

# Digital competencies of music teachers under the 'new normal' in Hong Kong

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## Abstract

The COVID-19 pandemic has posed challenges to education systems around the world, resulting in a 'new normal' for school music education in which teaching and learning can no longer rely only on conventional classroom practices. Concerns have also been raised over music teachers' digital competencies, given the perceived importance of the use of technology within the new educational landscape. This article presents the results of a study that examined the challenges and experiences associated with the digital competencies of music teachers during the pandemic period. Semi-structured interviews were conducted with full-time music teachers (N = 18), all of whom taught music as a subject at mainstream primary or secondary schools in Hong Kong. The findings revealed challenges and upskilling of music teachers during the lockdown period, including the technological constraints imposed by the school and the online environment, how they made use of technology to teach music online, and the different ways they developed their digital competencies. Alongside with the catalyst effect of the pandemic that stimulated their upskilling, curriculum changes in teacher training programmes are necessary to better prepare music teachers for the digital transformation of music education and future challenges under the post-pandemic 'new normal' situation.

新型冠狀病毒肺炎(COVID-19)對全球教育系統造成衝擊，導致學校的音樂教育進入了一種「新常態」，令教學不能只依賴傳統的面授課堂。鑒於「新常態」下的教學非常倚重科技的運用，音樂教師的數碼技能尤為重要。本研究旨在考察音樂教師在疫情期間運用數碼技

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能的經驗及其所面臨的挑戰，對18名在香港主流小學或中學教授音樂課程的全職教師進行了半結構化訪談，調查結果顯示在實施新冠肺炎封鎖措施期間音樂教師所面臨的挑戰和技能提升，包括線上教學環境及學校面授課堂的限制，科技的運用，以及他們學習數碼技能的方法。除了疫情的推動之外，課程改革及教師培訓也是必要的，以便音樂教師在數位化音樂教育和後疫情「新常態」下的未來挑戰做準備。

### **Keywords**

COVID-19, digital competence, Hong Kong, music education, new normal

## **Introduction**

The outbreak of the COVID-19 pandemic has had unprecedented effects on education (Daniel, 2020). School closures became an almost universal occurrence at the beginning of the first set of lockdowns as part of widespread public health measures aimed at curbing the spread of the virus, with different modes of instructions such as online and hybrid learning being put into practice as emergency solutions. These instructional modes rely heavily on online communication and internet resources, in which most of the conventional classroom pedagogies and learning activities become ineffective because of the absence of face-to-face intimacy and real-time communication. Teachers were forced to formulate alternative pedagogical approaches that can serve the purpose of emergency remote education while at the same time provide meaningful learning experience to students (Bozkurt et al., 2022). These approaches facilitated students' learning under the social distancing restrictions then in place, which had rarely been attempted before the pandemic. When the restrictions started to relax amid the wane of the pandemic, some of these practices endure concurrently with the return of the face-to-face teaching during the recovery period. The synergy took advantage of the online and face-to-face teaching in attempt to 'build back better' rather than 'back-to-normal', allowing accelerated learning for all students (d'Orville, 2020). This is widely acknowledged as the post-pandemic 'new normal' situation in the education sector, characterised by digital pedagogy and shifting roles of teachers (Bozkurt et al., 2022). Effort has been made by teachers to upskill themselves adapting to the increasingly open and flexible teaching environment (Raghunathan et al., 2022), despite the limited capacity for professional development during the periods of emergency remote education.

Music is a school subject that comprises a wide range of teaching and learning activities, such as aural skills training, instrumental learning and choral and ensemble practices, all of which involve multimodal sensory and auditory-motor interactions. The periods of social distancing during the pandemic have seen a range of innovative practices being adopted in music education, including online performances and guided listening on streaming platforms (Calderón-Garrido & Gustems-Carnicer, 2021; Hash, 2021), making good use of the technological characteristics of the online environment. The planning and implementation of these activities requires not only time and effort, but also relies on the digital competency of music teachers. Practical and mental unpreparedness to accommodate the rapid changes (Cheng & Lam, 2021; Daubney & Fautley, 2020) is just one of the concerns raised regarding how music education has been carried out under the restrictions brought about by the pandemic period, along with the different kinds of competency development needed in order for music teachers to cope with the 'new normal' teaching environment.

This study was situated in the Hong Kong context, one of the last few territories that pursued a 'zero-COVID' elimination strategy. Unlike most other countries where schooling resumed normally, the education sector in Hong Kong was still following strict and fluctuating public health

measures as late as the last quarter of 2022. Planned music teaching and learning activities, such as instrumental classes and ensemble performances, were frequently disrupted by sudden school suspensions, changing social distancing rules and the closure of venues. While contingency plans – with the support of advance network infrastructures – have consistently been in place to move the activities online, concerns have nevertheless been raised about the lack of readiness and digital abilities of teachers to bring about the successful transformative changes being witnessed within music education (Cheng & Lam, 2021; Ho, 2021). The study presented here explored music teachers' digital competency achievements within and beyond the pandemic period, in the process shedding light on the development of teacher training and professional development programmes for equipping them to cope with future challenges brought about by the 'new normal'.

## Conceptual framework

The technological, pedagogical and content knowledge (TPACK) framework (Koehler & Mishra, 2009) was adopted to frame the digital competency development of music teachers in this study. TPACK builds upon the pedagogical and content knowledge (PCK) framework proposed by Shulman (1987), which is concerned with the teaching of a specific subject. TPACK describes how teachers' technological understanding and PCK interact with one another to produce effective teaching through the integration of technology. In addition to PCK, TPACK comprises three intersecting domains, namely technological content knowledge (TCK), technological pedagogical knowledge (TPK) and TPACK. TCK describes how technology can create new representations for a specific subject content; TPK refers to the knowledge of how various technologies can be used in teaching and the ways these change how teachers teach. TPACK, which lies in the centre of the intersecting domains, is the knowledge required by teachers for integrating technology into their teaching of a specific content area. For a comprehensive mastering of TPACK, a teacher should have an intuitive understanding of the complex interplay between the three basic components of knowledge (CK, PK, TK) by teaching content using appropriate pedagogical methods and technologies.

## Literature review

### *Teacher training*

The increasing integration of technology within the music curriculum not only implies that technical skills are required in order for teachers to manipulate the various types of hardware and software for teaching purposes; it also presupposes an in-depth understanding of the educational affordances that technology brings to the facilitation of students' learning. Greher (2011) argued that teaching with technology requires a shift in pedagogical practice from learning about technology to creating with technology, in which teacher training is a viable way to equip pre-service and in-service music teachers with the necessary hands-on and technology-rich experiences for music teaching and learning in the digital era. Previous studies have long emphasised the importance and effectiveness of teacher training and professional development in the development of music teachers' digital competencies (Bauer et al., 2003; Ho, 2004), a situation reflected by more recent studies which reveal that pre-service teachers desire more training and support (Calderón-Garrido et al., 2020; Gall, 2012; Gorgoretti, 2019; Haning, 2016) in order to overcome their unpreparedness to effectively use technology in their future teaching careers.

Reese et al. (2016) conducted a phenomenological case study to investigate pre-service music teachers' teaching experiences, using tablets for the purpose of engaging students to create and

perform music. Tensions in the creation and tuition of music were revealed through their use of technology, including an underdeveloped TPACK and difficulties in recognising students' learning needs. Tejada and Thayer-Morel (2019) designed and validated a music technology course for a pre-service music teacher training programme based on the TPACK framework and a project-based learning approach. Their evaluations suggested that the elements of digital competence development should be embedded in every part of the programme, the relevant technology being adapted to suit the specific music matter. Drawing from insights of their qualitative study with pre-service music teachers, Serrano and Casanova (2022) concluded that the effective integration of technology in the teaching process requires continual feedback between technology, curricular content and pedagogy. They argued that employing TPACK as the framework for skills development was essential if the aim for music teachers was improvement in their quality of teaching.

### *Teachers' digital competence*

Early reports that music teachers are comfortable using general technology (Dorfman, 2008) have been echoed by more recent studies which confirm that music teachers mainly focus on 'everyday' technology, such as viewing websites, streaming videos and social media (Bannerman & O'Leary, 2021). This has led to concerns about a general lack of digital teaching competence, a fear supplemented by the findings of other studies revealing the limited range of music hardware and software that music teachers employ in their teaching (Savage, 2007; Gorgoretti, 2019).

Using the self-developed survey tool MTPACK-Q, Bauer and Dammers (2016) revealed that music teachers' acquisition of technology-related knowledge was lower than that for CK, PK or PCK. Bauer (2012) also found that their TPACK competency was positively correlated to the level of technology integration; in other words, the higher the music teacher's level of TPACK competency, the more likely s/he was to use technology for student learning. A narrative research study by Soszyński (2022) identified the environmental factors that could serve to stimulate music teachers' interest in the educational use of information and communication technology, including the availability of professional training and the attitudes of their colleagues.

### *Hong Kong context*

A mixed-method study conducted by Ho (2004) found that music teachers in Hong Kong are positive about the use of technology in facilitating their work, a result supported by Cheung and Yip (2004), whose findings reveal that music teachers believe the use of technology can simulate their students' learning interests. Both studies suggest that professional development is needed in order for music teachers to keep pace with the rapid changes taking place in the technology-enhanced teaching and learning environment. Cheng and Lam (2021) discovered that music teachers struggled with technological integration during the COVID-19 pandemic outbreak, prompting the need for the further development of their skills for coping with the challenges posed by the 'digital turn' in music education. On a more positive note, Tang (2020) found that music teachers were able to adopt more interactive teaching approaches through the use of technology, facilitating a more open and free environment and the nurturing of students' creative thinking.

### **Aim and research questions**

A review of previous studies has revealed a number of recurring themes, including music teachers' underdeveloped digital skills, their beliefs and positive attitudes towards the use of technology for teaching purposes and the need for professional development and upskilling. However, there is a

dearth of research investigating the ‘new normal’ initiated by the COVID-19 pandemic outbreak, and the huge challenges posed to education systems around the globe (Daniel, 2020) as a result. In order to explore its impact on music teachers’ skillset development and inform the review of educational policy and teacher training curricula, the aim of this study was to examine the challenges and experiences associated with the digital competencies of music teachers in Hong Kong under the post-pandemic ‘new normal’ situation. The following three research questions guided the study:

RQ1: What challenges did music teachers encounter within different modes of teaching and learning under the social distancing measures in place?

RQ2: How did music teachers make use of various kinds of technology in order to cope with those challenges?

RQ3: How did music teachers upskills themselves coping with the challenges posed by the pandemic?

## Methodology

The study adopted a qualitative approach that included semi-structured interviews with music teachers ( $N = 18$ ) in Hong Kong, all of whom were full-time school music teachers in Hong Kong from the time of the COVID-19 outbreak. Ten of the participants were female and eight male; nine of them taught in primary schools and the same number in secondary schools. Semi-structured interviews provided a repertoire of possibilities for the researcher to determine relevant topics and themes, while at the same time enabling the interviewees to freely express their ideas within certain limits, in so doing obtaining rich and direct information (Adams, 2015).

The design of the interview questions was referenced from the TPACK framework adopted for this study, the focus being on those unique issues raised as a result of music teaching and student learning during the pandemic. Emphasis was also placed on the overlapping domains of technical knowledge (TCK, TPK and TPACK), as well as on the development and adaptation of the participating music teachers’ digital competencies as they pertained to online teaching. The following series of open-ended questions guided each interview.

1. How is your school approaching music teaching and learning since COVID-19?
2. What has been the biggest challenge for you as a music teacher during this change?
3. What are your thoughts on your students’ adaption to learning music online?
4. What technologies have you used for online teaching?
5. What other technologies have been used to facilitate students’ music learning?
6. How has your role as a music teacher changed during the pandemic?
7. What is your opinion on the adoption of technology in music education?

Driven by the research questions and open coding of the collected data (Cohen et al., 2018), the data analysis adopted an inductive approach (Braun & Clarke, 2006). This involved the researchers reading through each line, sentence and paragraph, carefully labelled the transcripts line-by-line with initial codes. These codes were further compiled into a set of recurring themes through the literal interpretation of the text. The process was repeated for each transcript until no further themes could be interpreted from the data, reaching the thematic saturation. Any coding discrepancies were reconciled through discussions among the research team.

## Results

Drawing from the data from semi-structured interviews with music teachers, the findings of this study were categorised into four overarching themes: (1) Challenges; (2) use of technology; (3) transformation in music education and (4) upskilling.

### Challenges

The participants responded that they encountered difficulties related to the moving of the learning space to the online environment during lockdown. Some of these difficulties, together with the retention of students' attention and motivation in the online learning environment, were common to all school subjects.

*I am quite pessimistic about the effectiveness of online teaching, particularly for younger children who require constant and close monitoring. Somehow, I feel the delivery of online teaching brought about by the pandemic is only concerned with 'feeding' them learning activities, not taking advantage of the convenience and benefits that this kind of technology can bring. (Participant B)*

*It is very difficult to monitor students' learning progress if we are not physically there. If we ask them to sing along, for example, usually half the class will not even move their mouths – and, of course, everyone knows that choral singing didn't work over the internet. (Participant J)*

There were issues of internet latency, as commented upon by the participants. Most of them related to the impact on musical interactions such as ensemble practice and choral singing, which are important components of music teaching and learning activities in school.

*The delay [internet latency] was a big issue. When I tried to direct students to sing, their responses were slower than expected and unsynchronised. . . I will still do it, though, because singing is the only 'musical' activity that we can teach online. (Participant Q)*

Participant Q mentioned singing as the only 'musical' activity, because instrumental learning is not compulsory in the music curriculum and choral singing is the only practice-based music learning activity in many schools.

*It seems that Zoom [one of the video conferencing platforms] was not developed for educational purposes, which meant that I could not play ensemble pieces with my students. . . All I could do was to show the beats on the slides, and ask them to play their parts according to the visual cues. (Participant I)*

Another challenge, as reflected upon by the participants, was the school culture and bureaucracy. This could range from team dynamics to the structure of the school, along with the conventional practices of music as a subject.

*The music teaching team in my school tend not to make use of any technology to facilitate classroom music teaching and learning. Even if I myself value the use of technology, the things that I can do to make it [technological integration] happen are quite limited. (Participant K)*

*In my school setting, cost is not a major concern. But in general, cost is a major concern for schools in Hong Kong, where the school management typically asks, 'I am going to invest some money on the technology you mentioned, instead of purchasing musical instruments for the orchestra. What can you give me in return?' (Participant E)*

Participant E's comment reflected the commercialisation and marketisation of school music education in Hong Kong (Ho, 1999), where an investment of return is expected even during the periods of emergency remote education. Besides, there are differences of working culture among schools that hinder the use of technology, as raised out by Participant L.

*In other forms of arts education, technological integration is always a thing, both in terms of the pedagogy and content; for example, the visual arts integrate technology into the teaching and learning way before music does. I do not know why the culture is not there. The culture is just non-existent in my school.* (Participant L)

Catering for functionally diverse students was another important issue under the social distancing rules, requiring particular attention during both online and face-to-face teaching within the inclusive classroom. The participants mentioned some of the difficulties involved in taking care of special needs students.

*The learning motivation among special needs students was already low, particularly in the inclusive classroom where they had to learn the same things as their normal peers. When it came to the use of technology, without face-to-face support they felt totally lost and were not willing to get involved anymore.* (Participant R)

*S/he [a student with attention deficit hyperactivity disorder (ADHD)] will just sit there without focusing on anything, playing with his / her belongings and frequently attempting to take off their mask. Another student with amblyopia needs to be catered for with double-sized reading materials. I am not sure whether s/he is able to work things out during online teaching, and I don't have extra time for him / her. They are all different, and there is little support provided to music as a subject.* (Participant O)

## Use of technology

The participants mentioned a range of software that they used for online teaching, both for in-class teaching and the preparation of teaching materials. Most of them are free of charge and can be used by students at home with a computer or tablet during the school suspension period.

*E-book (electronic book) and Zoom, nothing more. Just these two.* (Participant P)

*The basic one is e-book, which is particularly useful for teaching music in the social distanced classroom. Since the students were not able to play the musical instruments, e-book seemed to be only thing that I could rely on. The other tool that I used was YouTube [a video sharing platform], which helped a lot in accessing different styles of music for the students' appreciation.* (Participant M)

*I used iMovie for video editing, and a web-based music-making platform called SoundLab for students to record some clips and jam around.* (Participant H)

The use of tablets in the social distanced classroom was of particular interest. Some participants guided the students to play music collaboratively using digital musical instrument (DMI) apps when the wearing of masks prohibited the playing of recorders or other aerophones.

*We used Garageband to play ensemble pieces, because not everyone could use their own instrument. So we formed circles and played with virtual instruments.* (Participant C)

*We used it [tablet] as a keyboard instrument. Our school has charging carts that I was able to use to bring the tablets to the music classroom, so I asked the students to explore music-making with Garageband.* (Participant A)

Another interesting observation concerned the use of technology to help students compose. The participants mentioned various approaches that could empower students to make technology-assisted music, even though the participants themselves may not have been competent in either music theory or instrumental performance.

*Some of the music platforms are really helpful in lowering the threshold for composition. Now students are able to drag and drop different loops and samples to create music through a process of trial and error, without needing to be able to read a musical score.* (Participant D)

*I will let students listen to the song, identify what the musical elements are, and think about how they came together to form a beautiful piece. Then I will step up and say, 'Maybe we can use GarageBand to create a song like this?'* (Participant G)

Some participants understood the impact of students' learning differences on their use of technology, tailor-making different tasks for students who had varying levels of competence.

*I taught GarageBand differently. For students who had already learnt a musical instrument, I went directly for compositional tasks; for those who had no instrumental experience, I explored the timbre of different musical instruments with them and asked them to play along with the accompaniment tracks.* (Participant G)

*Some of my students are not good at theory, and this is where music technology, such as GarageBand, can help. They just have to follow the steps, and then use their imaginations to create music.* (Participant H)

One participant mentioned the use of technology to motivate students with special needs.

*I believe that technology can motivate special needs students to learn music, and become more engaged in the teaching and learning activities. So far, this aspect has been effective, but more needs to be done in terms of tailor-making their learning experiences.* (Participant F)

### **Transformation in music education**

Apart from the use of technology to reinforce online teaching and learning, the participants also mentioned the overarching approaches they adopted to cope with the sudden changes brought about by the pandemic.

*During the school suspension period, music appreciation was the most frequent online learning activity. Since performance practices were not feasible within the online learning space, it was better for the students to explore different styles of music rather than wasting time on the ineffective development of musical skills.* (Participant Q)

*We have introduced a BYOD [bring your own device] policy with regard to the music classroom. Previously uncommon in Hong Kong because of a more conservative mindset, students can now bring their tablets to school, and that becomes the learning platform. I have to come up with curricular activities that involve the use of tablets, so that students can learn music in the BYOD classroom* (Participant E)



The educational system in Hong Kong has been traditionally considered more conservative compared to some other regions, bringing mobile devices to school was prohibited by many schools before the pandemic. The participants also commented on the transformative changes brought about by the adoption of online teaching, some of which have extended beyond the duration of the pandemic.

*Before COVID, we always asked our students to attend concerts in person. We believed that this experience was very unique, and could not be compared with YouTube . . . But during the pandemic, we had no choice. Online performances are the only option, so this is the new culture. (Participant I)*

*It is quite difficult to adopt a teacher-centred approach in online teaching, because students are easily distracted. We understand it is difficult for everyone, so as a teacher I have to conduct the lesson in more than one dimension . . . Once the students have finished the given task on their tablet, you can ask them to share and ask their peers whether they like it or not. It can become a kind of sharing session about how they feel and how they find that kind of musical experience in general, which is different from the normal classroom. (Participant F)*

## Upskilling

When asked about which knowledge sources they employed in order to simultaneously develop their digital competencies and cope with the aforementioned challenges, the participants responded with a range of upskilling options.

*I did not explicitly try to learn something new, because the knowledge and skills I learnt during my undergraduate teacher training were enough to deal with the changes. (Participant C)*

*Our school requires all teachers to use e-books. I had never used one before, but we learnt the proper way during the teacher development trainings and now I find it really flexible and adaptive. (Participant D)*

*I attended some free online workshops presented by university teachers, which talked about apps for music teaching and learning. (Participant N)*

Some participants mentioned that music teachers should try to support each other by sharing resources and teaching approaches.

*We have a WhatsApp [instant messaging platform] group among peers who graduated in the same year. During the pandemic, we shared a lot of lesson plans and e-resources to overcome the challenges as a community. (Participant F)*

*Peer support is very important, since we are now teachers and society has certain expectations of us. Music is not a mainstream subject, and there is less support in general, so we have to rely on each other. (Participant I)*

One participant commented on the different ways that the music software currently available could be improved to suit music teaching and learning purposes. This was considered by the author as one of the expectations leading to the further development of music technology.

*There should be some digital tools that can remove the barriers for students to play music. It could be something that helps them to better translate musical notations into musical notes, or it could be a digital musical instrument that they can practice on at home and perform in class. (Participant G)*

## Discussion

Responses from the participants revealed the challenges they faced teaching music under the 'new normal', where social distancing measures were implementing during the transitional period before shifting 'back to normal' (Kerres & Buchner, 2022). The return does not simply implies the reinstatement of an old system, but a recollection of learned practices integrated into the established convention of teaching and learning before the pandemic. The fact that the online learning environment failed to compensate for face-to-face interactivity was compounded by human factors and subject-specific concerns. They reflected that school culture and bureaucracy, catering for functionally diverse students and retention of students' attention and motivation were the non-subject specific challenges encountered for teaching in the online environment, which echoed previous studies situated in the Hong Kong context (Chiu, 2021; Lee, 2022).

Just as importantly, there were subject-specific issues that music teachers may need to tackle alone. Most of these issues, as revealed by the participants, were related to the lack of instant response on the video conferencing platforms for real-time musical interaction. This restriction limited the possibility of music teaching and learning activities that can take place during lockdown, and thus further contributed to the dissatisfaction of students' learning experience. In the current study, the participants worked within a limited range of available technologies and applied them in innovative ways to support conventional school music pedagogies and overcome challenges in the online teaching and learning environment. Their innovative efforts showcased their proficiency in TK, TCK and TPK, which correspond to their ability to solve technical problems, understand application of technology in music education and utilise various technologies for music teaching and learning (Bauer, 2012); however, there is a lack of knowledge and skills in effectively integrating technology into their teaching practices while considering the unique aspects of music instruction, known as TPACK. While innovative pedagogical approaches can be found from recent literature that shared best practices in online music education (e.g. Biasutti et al., 2022), these practices may require digital competence to manipulate the relevant technology for desirable learning outcomes. Lim (2022) argues that the effectiveness of digitally-mediated teaching and learning goes beyond the technologies themselves and emphasises the role of teachers as designers of learning experiences. This viewpoint is support by Himonides (2012), who asserts that technology should not be seen as a solution for music teachers to simply apply in the classroom, but rather as a tool that supports teaching and learning and enables the engagement with valued forms and knowledge. Given the time constraints and the challenges posed by the pandemic, music teachers can adopt innovative pedagogical approaches that do not necessarily require a high level of digital competence to be developed quickly. These approaches include blended learning (Beirnes & Randles, 2022), flipped classroom (Ng et al., 2022) and hybrid learning (Li et al., 2021), some of which have been successfully implemented in the Hong Kong context.

Because of the uniqueness of music learning, inasmuch as it involves creativity development and motor skills training, the integration of technology has the potential to make teaching and learning activities more relevant within and beyond the physical classroom, including stimulating students' interest in 'rote' learning processes such as theory-based learning and instrumental learning drills (Chong, 2019; Wan & Gregory, 2018). This has been emphasised in Puentedura's (2015) SAMR (substitution, augmentation, modification, redefinition) model, which highlights the potential for technology to surpass the level of mere substitution and foster the transformation of classroom-based teaching and learning, embracing creative practices. Such practices did not rely exclusively on digital competence, but also pedagogical insights and continuous upskilling of the music teachers, as informed by the TPACK framework (Bauer, 2012).

On a more positive note, the COVID-19 pandemic provided the catalyst for the adoption of student-centred approaches, and encouraged music teachers to learn new knowledge and skills as part of the digital transformation brought about by the pandemic. These transformative changes require a paradigm shift that approaches music education differently within school settings, along with nurturing music teachers' ability to adapt to such changes. This is reflected by the upskilling of participants during the pandemic, and the global concerns to further develop the digital competencies of music teachers in order to cope with future challenges. Revisions to teacher training and opportunities for professional development, alongside encouraging teachers' self-awareness and the consciousness to develop their capacity, can help facilitate the upskilling of music teachers as suggested by Soszyński (2022). In this regard, a positive start would be to recognise those teachers who took an active role in directing their own learning, such as by attending training workshops and forming learning communities as a means of supporting one another both pedagogically and mentally (Cheng & Lam, 2021; Lave & Wenger, 1991). In terms of teacher training, scholarly work around the globe has been looking into the curriculum changes needed to equip teachers with the necessary skills (e.g. Abdullahi, 2021; Kilincer, 2021) to thrive in uncertain times; it is to be hoped that music teacher training programmes will soon follow. While some ideas that could serve to modernise the current music curriculum in light of the 'new normal' school learning environment are already being advocated (e.g. Liu, 2020; Maron, 2021), more top-down governmental efforts as part of a comprehensive review of curriculum development are urgently needed.

In addition to the development of digital skills and TPACK competence, Greher (2011) suggests that music teachers involve themselves more fully in the creation of technology, a finding echoed by Cheng and Leong (2017), who advocated interdisciplinary efforts as a means by which music teachers could contribute their expert knowledge in music software development to improve educational affordances for teaching and learning purposes. This is also in line with the proposal by Macrides and Angeli (2018) to incorporate design principles in the development process for improving the affect and affordances of music technology based on the TPACK framework. Although no such efforts were discovered in this study, the participants did reflect on their concerns over existing music software and their expectations regarding the functionality of those digital tools that could better help teaching and learning music within and beyond the classroom. With the availability and accessibility of development platforms, along with the improved ability of music teachers to design digital tools that facilitate their teaching and students' learning progress (Reid et al., 2020), an ideal future under the 'new normal' would see music teachers as multifaceted creators, educators and facilitators for students' active learning.

## Conclusions

This study examined the challenges and experiences associated with the digital competencies of music teachers in Hong Kong under the post-pandemic 'new normal' situation. The findings revealed the challenges they encountered and their attempts coping with the digital transformation of music education, coupling with their competency development and upskilling during lockdown. The 21st century has so far provided music teachers with a variety of challenges, in addition to the changing educational landscape under the 'new normal', they have had to deal with tensions between conventional music practices informed by the curriculum and the realm of music practices in young people's wider lives, manage the impact of new media and emerging technology on music as a school subject and navigate contextual issues, such as political instability and the crisis of identity in the case of Hong Kong. As the realm of education becomes ever more complex and unpredictable, self-awareness and the conscious need for music teachers to keep themselves equipped and updated are important factors for coping with the unknown challenges of the future.

Several limitations were identified in this study that might inform further research. Participants were selected through purposive sampling. They may only represent a specific group of people, where in this study it was limited to younger music teachers the Hong Kong, that the findings may not be generalised to other age groups or countries. A follow-up quantitative study would triangulate the results of the current research and provide more generalisable outcomes of wider significance. Framed by TPACK as the conceptual framework, the study only investigated the digital competencies of music teachers in general, but not any specific pedagogical approaches or teaching contexts. Further studies that address different aspects of digital competencies, including catering to students with functional diversity and different learning needs within the inclusive classroom, the capacity for interdisciplinary teaching and learning within school settings and the effectiveness of various professional development pathways for music teachers, would all constitute significant first steps in this direction.

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