Pod by SHCM further integrates WFS technology with wave field synthesis algorithms to construct an "Artificial Intelligence Neuro-Acoustics" technology matrix. Through real-time sound field analysis and spatial audio algorithms, it generates three-dimensional holographic sound fields to precisely cover the user's auditory perception region. The WFS Spatial Audio system translates music content into spatially oriented sound stimuli, aligning sound wave frequencies with brainwave resonance for precise regulation, establishing a "sound-physiology" synergistic intervention mechanism. This capability to reconstruct sound fields elevates music therapy from traditional auditory experiences to multidimensional perceptual interventions.

## 3. Application Scenario Analysis

The key laboratory of Artificial Intelligence Music Therapy at SHCM, in response to the diversified trends in social mental health service demands, has developed a music therapy application system encompassing various disease types and special populations. This system leverages deep integration of artificial intelligence technology with music therapy to create specialized intervention plans for different application scenarios.

In sleep disorder intervention, the system employs artificial intelligence music generation technology to dynamically adapt music parameters based on individual sleep physiological data, and has been applied in hospital sleep centers and community health management institutions. For depression emotional management, particularly addressing the need for psychological health monitoring among middle and primary school students, the therapy pod uses emotion mapping technology to achieve real-time evaluation of emotional states and music interventions, thereby providing standardized screening and intervention tools for campus psychological wellness centers.

For patients with neurodegenerative diseases, the system has designed music therapy solutions for cognitive stimulation and motor coordination tailored to patients with Alzheimer's and Parkinson's disease, creating systematic application models in nursing homes and rehabilitation centers. The CMT module for premature infants employs specific frequencies and rhythms of music to aid clinical care in neonatal intensive care units. For rare disease populations, including autism spectrum disorders, Attention Deficit Hyperactivity Disorder (ADHD), and epilepsy (especially pediatric epilepsy), the system integrates multimodal fusion technology to provide personalized integration training environments encompassing visual, auditory, and tactile stimulation.

In the realm of elderly health management, the therapy pod not only offers regular emotional regulation and cognitive training functions but also features a hospice care sound field module to create soothing and serene sound environments, providing psychological support to terminal patients and their families. This immersive and personalized music therapy environment, combined with the WFS wave field synthesis holographic sound space and Spatial Audio technology, enables precise sound field control and individualized auditory experiences.

Through the above applications across multiple scenarios, the Artificial Intelligence Music Therapy Pod by SHCM not only provides innovative health management tools for medical institutions, educational institutions, and elderly care facilities but also establishes standardized experimental platforms for evidence-based music therapy research, promoting the transformation of music therapy from empirical medicine to precision medicine.

## 4. Mechanisms of Action and Brainwave Music Technology

The Artificial Intelligence Music Therapy Pod by SHCM operates through a comprehensive closed-loop system involving monitoring, assessment, generation, experience, and feedback. Physiological states are captured using high-precision monitoring devices, including real-time tracking of brainwave activity such as  $\delta$  waves (0.5–4 Hz) and  $\theta$  waves (4–7 Hz) with EEG caps, as well as continuous monitoring of HRV (heart rate variability) and blood oxygen saturation. Before therapy begins, the system employs a specially developed Artificial Intelligence Music Therapy Pod Pre-assessment Scale to comprehensively assess subjects' psychological states, musical preferences, and health needs, creating personalized user profiles.

Based on assessment results and real-time physiological data, the system utilizes AI-generated content (AIGC) technology combined with Wave Field Synthesis (WFS)-based Full Dimension Spatial Audio algorithms to generate personalized spatial audio therapy content in real time for each subject. The AIGC system employs deep learning to analyze vast music therapy datasets, understanding how different musical elements affect body and mind dynamics, while dynamically adjusting parameters such as rhythm, timbre, and harmony. The WFS technology presents this music content in the form of immersive spatial audio, generating a flowing 3D soundscape.

Subjects recline on specially designed zero-gravity chairs inspired by aerospace technology, which position the body at its most relaxed state to facilitate deep meditation. In this state, Spatial Audio gently stimulates the brain and mind, enveloping subjects from multiple directions with varying intensities and frequencies through auditory perception, bone conduction, and sensory vibrations. During the experience, the system continuously monitors physiological indicators to provide dynamic feedback: music shifts to a more soothing mode when relaxation signals such as enhanced  $\theta$  waves are detected; high  $\beta$  waves indicating tension are addressed with gradual rhythm adjustments and low-frequency enhancements. This real-time responsive closed-loop mechanism ensures optimal therapeutic effects, tailoring each session to the subject's instant feedback for a personalized and intelligent music therapy experience.

The above figure presents the design model for the Artificial Intelligence Music Therapy Pod by SHCM incorporating Wave Field Synthesis-based Full Dimension Spatial Audio technology.

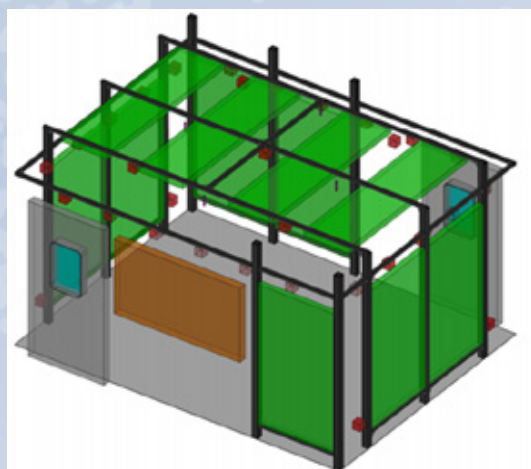


Figure 2: Artificial Intelligence Music Therapy Pod by SHCM design model

## 5. Principles and Innovative Applications of Wave Field Synthesis-based Full Dimension Spatial Audio Technology

Wave Field Synthesis (WFS) is a groundbreaking spatial audio reconstruction technology based on Huygens' principle. The principle states that each point on a wavefront acts as a new secondary wave source, with the envelope of these secondary waves forming a new wavefront. In acoustic applications, WFS utilizes densely arranged loudspeaker arrays, where each loudspeaker functions as an independent secondary wave source. By precisely controlling delays and amplitudes, the physical structure of the target sound field is reconstructed in three-dimensional space.

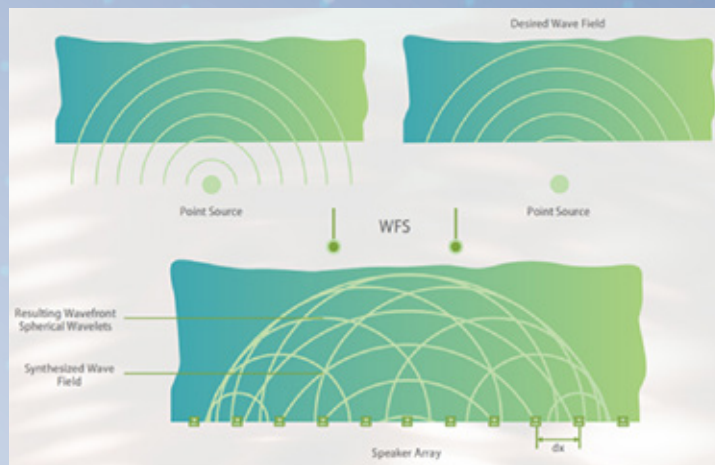


Figure 3: Principle of Wave Field Synthesis technology

From the perspective of sound wave propagation physics, natural sound waves primarily exist as spherical waves and planar waves. Spherical waves from point sound sources attenuate with distance, whereas planar waves maintain constant amplitude. The core innovation of WFS technology lies in its ability to precisely simulate these waveforms within limited spaces through collaborative loudspeaker arrays, even reconstructing the physical structure of sound waves at any point within complex sound fields. This breakthrough transcends traditional stereo and surround sound system limitations, achieving physical sound field reconstruction rather than psychoacoustic approximations.

In applications within the Artificial Intelligence Music Therapy Pod by SHCM, WFS technology demonstrates three key advantages. First, its ability to recreate virtual sound fields in real time enables the therapy pod to simulate natural acoustic landscapes such as forests, oceans, and valleys, as well as specific spaces like concert halls and cathedrals, providing optimal sound field environments tailored to diverse therapeutic needs. Second, the upper, middle, and lower tiered loudspeaker array design ensures uniform distribution and precise directional control of the sound field, allowing consistent Spatial Audio experiences at every listening position and overcoming the traditional "sweet spot" issue of sound systems. Third, WFS's high precision in sound image location creates trajectories for sound to move freely in three-dimensional space, delivering a truly immersive experience.

The innovation of this technology in music therapy lies in its capability for targeted interventions. By dynamically calculating and adjusting sound wave parameters in real time, the system directs sounds of specific frequencies from specific directions to stimulate particular regions of the brain, offering unprecedented precision in acoustic control for neuro-music therapy interventions.

The irreplaceability of WFS technology stems from its fundamental nature of physically reconstructing sound fields. Unlike virtual surround sound based on psychoacoustics, WFS reconstructs the real physical structure of sound waves and does not rely on listener positions or auditory psychological models. This objective sound field reconstruction ensures the stability and replicability of therapeutic outcomes, providing a reliable technical foundation for standardized and evidence-based research in music therapy. Combined with real-time optimization of artificial intelligence algorithms, the system dynamically adjusts sound field parameters based on physiological feedback, achieving truly personalized and precise music therapy, representing the cutting edge of advancements in music therapy technology.

## 6. Offline immersive content of the Artificial Intelligence Music Therapy Pod featuring Spatial Audio

The core advantage of Full Dimension Spatial Audio technology based on Wave Field Synthesis (WFS) lies in its irreplaceable offline experience, which determines that the Artificial Intelligence Music Therapy Pod must use physical space for presentation. Compared to traditional headphone technology, online platforms, or multi-channel systems, WFS technology precisely controls the physical propagation paths of sound waves to reconstruct a complete sound field in three-dimensional space.

This enables subjects to perceive precise sound source localization, distance depth, and spatial envelopment, providing an immersive experience unattainable by other technological methods. Based on these technological features, the design of the Therapy Pod's content is structured around three key dimensions. First, the natural soundscape module utilizes advanced virtual reality simulation technology to construct a soundscape data corpus covering both the Sound Map of China and the World Sound Map. It faithfully reproduces sound field characteristics of diverse regions—from the tropical rainforests of Xishuangbanna to the polar glaciers of Northern Europe—allowing subjects to experience emotional resonance transcending time and space within a sound environment.



Figure 4: WFS ISONO intelligent sound object tracking control technology

Next, the Master Therapy Module harnesses Spatial Audio recording techniques specifically to record non-material cultural heritage music copyright pieces of traditional Chinese musical instruments such as the guqin, pipa, and guzheng. These recordings integrate the cultural philosophy of narrating the Chinese story and embodying Chinese spirit into music therapy practices. Innovatively, opera therapy elements are incorporated, expanding the boundaries of traditional music therapy.

The Artificial Intelligence Brainwave Music Module represents the frontier direction of technological innovation, employing continuous training of high-quality copyrighted music corpora combined with deep learning algorithms to analyze subjects' EEG characteristics. It generates personalized therapeutic music in real time, achieving a paradigm shift from standardized therapy to precision intervention.

The organic combination of these three dimensions transforms the Therapy Pod into not merely a technological product but a comprehensive solution integrating cultural heritage, technological innovation, and business model innovation. It paves new avenues for the development in the music therapy field.

## 7. Conclusion and Future Outlook

Artificial Intelligence Music Therapy Pod, as an innovative achievement in music therapy technology, exhibits broad developmental prospects. In terms of social value, this technology provides critical support for building a multi-level psychological health service system in China, particularly addressing cognitive disorder prevention and chronic disease rehabilitation management amid an aging society. Economically, the Therapy Pod is expected to create a new trillion-scale health industry platform. Through a full-industry-chain model combining equipment manufacturing, content production, and service operations, it will drive collaborative development in music copyright, medical devices, and health management industries. Furthermore, it explores new models for the deep integration of digital economy with the health industry.

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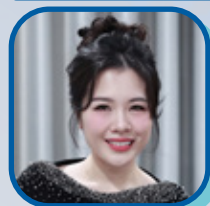
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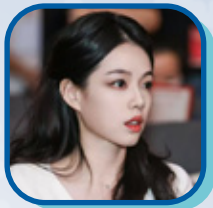
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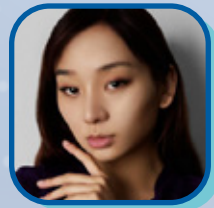
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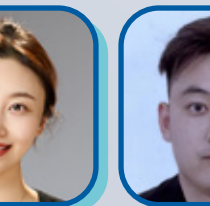
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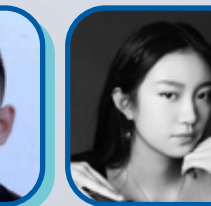
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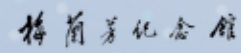
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知識



世人學習音樂  
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The Profound Impact of Traditional Music and AI-Generated Music  
on Adolescent Cognitive and mental Development



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