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ARTICLE

Digitally mediated collaboration and participation: composing 10,427 miles and 11 hours apart

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Abstract
COVID-19 presented many challenges while the shift to online learning also provided unexpected opportunities for music teachers. During the pandemic, two researchers who are teacher educators undertook a composing project with music teacher education students in Scotland and Australia in response to the theme: *My Life in Isolation: A World Apart or Same Difference?* Turino's (2008) theory of participatory music making will be drawn upon to analyse this collaborative online music and video creation project. What participation means as a music-maker will be discussed. The paper argues for greater attention to the affordances of digital collaborative music technology tools to build the confidence of pre-service teachers to facilitate real-world composing projects to promote participation, collaboration and social interaction.

Keywords: Participatory music; composing; engagement; collaboration; music technology

Introduction

At the beginning of 2021, both Aberdeen, Scotland and Melbourne, Australia had been in extended lockdowns and prolonged remote learning as a result of the global COVID-19 pandemic. Musical performances had been cancelled and school practicum placements had been severely disrupted or shifted online (Kidd & Murray, 2020). On opposite sides of the world, two music teacher-educators noticed that their students were experiencing well-being and engagement challenges. This paper will discuss a case study of teaching practice informed by collaborative self-study methodology (Samaras, 2011). In keeping with self-study, the collective first-person plural pronoun 'we' is used in this paper, referring to the researchers/teacher-educators. The students involved in the project were pre-service teachers in Australia and Scotland, working towards becoming fully qualified at teaching secondary school music for students aged 12–18. Music education in Scotland and Australia is similar: Curriculum music is general or classroom music based on a model of performing, composing and listening, whereas, instrumental and ensemble music is co-curricular or extra-curricular and involves supporting progression on a wide range of instruments.

We usually build a cohort experience with our respective students in person in our music studios, which is part of the larger on-campus cohort experience. Making music in groups with friends is a big part of being a musician (Kokotsaki & Hallam, 2007) and being a pre-service music teacher, both as a model of classroom pedagogy to promote participation and to build connections with peers. We needed something for our students to be excited about so we decided to undertake a collaborative online music and video creation project in response to the theme: *My Life in Isolation: A World Apart or Same Difference?*

We used Soundtrap for Education (www.soundtrap.com/edu/), a cloud-based digital audio workstation (known as a DAW), to undertake this experience. We chose Soundtrap because it has a safe walled garden feature in the paid education version, which meets requirements for government e-safety requirements for school students. The music teacher education students worked in groups of five with a mixture of Aberdeen and Melbourne students in each group. Each student collected video that captured their experience of life in isolation. As a group, they combined and edited this footage into 1–2 mins to depict their collective experience of lockdown on opposite sides of the world. Then, they collaboratively composed music to accompany their footage in the same way that film composers work. In addition to addressing engagement and well-being challenges, the purpose of the project was for our students to explore a real-world online collaborative music and video creation project that they could adapt for use with upper primary and secondary school students to promote participation in music making.

In this paper, we aim to highlight the commonalities between, and affordances of, drawing on theories of participation derived from both music education and ethnomusicology to build the confidence of pre-service music educators to incorporate creative music making, digital technologies and the music that young people choose for themselves, to promote participation.

Digital composing and participation in music education

One of the perennial problems of music education is building pre-service teachers' skills and confidence to include more creative, as opposed to recreative, music making in their classrooms (Fautley, 2015). Several researchers stress the importance of promoting the creative act of composing and the need to counter-hegemonic thinking that privileges performance, restricts creativity and the ongoing development of new music (Fautley, 2015; Georgii-Hemming & Westvall, 2010) and recognise the everyday musical cultures of young people (Green, 2008). Drawing on participatory culture in media education (Jenkins, 2006), collaborative co-construction of digital music projects can contribute to more culturally relevant pedagogy (Cremata & Powell, 2017) and the development of student voice (Spruce, 2015). Similarly, Kuhn and Hein (2021) highlight that digital music technologies for creating provide a powerful means to support active, culturally relevant and creative music making for students at all levels of prior musical experience.

Spruce (2015) argues that bringing digital technologies for composing into school classrooms builds bridges between young people's inside and outside school musical lives, thus supporting their multiple and shifting musical identities (Hargreaves et al., 2017) and reducing alienation from school music. Reducing the barriers to music making promotes participation, access and inclusion. Kuhn and Hein (2021) discuss access to digital instruments and loops, stating that the process of creating music is not limited by students' skill in playing an instrument or being fluent in musical notation. The rise of low-cost and accessible music software and hardware has meant that young people frequently create music in their lives outside of school (Mackrill & Daubney, 2016).

Providing opportunities for young people to play and create 'their' music, using a pedagogy that draws on Green's (2002, 2008) informal music learning principles, builds connections between school music and the everyday musical cultures of young people. Informal learning principles (Green, 2008) provide opportunities for young people to make music in groups with their friends and make decisions about curriculum and pedagogy which impact them. Kuhn and Hein (2021) argue that creating using digital technologies is best taught through Green's (2002, 2008) pedagogical principles. In addition, collaborative digital composing has a participatory ethos (Mitchell, 2019) involving participation as a learning process, thus students get better through the process of doing music (Turino, 2008).

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Participatory music making

As an ethnomusicologist, Turino (2008) developed his theory of participatory music making by working in diverse community and cultural contexts rather than in educational spaces. His theory of participatory music making is increasingly used in music education research to understand experiences that involve all learners in engaging musical experiences irrespective of prior experience (Gibson, 2021; Thibeault, 2015; Harwood & Marsh, 2012).

Participatory music making removes the distinction between audience and performers (Turino, 2008). In this musical setting, the goal is to involve everyone in a collective performance role, people are either participants or potential participants. These activities are more about the doing and social interactions than about creating a high-quality artistic product or commodity (Turino, 2008). Drawing on Csikzentmihaly and Csikzentmihaly's (1990) flow theory, in Turino's (2008) experience, participants return again and again to musical activities that produce intense concentration and enjoyment and as they do so, their skill levels increase. Turino (2008) argues that participatory music making is not a lesser form of music making but is something different and should be valued as such. This theory is useful for pre-service teachers as most school students that they teach will not go on to become professional musicians, instead, they will ideally become lifelong amateur musicians as performers/listeners/creators/consumers, and this could take many forms. This ethos is reflected in the following quote, 'Participatory music making sees all participants' contributions considered to be of equal importance. More experienced musicians take responsibility for supporting and inspiring those around them to join in, at whatever level of competence they possess . . . ' (Harwood & Marsh, 2012, p. 325).

In contrast, Turino (2008) defines another field as presentational music making where one group, the performers, provides music for another group, the audience, creating a separation between the artist and the audience resulting in a focus on musical quality and virtuosity. In the UK and Australia, presentational music making is traditionally foregrounded in school music education with an emphasis on creating a musical product for performance or preparation for graded music examinations on an instrument/voice. 'Oftentimes all forms of presenting musical progression tends to default to a graded music examination type thinking' (Fautley & Daubney, 2022, p. 132). Instrumental music making in a 'master-apprentice' style and large ensembles such as those modelled on El Sistema practices also prioritise individual virtuosity over collective participation (MacGregor, 2020). Ensembles (co-curricular or extra-curricular) may also participate in adjudicated festivals, such as the National Concert Band Festival.

The argument is not that one field of music making should replace the other, rather Harwood and Marsh (2012) contend that 'a complete and balanced in-school music curriculum could include opportunities for both presentational and participatory music making' (p. 325). Similarly, Turino (2008) suggests participatory and presentational music making are not mutually exclusive and it is possible to move between one and the other. Camlin (2014) interrogates these concepts further and brings them together. He suggests applying a dialogic frame to explore Turino's (2008) presentational and participatory fields as a continuum. He demonstrates that both are valuable to understand issues of musical quality in participatory contexts including school music settings. Camlin's (2014) notion of creative tension refers to 'how to achieve both artistic excellence (Great Art) and universal access (Everyone)' (p. 101). Kuhn and Hein (2021) highlight how creating using digital music technologies can bridge this tension, 'in the era of digital audio production, meaningful musical creativity has never been more accessible. A student can learn to create good-sounding music with a computer in a matter of hours, rather than months or years' (p. 7).

Small's (1998) concept of musicking is also useful to understand participation and he has a slightly different viewpoint. Small extends Turino's and Camlin's conceptions of musical participation to be more than a performance role. He says, 'to music is to take part, in any capacity, in a musical performance, whether by performing, by listening, by rehearsing or practicing or by providing material for performance' (Small, 1998, p. 9). In a digital music creation context, Kuhn

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and Hein (2021) apply Small's ideas of musicking as being more than performing. They argue that the term 'producer' applies to 'creators working across traditional role boundaries . . . A producer is anyone who creates recorded music in any capacity. Producers write songs, programme beats, manipulate loops and samples, play instruments, run recording sessions, and edit and mix audio' (Kuhn & Hein, 2021, p. 4).

We will go on to consider these concepts in relation to project findings.

Methodology

This research was conceived as a case study (Creswell, 2007; Yin, 2009) informed by collaborative self-study methodology (Samaras, 2011). Creswell (2007) envisages case study as 'the study of an issue explored through one or more cases within a bounded system' (p. 73). Yin (2009) holds that case studies are helpful for discovering more about a little-known or understood situation, where the phenomenon under investigation is not easy to extricate from its context. This was the most appropriate choice for this research which examines the affordances of collaborative, digital composing during the pandemic with pre-service teachers, which is inseparable from its context.

As Samaras (2011) suggests, we undertook the inquiry as both researchers and teacher-educators and it was situated in our teaching practice. Working collaboratively helped extend our individual thinking and validate our individual perspectives on the project outcomes and challenges. The project focussed on improving learning outcomes for our students and navigating the challenges presented by COVID-19. Together, we worked through an iterative process of framing the study, questioning, reflecting, discussing, framing and reframing our interpretations of what had occurred. Self-study has assisted us to interrogate our practice to generate and present knowledge.

Data collection consisted of a series of reflective discussions that we undertook which included reviewing and reflecting on project artefacts such as the videos, artist statements and students' reflections from the sharing celebration using Mentimeter, an online polling tool. Ethical approval was obtained from our respective institutions and informed consent was given by the students for permission to use the project artefacts as research data.

We undertook an inductive thematic analysis following Braun and Clarke's (2021) six-stage recursive and iterative process to identify themes. Stage 1 began with data familiarisation where we organised and immersed ourselves in the data, reading and re-reading reflective discussion transcripts, artist statements and student reflections. We became familiar with the content, moving to Stage 2, data coding. This involved forming initial codes and generating a formative analysis. Coding entailed assigning names to small segments of data such as a phrase or sentence or a key moment in a video. Following coding, we combined the small segments into broader categories, reducing and distilling the data. From these categories, a hierarchy was constructed to identify connections and overlaps, forming initial themes (Stage 3), thereby reducing categories further. The categories were then collapsed and re-grouped to build potential themes in Stage 4, theme development and review, which were further developed and refined during the writing process (Stages 5 and 6). Finally, data were selected to illustrate the themes and literature was integrated with the themes to construct research findings.

The project

We begin by briefly outlining the project. We identified the theme, *My Life in Isolation: A world apart or same different?* for the project and then devised a more detailed project brief or stimulus. We provided a suggested process and tried to foresee difficulties, particularly related to technology and organisation. While the students were not involved in conceiving the project, they had to plan their own group's project. We began by meeting with the participants on Zoom. Finding a time

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period that aligned with our different academic years and when neither group of pre-service teachers was on placement was challenging and so it transpired that the day we launched the project was the first day of the Melbourne students' Master of Teaching course. They were very much thrown in 'at the deep end' (Green, 2008, p. 25). The project began with an introduction and time for the groups to meet. We asked a freelance teacher, composer and music technology specialist to deliver a 45-min introduction to Soundtrap.

We both used 3 hours of asynchronous class time and there were 85 students divided into 17 groups. We organised the students with 3 from Melbourne and 2 from Aberdeen in each group. Four is usually our preferred group size, but we wanted to have a mixture of Aberdeen and Melbourne students in each group. We were also concerned about students not contributing and then other students feeling like they had to do all the work so the groups were slightly bigger than usual. During lockdown, it was often hard to know what was going on for people at home, so creating a supportive group work environment that minimised any undue pressure was important.

Pre-service teachers had 4 weeks to complete their creation with a sharing celebration 5 weeks after the project launch. At the sharing celebration, as a group, we watched all the videos which had been compiled into a YouTube playlist. This was in the style of a 'watch party' in keeping with digital media culture (Cremata & Powell, 2017). Students also completed a reflection using Mentimeter, an online polling tool. Setting the deadline, which was the sharing celebration, was important to support productive groupwork.

The project reflects both Turino's (2008) fields of music making and everyone adopted the role of both artist and audience at different points in the project. Participatory music making was reflected through everyone taking on a role of their choice in the online music and video creation process. Presentational music making was also evident through production and the online sharing celebration at the end of the project using a YouTube playlist rather than an instrumental performance in a concert venue. Everyone took on the role of audience to watch each other's projects. Turino (2008) gives examples of both simultaneous and sequential participatory music making. Simultaneous participatory music making involves everyone in a performance role at once. Sequential participatory music making involves everyone taking turns to perform, and to be an audience member, with an expectation that everyone will perform. Sequential participatory music making was evident in this project, as the students listened to all the music and video creations. Sequential participatory music making represents a blurring of the distinction with presentational music making. The musical features of presentational music are more distinct with an aim to hold an audience's interest through aspects such as greater contrast, more transparent textures and more complex musical ideas (Turino, 2008) and this was seen in the projects.

Video example

We have one example to share with you composed by Andy Turner, Calum Wood, Channelle Thomas, Kaitlin White and Danna Yun. https://youtu.be/h3zFNCL5Cew?list=PLgi37zowFl5X62fqrhDFbrZspVvmKj9YB

Findings

We will now discuss some of the benefits and challenges of the project with a focus on using the theories discussed earlier as a lens to examine participation and participatory music making in this project.

Artistic outcomes

The artistic outcomes were impressive. We were surprised at the quality of the music and video creations produced in the short period of time allocated and we were reminded of the power of

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interdisciplinary arts practices. There was a link to real-world arts practices through film music and how film music composers work. Together, the value of the music and video production was powerful. Camlin's (2014) argument that participatory and presentational music making are not mutually exclusive and that musical quality is important in both was reflected in the importance of the video to the overall impact. The video aspect was important in that it provided a scaffold and structure for the composing and the effect of the music and video together was greater than the individual parts. The project reflected the affordances that Kuhn and Hein (2021) identify of digital tools to facilitate high-quality musical outcomes for experienced and inexperienced musicians alike. Digital technologies were used as a tool for creating and not as an end in themselves.

The videos also provided an opportunity for students to have a window into each other's lives on opposite sides of the world. What they chose to share about their experiences of lockdown was important to them. The artist statement that follows is from the creation above, which highlights the music and video aspects working together.

> *The song and video reflects the lives which we have been living during lockdown, and the ways in which we have been maintaining our purpose and fulfilment whilst abiding by the varying rules in place. It draws heavily upon traditional Scottish music, but also includes harmonically-altered motivic fragments of the traditional Australian bush ballad 'Waltzing Matilda'. Despite the large geographical distance between Aberdeen and Melbourne, this represents the unified feelings and connection which we share regarding the current pandemic. Additionally, the amalgamation of fragmented melodies represent the community spirit in piecing together damage to redefine beauty in lockdown. A lot of the Scottish footage was taken during the recent snowy weather (February 2021) and it was a joy to be able to exercise close to home in the form of skiing, snowboarding, and surfing. Meanwhile, the clips of Melbourne's nostalgic memories compare with a bleaker emptiness of today, signifying a negative impact, but also signifying a rekindled sense of human spirit in the face of a unified effort to protect each other. The song features guitar, keyboard, trumpet and xylophone, and effects from the wind and waves complete the track showing that even in lockdown, life is full of meaning, opportunity, and little moments of joy to discover.*

The music and video creations were produced collaboratively using Soundtrap and students were making music in groups remotely and asynchronously. For example, a student in Aberdeen could record a bass part using loops, save it, then a student in Melbourne could add a vocal recording over the top of this. Using Small's (1998) idea of musicking, students took on different roles both musical and extra-musical and for some of them, their primary contribution was in editing the video and compiling the final artefact.

Collaboration

While the skills associated with composing using digital tools were important for the pre-service teachers to practise, it was the collaboration aspects that the students valued most. There was a feel-good factor and the international collaboration aspect of the project supported wellbeing and engagement which was reflected in the students' comments. They enjoyed collaborating with people on the other side of the world and some of them commented that they felt they had made friends who they would stay in touch with. In response to 'what did you enjoy the most about the project?' Student D said:

> *Meeting people who are geographically so far away from us! I really enjoyed the collaboration process with the Aberdeen students. We worked really well together with a clear management plan, and my biggest takeaway was learning different styles of music through exchanging folk songs with each other.*

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Student H explained the collaborative process that their group used:

> *We brainstormed ideas about mood and structure. Once we had agreed on this, we all took turns working on Soundtrap by experimenting with different loops and sound combinations. We also edited each other's work.*

Individually, we have done similar projects previously that have not been international collaborations. However, this project was more effective and the collaborative aspect is something that we will continue to do post-pandemic even as we return to largely in-person teaching. Likewise, Forbes (2020) highlights that greater attention should be given to collaboration in tertiary music education and Dowling Long and Long (2023) also argue for greater opportunities for collaborative projects in teacher education. The social aspect of this project and the associated well-being outcomes relate to Turino's (2008) argument that in participatory music making, the musical activities are more about the doing and the social interactions than about creating an artistic product or commodity. This is reflected in Student D's comment:

> *Initially I just wanted to get the work done, but we warmed up to each other and through this project, got to know each other very well. Now we've agreed to meet up if we ever visit them/if they ever visit Melbourne.*

In response to what impact will the project have on you as a teacher, Student J commented:

> *Hopefully a better globally minded attitude, and it was nice to experience how easy making music is with other people regardless of distance or background.*

The students also experienced challenges with collaborating and had to draw on, or quickly develop, time management, organisation and communication skills. Being able to function as a group was challenging for some – these skills were underdeveloped due to extended lockdowns. Student J shared:

> *[To manage the logistics of collaboration, we used] 'social media, scheduling, and delegating tasks. Scheduling was the most important I feel as just finding a way to have a communication channel with an 11 h time difference between 5 people with busy lives was tough'.*

Turino's (2008) theory of participatory music making emphasises the need for a variety of roles within an activity for it to be successful. Multiple access points are necessary, so everyone is inspired to be involved regardless of previous experience and skill level and this was provided through the open-ended nature of the project. Drawing on flow theory (Csikzentmihaly & Csikzentmihaly, 1990), Turino (2008) explains that if a task is too easy, boredom may occur while a task that is too difficult may result in anxiety and withdrawing. Instead, an optimal level of challenge is required to sustain interest. The activities need to be designed and facilitated in a way that there are continually expanding and achievable challenges to sustain the interest of everyone because it is through participation that skill levels increase.

For example, Student J's comment suggests their inexperience with composing and that this project gave them an opportunity to engage in the collaborative composing process in a way they found comfortable:

> *My role wasn't anything pivotal in the composition process, the structure and general compositional principles were set out about by other group members, so I just had a bit of fun in Soundtrap and left whatever I thought sounded nice.*

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While Student F appears to be a much more experienced learner with DAWs and took on a leadership role in their group:

> *We discussed ideas and agreed upon musical inspiration with the Aberdeen group before. I then experimented with Soundtrap to find some samples that were similar to the description and wrote the first minute, which I then shared with the group who could later edit/extend if they wished.*

The role of the more expert musicians was to support and inspire the less experienced to participate. Multiple and shifting roles inclusive of a range of prior experience resonate with Lave and Wenger's (1991) theory of situated learning. In this theory, legitimate peripheral participation describes the process through which inexperienced learners become part of a community of practice and all levels of participation are acknowledged. This was clearly evidenced in the project; students were able to negotiate within their group to select the role(s) and task(s) they undertook with some students taking on leadership roles and many skill-sharing with their peers as the project unfolded.

Affordances of DAWs

Completing a composing project using a particular digital platform was helpful for our students to have enough time to gain familiarity so that they could confidently use this tool to facilitate composing on placement and as graduate teachers. The students generally found Soundtrap straightforward to use and being browser-based and using cloud-storage made the logistics of working internationally much easier.

Student E shared:

> *Soundtrap was very convenient, the benefits were that it is much much simpler than using a traditional DAW, there was no need to worry about files or organization between projects.*

In this research, affordances (Norman, 1988) refer to the relationship between the properties of Soundtrap and the capabilities of the students to explore its possibilities. The project seemed to give the pre-service teachers more confidence to use DAWs generally, and Soundtrap in particular, in their teaching. Soundtrap is a DAW focusing on creating through audio as opposed to music notation and students seemed to thrive in composing using this medium. As teacher-educators, we scaffolded the project and facilitated learning as required and several of Green's (2008) informal learning principles were evident, which allowed for student-centred learning. Kuhn and Hein (2021) highlight the affordances of DAWs alongside informal pedagogy principles (Green, 2002, 2008) to promote participation, which was reflected in this project. They state,

> *digital production is ideally suited to this goal [of producing 'real' music], since student productions can sound quite legitimately 'real'. It feels wonderful to walk away from a class with a mixtape of your own great- sounding tracks! (Kuhn & Hein, 2021, p. 12).*

In response to a question, what did you enjoy most Student G commented:

> *Seeing what can be achieved using Soundtrap.*

Our students also commented on the benefits of the collaboration feature of Soundtrap, which does not exist in other DAWs that they might have used before. This included the walled garden online safety feature, ensuring that students can only collaborate within the group and not with

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anyone else on the internet. Soundtrap was also noted for its value as a digital composing tool that is accessible to school students. Student E noted:

> *[My biggest takeaway has been] the power of Soundtrap in collaborative composition situations!*

In response to a question about what impact the project would have on future practice, Student G commented:

> *I now have the confidence to use online DAWs. I know that good things can be produced.*

Challenges

While collaboration was the aspect of the project that the students enjoyed most, it was also the area they found most challenging. Navigating the time zones and having to communicate solely online was a challenge. Some groups divided up the workload well, others floundered, and we received emails, which we were expecting even though we had carefully designed the project to minimise these. For example, someone has not responded or someone else has not contributed. In response to a question, 'what did you find most challenging', comments included:

> *Not knowing if anyone was actually going to do anything* (Student F).

> *Not being able to meet in person and really get to know them and as well as different time zone made it difficult, but it was easy to overcome with communication* (Student B).

Some students were initially challenged with the type of musical task, Student C reported *'they are not happy, this is not their normal composition'*. Groups chose, for the most part, to compose in a popular music style, although this was not prescribed. This was interesting to note when given free choice that students brought in influences from their musical lives outside of their regular University composition experience.

We deliberately did not make this project part of the summative assessment for the participants involved although it fed into assessment tasks if students chose. For example, some used the project as the basis for a unit or scheme of work that focussed on digital collaborative composing. The project was undertaken during allocated class time. Despite this, there were still comments about whether the project was for assessment, and if not, then they found it difficult to fit into their already busy lives and schedules. This reflects the assessment culture in higher education and schools and the value placed on assessment and a performance driven, presentational, culture (Fautley, 2015). In response to what did you find most challenging, Student C remarked:

> *Keeping in touch with everyone and struggling to find time to do this project on top of everything else in the course.*

Discussion

Through experiencing this project as learners, the students articulated some of the possibilities of DAWs and music and video creation projects for school students and there were some high-quality artistic outcomes for them to use as exemplars in their teaching. The project was helpful for our students to develop and practise some much-needed skills in creating music and video using digital tools.

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Having an open-ended creative composing task rather than a recreative performing task was helpful to support multiple roles and access points as Turino (2008) suggests. Similarly, having an open-ended task that was engaging regardless of prior experience was evident. Students were able to access the task at a level comfortable for them, this was related to their confidence with composing and digital technologies but also the genre chosen. Most groups did something in a broadly contemporary popular idiom yet there were many Western art musicians in the group and this genre was new for many of them. Some of the Western art musicians did find the task challenging and frustrating at first, as they felt as if they were being asked to make music outside of their comfort zones. They did gain confidence as time progressed. The more confident and experienced composers and popular musicians took on musical leadership roles within their group and this sustained their interest. Multiple understandings and perspectives of musical participation in the research of Turino (2008), Camlin (2014) and Small (1998) were all evident in this project and these were helpful in explaining the student responses that we noticed. Together these theories may be helpful for other music education researchers conceptualising participation in music projects. Researchers such as Lamont et al. (2003) discuss the difference between music in and out of school and this can be extended to Higher Education. In this project, students saw their music and video creations both as music for preparing to be teachers and 'their' music as it reflected their experiences of lockdown.

It is helpful to examine the role of the teacher in this project through the lens of Green's (2008) informal learning principles, in order to highlight some of the benefits and challenges encountered, as well as providing ideas for consideration when transferring into a school context. The students did not know each other and so while they ended up making music in groups with friends, this is certainly not how the groups were formed. We did the grouping and deliberately put a mixture of Melbourne and Aberdeen students in each group and aimed to also mix students with popular music and Western art music backgrounds in each group. There was a haphazard, serendipitous learning process that was entirely student-directed. As the composing part of this project was largely undertaken online and asynchronously, we did not have a good overview of the composing process they used. We were very much doing as Green (2008) asks teachers to do and standing back. This stance is something music teachers often find difficult (Mariguddi, 2021). Green (2008) also asked teachers to observe and then offer support, and this was much more difficult given the online and asynchronous nature of the project, and we relied on the students asking for help when they needed it. As teacher-educators and musicians, we were both comfortable and experienced working within these informal learning principles (Green, 2008) but not all the students were, and this caused some initial discomfort with some who were not used to having such freedom in a task. Scheduling the sharing celebration was crucial for keeping the whole project on track. Adapting this project for school students may require a greater amount of teacher oversight and scaffolding of the composing skills. For example, providing additional parameters for the musical material in a composing toolkit. In addition, formative peer- and self-assessment at the mid-point of the project to reflect and set goals for further refinement would also likely be useful for school students.

Conclusion

The theories discussed have been useful for us to unpack this project. When applied to music education, the research findings reflect the views of scholars such as Harwood and Marsh (2012) and Jeanneret et al.'s (2014), who argue that Turino's (2008) theory of participatory music making can challenge the dominant paradigm of music performance and encourage greater participation in creative music making for learners of all levels of prior musical experience.

We hope that by experiencing this project as learners, our teacher education students will go on to be empowered to try something similar with their own secondary school students once they

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graduate. We have reflected further on the development of digital skills in our pre-service teachers and their confidence in technological pedagogical content knowledge (TPACK) (Koehler & Mishra, 2009), but this is beyond the scope of this paper. We align with authors such as Dammers (2019) and Bauer (2020) who state that consideration of all areas of the TPACK framework is essential for facilitating effective digital composing projects. There is a need for ongoing professional learning and mentoring in the use of digital technologies so that teachers are comfortable using these, and using these effectively, in their day-to-day practice. We hope this project makes a small contribution to this need for our students. Partti (2014) uses the term 'cosmopolitan musician' and we suggest that this is a useful concept for music teachers to embrace, whereby they are comfortable blending digital music with the more traditional forms of musicianship, allowing for versatility, adaptability, cross-genre and inter-disciplinary music and arts education practice to continue to develop.

Real-world composing projects are important for music education in schools and as this project demonstrates, can be facilitated effectively with digital technologies. Projects that involve music and video creation and collaboration such as this one can also be a powerful tool for engagement and well-being. We argue for greater attention to the affordances of participatory music practices, collaborative practical experiences and shared social interaction in school music education and teacher education and the use of digital collaborative music technology tools to facilitate real-world composing projects for students at all levels of education.

Competing interests. The authors declare none.

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