

WHAT PROFESSIONAL MUSIC TRAINING DOES BETTER THAN AI — THE TUT EXPERIENCE

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Abstract

The context for this paper is the Taiwan Ministry of Education's AI Pedagogical Content Knowledge (AIPACK) project to enhance the ability of teachers to incorporate artificial intelligence (AI) into the curriculum. It encourages the use of technology applications to develop comprehensive AI-related courses, facilitate partnerships between academia and industry, assess and update AI-related curricula, and give music educators an opportunity to reconfigure and strengthen their pedagogical methods. This paper contains observations and reflections from a case study of postgraduate students ($n=7$) in the Music Department of the Tainan University of Technology (TUT), Taiwan. The study involved the use of AI in teaching music alongside professional training presented by teachers with specialized knowledge and technical skills. The author compared professional music training in the Research Methods and Thesis Writing class, which involves structured learning in performance through formal schools (universities) or online platforms (Coursera), with the use of *Claude AI* for the students' performance program notes writing. The students were asked to write program notes for a concert audience about their performance of Schumann's piano piece *Papillons*, Op. 2. The author evaluated the students' program notes and the response of the audience and found that on average, professional training produced better results than AI. The paper provides insights into the relationship between human and machine creativity, which is related to important questions about the future of creative work in the age of AI.

Keywords: *Artificial Intelligence (AI), music, learning applications, professional training.*

1. Introduction

Professional music training involves rigorous skill development (10,000+ hours of practice), formal education (conservatories/universities), and crucial practical experience (performances, recordings). Modern training increasingly emphasizes entrepreneurial skills, mental health, and adaptability to a changing industry, blending artistry with business acumen, marketing, and technical proficiency, beyond just mastering an instrument. It is a blend of intense individual focus, collaborative ensemble work, and navigating the realities of a diverse, often self-managed career. While AI does a great job teaching what to play, it often misses the why. Music is an emotional, creative process. It is about expression, stage presence, body posture, breathing, and understanding the feeling behind each piece—not just the mechanics. That is where professional music institutes come in. What is the difference between my using computers to make music and computers making music without me? AI is already capable of doing deep fake vocals and creating complex synth patches. Its ability to compose new music still falls short, but any shortcomings today will likely be remedied soon. People have already embraced AI artwork and essays. Will music be following soon? The problem comes when you try to build something completely yours. If you play a piece of Schumann's Piano Piece *Papillons*, Op. 2 music according to your emotions, taste, and preferences or discover a totally new melody, this is where your acquired skill shines. But one of the most important things I have learned in all my years as a professional musician is how to play pain-free and overcome stress, making beautiful music with ease while also enjoying my life and relationships in the process.

As Merchán Sánchez-Jara et al. (2024) said, artificial intelligence (AI) is a hot topic that presents new challenges and opportunities for the improvement of educational processes. The disruptive and transformative force of this new technological development implies the adaptation of educational ecosystems for its use and integration as a didactic and pedagogical resource. From a critical perspective, the use of AI in music education highlights the challenges and opportunities, as well as the most paradigmatic areas of application, which project the development of AI in the organization and development of teaching–learning processes in music (Merchán Sánchez-Jara et al., 2024).

The best musicians will play the same piece a bit differently every time they play it, and every interpretation will be a different echo of perfection. That is why we still listen to the other members of our species playing music. The rise of AI in music has ignited a fierce debate: Is it a creative partner or existential threat? Koivisto and Grassini (2023) found that the best human ideas still matched or exceeded those of the chatbots.

This research aims to explore avenues where AI can be integrated to bolster and amplify human creativity, thereby fostering a close interaction between technology and human potential. The relationship between human and machine creativity is related to important questions about the future of creative work in the age of AI. The case of the TUT Music Department was examined to achieve this aim. The main reason for focusing on the TUT is that the study of the TUT's Music Department and its curriculum and integration of innovations has been ongoing since 2020. The TUT offers a seven-year program from high school directly to a bachelor's degree (undergraduate class) and postgraduate class in vocational education, and qualifying as a music artist first requires mastery of the general concert audience. This assumption has ensured that TUT is a leader in professional music training as music artists shift from amateur to professional status.

2. Background

Music training at all levels of education is traditionally noted as people's serious.

Like other educational programs, professional music training programs are challenged by major changes in the sociocultural and educational landscape, and addressing pedagogical changes to ensure continued excellence in music teaching is both complex and stratified (Johnson, 2020). In response to Taiwan's societal challenges, such as current issues regarding music education policy, the Ministry of Education in Taiwan amended the Arts Education Act (AEA) of 1997, which outlined the curriculum for study in the performing arts. The AEA of 1997 was related directly to Taiwan's art education reform (Law & Li, 2013). This new milestone provided a solid foundation in music education in Taiwan for all students (Ministry of Education, Taiwan, 1997). The TUT Music Department's seven-year program from high school to a bachelor's degree in vocational education has served as an example of incorporating educational innovations and interventions based on Teachout's (1997) three categories of skills/knowledge components, namely, teaching skills, personal skills, and music skills and behaviors as core competencies. Handbooks published for 2023 present the benefits and limitations of AI in TUT classrooms, for example, time-saving solutions and ethical issues, and provide concrete examples of how AI can be used to improve student outcomes. In particular, incorporating AI is noted as helpful if the experimentation with technological innovation is not only a task for the teacher but also involves the active participation of the learning community, including school organizations and parents.

3. Literature review

Research examining the impact of AI on higher education has witnessed substantial growth in recent years, as highlighted by notable studies (Al-Zahrani, 2024a; Al-Zahrani, 2024b; Bozkurt et al., 2021; Chu et al., 2022; Dai & Ke, 2022; Laupichler et al., 2022; Merchán Sánchez-Jara et al., 2024; Zawacki-Richter et al., 2019). Scholars from diverse fields, including education, computer science, psychology, and ethics, have explored various facets of AI implementation in higher education settings. Music education emphasizes emotional communication, aesthetic experience, and creative expression, which means that AI not only plays the role of an auxiliary tool in music education but has also gradually become a co-creative subject (Wang & Zhang, 2025). The Merchán Sánchez-Jara et al. (2024) research results confirm that the incorporation of AI in music education is paving the way for a more personalized, interactive, and efficient learning experience. However, there is a noticeable lack of emphasis on higher-order thinking skills, collaboration, communication, self-efficacy, and AI skills in higher education studies (Chu et al., 2022). Laupichler et al. (2022) stressed that research on AI in higher education is still in its early stages, necessitating refinement in defining AI literacy and determining appropriate content for non-experts to enhance their understanding of AI. However, Zhang (2023) emphasized the advantages of working on teaching strategies according to the unique learning profile of each student. In this sense, in line with González-Gutiérrez and Merchán-Sánchez-Jara (2022), the reflection on how, why, and for what purpose new technologies are used in educational ecosystems becomes even more relevant in the era of artificial intelligence.

At the TUT, students can receive individualized tutoring and feedback from AI based on their learning requirements and development. Students can receive individualized research support tutoring from a conversational agent built on generative AI tools, which enhances learning outcomes. The conversational agent can adjust explanations to students' comprehension levels and misconceptions.

Despite the many and obvious benefits of AI, music instructors wonder whether it can take the place of professional training that demands specialized knowledge and technical skills.

4. Schumann's Piano Piece *Papillons*, Op. 2 program notes for a classical Western concert

As an aspect of the professional music training at the graduate student level, student performers are expected to write program notes about their performances for a general concert audience, an audience of non-musicians who are interested in music and fairly knowledgeable. The goal of teaching students to write program notes is to increase the audience's understanding and enjoyment of the music performed (Blom et al., 2020).

It is assumed that program notes are naturally associated with knowing how to listen and think about the music performed at the strategic level and initiate a relationship between performers and their audiences. Therefore, students presenting recitals are encouraged to write notes for themselves and their audience, and graduate students are often asked to relate interesting facts about the composer they are studying. Knowing the historical context of a piece makes for better interpretation and a better listening experience.

In professional music training, instructors guide students every step of the way—not only helping them develop their skills but helping them to thrive in today's ever-changing music environment and encouraging them to answer their special musical calling. For example, the teacher might take time in class to explain Schumann's piano piece *Papillons*, Op. 2, as students rehearse the piece. The teacher might alert students to what was going on in inventive and descriptive titles from Schumann's piano music when he composed the piece and discussed how it is similar or different to anything audiences have heard. Much like college music lecture recitals, the teacher might discuss with the students and raise awareness of how Schumann uses titles for his movements to reflect the tempo or speed at which he wants the music to be played. The teacher might also focus on literature and reflect on including program notes to inform the audience about what was written before the piece. For example, it is the scene of the masked ball at the end of Richter's novel *Flagellar* (1804, as cited in Perahia, 2014) that provides the dramatic "setting" for the cycle, a scene in which two brothers in love with the same woman vie to win her heart amid the gaiety and varied musical offerings of a social evening with a dance orchestra. Professional music training informs the audience and facilitates a better listening experience by including what is interesting and relevant about the composer.

Therefore, the purpose of learning this musical piece goes beyond just playing good music well. It incorporates an intentional introduction to new musical discourses and tools for students to add to their cognitive understanding of how music works by helping the student (and audience) understand that music is located within time and culture. With the growth of artificial intelligence (AI) and natural language processing (NLP) technologies, chatbots have evolved significantly, becoming more capable of handling complex tasks and undertaking more human-like interactions. So, how does professional music training do better than AI? A "real" musician can learn patterns, chords, phrasing, genre styles, and emotional cues from other musicians and producers. When they create something "new," they are drawing on the influence of everything they have heard and learned. They have learned over a long time that their creativity is a mixture of memory, taste, skill, and arrangement.

5. Conclusion

AI has notable benefits such as research support and improved teaching outcomes. It can also facilitate personalized learning experiences, create adaptive learning environments, provide real-time insights into student performance, enhance the professional capabilities of cross-field talents, influence teaching methods, and support the development of critical thinking and problem-solving skills.

The shortcomings of AI include things like the cost of implementation and degradation over time compared to professional training in performance, creation, and business, ranging from university degrees (MA in Performance) to online courses (Coursera) in areas like production, songwriting, and music business.

Humans experience emotion, intention, and meaning and have personal experiences. I believe that is where music started. It is a way to express oneself in any mood. Granted, AI brings speed and flexibility, but AI does not "feel" or "experience" music; it generates music and information based on structure and data and is extremely accurate. The *human* brings the soul. Even if AI helps to write the lyrics, the human should, indeed must, put their own stamp, not just on the music, but the voice, the brand.

In practice, AI and professional training can work together. Humans provide direction, story, emotion, voice identity, authenticity, musical instruments, genres, and mixed genres. AI provides infinite creative drafts, variations, and production assistance. The research results confirm that AI cannot produce

the emotions and insights that come from professional training by a “real” teacher with specialized knowledge and skills developed through years of practice.

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