ADOPTING CHATGPT TECHNOLOGY APPROACHES IN PROFESSIONAL MUSIC TRAINING – THE TUT EXPERIENCE

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Abstract

The Ministry of Education, Taiwan, is interested in knowing about the impact of ChatGPT on the higher education curricula of music education, how technology applications can serve as learning tools, and the implications of using such tools. What follows are some observations and reflections from the Tainan University of Technology (TUT), Taiwan, and its educators' experiences of teaching music, such as thesis writing. Notable benefits include research support, grading, and enhanced human-computer interaction. The idea put forward is that technology applications require an emergent sensibility in the educational sector, and this represents an opportunity for music educators to reconfigure and strengthen their pedagogical approaches. By recognizing the accessibility of new and varied forms of musicianship and acknowledging how course curricula continue to grow in their range of practices and necessary literacies with AI technologies, strategies can be developed to support teaching enhancements, aid research, increase student retention, and serve as useful experiences for music students.

Keywords: ChatGPT, musician, online learning approaches.

1. Introduction

ChatGPT is the acronym for Chat Generative Pretrained Transformer. It was created by OpenAI and released in November 2022 (Frith, 2023). Marche (2022) suggests that ChatGPT is a disruptive technology that will change scientific and educational processes. Education, including music courses, has seen consistent growth in the use of digital technologies, but integrating ChatGPT also feels like the beginning of a revolution. ChatGPT's emergence has disrupted music education and changed how specific subjects are written about, affecting interactions among learning styles and learning patterns in language that can be recreated with machine learning (Rosalsky & Peaslae, 2023).

A key challenge exposing music's limitation for shifting to online learning is the traditionally focused face-to-face teacher-apprenticeship teaching models. The background to adopting online music courses provides fascinating insights into the higher education scene where technology and the internet supplement face-to-face learning with respect to understanding engagement in practical hands-on activities such as learning how to play a musical instrument, singing, performing solo or in groups, and improvising and composing music. One of the benefits of AI systems is that they can facilitate online learning and make education accessible to students in remote areas, leading to more equitable and inclusive education.

This research aims to explore the relationship between ChatGPT's large language models and musicians/audiences and show how teaching students to write and understand program notes can be facilitated by an artificial intelligence robot that can author essays when given a prompt. 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 in vocational education, and qualifying as a music artist first requires mastery of the general concert audience. This assumption has ensured TUT as a leader in professional music training as music artists shift from amateur to professional status.

2. Background

Like other educational programs, professional music training programs are challenged by major changes in the socio-cultural 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 (Lau & 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 directly 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.

How can ChatGPT help teams improve communication and collaboration? "The GPT models are a series of large language models trained to generate human-like text. The first version, GPT, was released in 2018 and was followed by several updated versions, including GPT-2 in 2019 and GPT-3 in 2020" (Leadership Institute, 2023). Launched in November 2020, Chat GPT is an innovative and user-friendly communication platform and tool that helps people stay connected and improves collaboration among team members (Roverba Marketing, 2023). ChatGPT highlights the significance of adaptation for AI systems and the individuals and organizations that use them (Piglet, 2023). ChatGPT can help businesses develop innovative products and services more quickly and adapt easily to technological changes and customer needs.

ChatGPT is the latest innovation to be integrated into teaching music at the TUT. This paper is focused on how ChatGPT can help maintain conversation flow and provide relevant responses, therefore helping to improve communication and collaboration between instructors and students. In the context of ChatGPT and the associated variety of industries and applications, further adaptations proved necessary to achieve the formal educational goals for the Music Department at TUT.

3. Literature review

The world has been stunned by the sophisticated ability of the generative AI tool ChatGPT to complete remarkably complex tasks since its launch (RoboticsBiz, 2023). Today, ChatGPT and chatbots are used in a wide range of industries, including customer service, healthcare, finance, and education, among others. Chatbots' development is the result of advancements in AI and NLP technologies and the increasing demand for more efficient and convenient ways to interact with technology (Kooli, 2023).

The introduction of the technology has not been without controversy, however, especially in the educational field. Incorporating ChatGPT into education has turned into a divisive issue among educators. For example, Fowler (2022) noted, "There is some concern among educators about the potential impacts of chatbots like ChatGPT on education. Some people are worried that chatbots could replace human educators or be used to automate certain teaching tasks, potentially leading to job losses" (p. 1). ChatGPT's capabilities can be roughly divided into three categories: (a) You can ask a question, and ChatGPT answers it. (b) You can ask ChatGPT to generate text, for example, an outline or a reflection on a particular topic. (c) You can enter pieces of text and ask the ChatGPT to summarise, paraphrase, translate, remove spelling mistakes, give feedback about the writing, etc. Also, suppose the author is a professor of pedagogy: One of the most significant advantages of using ChatGPT in the classroom is that it encourages active learning. Students can interact with GPT chatbots in real time, allowing them to ask questions and obtain immediate answers and enabling them to learn. ChatGPT is efficient and produces a written answer. The disadvantage is that verifying whether the answer is true and what the answer is based upon is not easy.

While some see ChatGPT as the future of education, others are more pessimistic and see it as a threat to most forms of learning and a way to make teachers and students lazy with weak or nonexistent analytical skills (RoboticsBiz, 2023). In an article in *The Atlantic*, "The College Essay is Dead," Stephen Marche states, "Nobody is prepared for how AI will transform academia." Possible drawbacks of ChatGPT in education are that research is not focused on matching the level of human interaction a real teacher or tutor provides. For example, Kooli (2023) noted that ChatGPT can only work on one task and respond to one query at a time.

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

In the following section, Schumann's Piano Piece Papillons, Op. 2 is used as an example to evaluate the merits of using ChatGPT as a research assistant, like accessing relevant information and data, with students writing academic papers using ChatGPT for writing assistance and suggestions for phrasing, tone, and style.

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

As an aspect of the Research Methods and Thesis Writing class 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).

As a knowledgeable musician, I still enjoy reading program notes and continue to learn through them because no one can know everything about a musician with a vast musical repertoire. 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 audiences, 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 interpretations and a better listening experience.

Before COVID-19, the teacher might have taken time in class to explain Schumann's Piano piece *Papillons*, Op. 2, as students rehearsed the piece. For example, the teacher might have alerted 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 had heard. Much like college music lecture recitals, the teacher might have discussed with the students and raised awareness about 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 have focused on literature and reflected on including program notes to notify 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 *Flegeljahre* (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. Program notes inform the audience and facilitate 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 did my teaching of writing program notes change with the introduction of ChatGPT in the online educational context?

In brief, during and post-COVID, I transitioned into connecting with my program notes' classroom community using these intelligent systems as research assistants and learned to create an engaging learning experience. The advantage of teaching the writing of program notes online is that a teacher has the means to access and foster interaction; for example, both the teacher and the student writing his or her program notes can produce, edit, and enrich videos of performances to create a better learning experience online. For students, ChatGPT facilitates learning through collaborative study groups, individual test preparation assistance, and feedback for improving assigned work. Aligning tool usage with principles of academic integrity ensures proper enhancement rather than substitution of independent scholarship. Academic writing is an essential part of research. ChatGPT can aid the writing process in multiple ways, from outlining to drafting and revising (Essex, 2023). Once a detailed outline is ready, the writing process can be moved forward by having ChatGPT generate initial drafts of sections based on notes and outlines. These drafts can then be reviewed, modified, and improved at the writer's discretion to polish the complete paper. The disadvantage of teaching program notes online is how AI and chatbots could impact the education field negatively with respect to the integrity of assessments. For example, based on the author's teaching practice with MA (Master of Arts degree) music students at the TUT, two student-centred classroom strategies include the critical response process (CRP) and practice as research.

The new online learning experience changed the state of teaching and learning from "mono" and "teacher-centred" to "interactive" and "student-centred," thus making it necessary to create a hybrid model where information technology and online activities became an integral component of the education process (Li, 2022). The author, therefore, used those technologies to teach musical appreciation through program notes. Tech brands such as Chatbot, which can understand and respond to human inputs in natural language, can handle complex tasks and undertake more human-like interactions. In addition, with the internet, it is

so much easier for students to obtain information about a composer as compared to what was the case in the past, and it was exciting to see students think about music in new ways and begin to comprehend different musical styles as a result of their increased access to various musical genres. Many student musicians also discovered that online platforms such as Bandlab, Charanga, and Soundtrap (owned by Spotify USA) and their online cloud-based Digital Audio Workstations (DAWs) could enhance their reach to interested audiences. Chatbots in education can personalize learning pathways (Hsu et al., 2023). Kuhail et al. (2022) found that chatbots can provide students with instant feedback, support, and personalized learning experiences.

ChatGPT is the emergence of the latest powerful AI-based chatbot. ChatGPT was trained on a massive dataset of text from the internet, allowing it to generate human-like responses to a wide range of questions and prompts (Kooli, 2023). Assessing students through case studies is an example of an effective student assessment strategy. Using case studies that require students to analyze real-world scenarios and apply their knowledge to solve complex problems could help mitigate the effects of the excessive use of AI (Kooli, 2023).

However, while chatbots can provide students with immediate answers to questions, using chatbots in the educational field also raises ethical challenges that must be addressed: Their use can also lead to academic dishonesty and a lack of learning. In addition, using chatbots can create an uneven playing field because some rich students may have access to better or more advanced chatbots than poor students. These are two different issues—one is directed at ensuring all students, regardless of their economic status, have access to the same quality of assistance (the same chatbot), and the other idea supports institutional efficiency.

5. Conclusion

Various AI tools and techniques can be used in education to help researchers, educators, students and even the institution. These methods are constantly evolving as AI technologies advance. One ethical challenge associated with using chatbots in education is the potential for the technology to replace human interaction and expertise. Another ethical challenge is the potential for bias in chatbots. One benefit for education could be that because AI takes care of the drudgery of gathering information, students can focus on evaluating the worth of that information. This paper has reviewed the utility of AI technologies and the ethical challenges that might emerge from their use. The shift to online learning has encouraged a more interactive and student-centred approach to learning. Students' learning is enhanced using digital technologies, for example, their performances are more accessible to wider audiences by making videos showcasing their musical performance skills. This study acknowledges that the potential benefits of AI systems and chatbots in the academic field are substantial including personalized learning, increased accessibility, and improved efficiency; consequently, their use is likely to increase in the coming years.

However, the AI tool ChatGPT is limited in providing the same quality of critique for performances as would be the case in face-to-face instruction, in the same way as watching a televised concert performance is an inferior experience compared to watching a live performance. Moreover, online distance learning courses in music mean that teaching music online requires knowledge and skills in online design, assessment, and communication. At the same time, regardless of what research reveals about chatbots and their place in education, teachers will be asked to use remote teaching methods in music education to ensure the sustainability and scalability of music education or attract and retain students. Arguments for adopting and adapting to online learning approaches for teaching music and musical appreciation should not be ignored.

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