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THE SECOND INTERNATIONAL CONFERENCE

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PROCEEDINGS

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“But I *Like* That You Can’t Hear Me”: Unexpected Outcomes in Online Music Lessons

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Abstract

This paper details an action research project devised during the 2020 lockdown with a private vocal student. The transition to exclusively remote instruction prompted by COVID-19 pandemic required a fundamental rethink of existing pedagogical strategies. The synchronous video conferencing software commonly used to replace face-to-face lessons has inherent sound transmission limitations, which prevent spontaneous collaborative music-making. My student wished to learn folk harmonizing, an aural practice traditionally passed informally through imitation. Sparse existing research specific to transmitting these skills via Virtual Learning Environments (VLEs) necessitated collaborative inquiry into how we might best continue our learning trajectory despite the technological limitations of lockdown. Transformative action was sought through Action Research (AR). We designed iterative cycles of practice, theory, reflection, and analysis. These were embedded into our weekly Zoom lessons. The theoretical framework of the Technology, Pedagogy, and Content Knowledge model: TPACK (Mishra & Koehler, 2006) was used to focus our interventions, and shared understanding was constructed through reciprocal learning. Impressions and observations of emerging themes were generated via dialogue, observation diary, and teacher’s reflection. We imbricated session data from the AR process, existing research, TPACK criteria, and student-teacher dialogue to observe what knowledge had emerged. Lack of aural feedback and visual nuance did not adversely affect student progress or enjoyment. Hopes for improvements in content mastery and remote learning environment optimization were met. The inductive nature of the research and working through uncharted territory together revealed fresh insights into

* ESCOM Early Career Researcher Award is given to Sophie Gemma Storr, London College of Music, University of West London, United Kingdom, for a high-quality proceedings paper in the field of music perception and cognition.

learning. “I like that you can’t hear me! I can think!” Unexpected outcomes included our mutual joy in the playful experimentation and the student thriving amidst sonically inconsistent conditions. “It takes the pressure off!”

Introduction

The COVID-19 pandemic presented specific challenges: singing’s status as a ‘super spreader’ of COVID-19 (Borak, 2020; Young, 2020) made distance learning a new necessity. This unprecedented situation disrupted traditional working methods, strongly motivating research into how technology might support human musicking. Remote music learning is typically facilitated via asynchronous Virtual Learning Environments (VLEs) or synchronous conferencing platforms (King et al., 2019). These applications have promise as part of a blended learning plan; however, the transition to teaching exclusively online has presented challenges. Among these are sound transmission limitations preventing spontaneous collaborative music-making (Dammers & LoPresti, 2020).

Among the numerous sources on teaching and learning remotely (Bennett, 2010; Brändström et al., 2012; Dammers, 2019; Dammers & LoPresti, 2020; Grant, 2013; King et al., 2019; Kruse et al., 2013; Scott, 2006; Wegerif, 2013; Zainuddin & Halili, 2016), only King et al. (2019) explicitly reference simultaneous musicking. They discuss the difficulties experienced by teachers in their study when discussing the impossibility of accompaniment agitated teachers in their study, and how that required additional preplanned resources and inhibiting spontaneous alterations to lessons.

Sources on singing harmony were primarily choral instructionals (Gordon, 2007; Hen-

derson, 2015; McGill & Volk, 2007; Roe, 1994), focused on informal (Churchill, 2012; Crump Taggart 2018;) or in-person practice (Cooper, 2016; Green, 2002; Kennedy, 2009), and theoretical or context analyses of traditional practices for mastering this art (Green, 2002; Johansson, 2004; Lilliestam, 1996; Woody, 2012; Woody & Lehmann, 2010). Only Euba (2002) and Ward (2019) specifically discuss aurally situated content and culture via remote learning. Their findings suggested that the more ‘oral’ a subject, the less appropriate it is for remote instruction.

Pedagogies

Remote platforms can support a socially constructivist way of learning (Scott, 2006). Knowing is constructed through relationships between the experiences of student, teacher, and peers within the VLE (Johnson, 2017; Johnson & Lamothe, 2018; Wegerif, 2007, 2012). The VLE allows the use of simultaneous technologies for lectures, course material, and digital text, functioning as a conduit for contemporary pedagogies like ‘flipped’ learning (Dammers & LoPresti, 2020; Grant, 2013; Zainuddin & Hali, 2016).

VLE Consideration

Approaches to musicking in a latency-rich environment were eclectic. Kruse et al. (2013) and Dammers (2019) provided some comparison to our situation, as they detailed the frustrations inherent in managing time lag. Bartlette et al. (2006) and Howell (n.d.a,b) conducted studies that both proved to be useful as project design sources by showing the exact delay times at which it becomes impossible for musicians to function and comparing the sonic potential of video conferencing software. Certainly, there is exciting growth in exploring potential via the inherent latency of these systems. We were inspired to imitate Howell’s (n.d.c) Soundjack music-making program as a practical alternative to the high-tech solutions (Rofe & Reuben, 2017) of creative playfulness in our session planning.

Theoretical Framework

The TPACK model (Figure 1) was used as a lens to guide our interventions. This suggests that to integrate technology into the learning environment effectively, teachers must have knowledge in three areas: Technology, Pedagogy, and Content (domain-specific expertise).

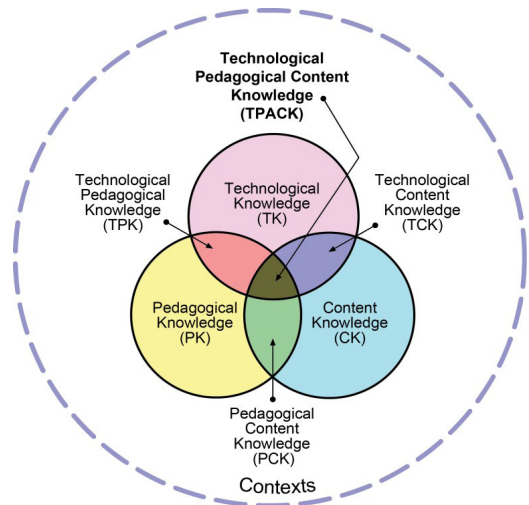


Figure 1. TPACK framework. Retrieved from <http://tpack.org>

Aligned with our literature review themes, this model provided a tool to incorporate existing theory into our research schedule sequentially and addressed concerns that technology problems would dominate lesson time. Its content prioritization aids effective planning by ensuring the technology serves the music rather than vice versa.

Aims

Learning remotely removes this vital context. Additionally, commercially available internet networks have an inherent variable sound delay, or latency, in transmitting real-time audio. This prevents communication via simultaneous musicking common to most instrumental and vocal teaching. Currently, available technological solutions cannot provide an optimal environment for teaching harmony remotely, so how might we adapt and reappropriate them?

Remote instrumental and vocal teaching research divides into three approaches: those who merely observe that latency is a problem; those who have succeeded in solving the latency using network capabilities and hardware not available to the average consumer, and those who are finding innovative creative workarounds (Figure 2).

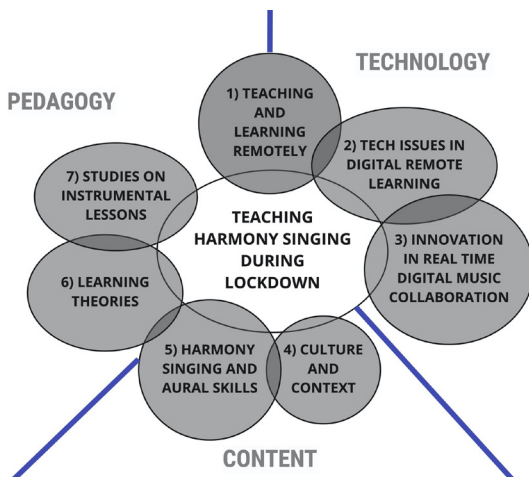


Figure 2. Situating the practice amidst existing areas of research.

Pertinent research at the time of the study was sparse. My question, “How might we best teach a situated aural skill primarily through video conferencing?” occupied a void between several intersecting areas of research, with a common approach or applicable theoretical consensus hard to find.

Methodology

Action Research (AR) creates change by foregrounding shared understanding between participants/researchers and prioritizing the co-construction of local knowledge (Genat, 2009). Collaborative and inductive steps toward improvements are created using iterative cycles of practice, theory, reflection, and analysis (Kemmis et al., 2013). In this case, the specificity of focus and the particular experience of one student was used to examine general issues surrounding remote teaching.

Case Study

My student Sian is a classically trained amateur musician and choir member who has been studying privately with me for two years. Sian is interested in developing her aural memory and learning to harmonize melodies in popular and folk music traditions. We have done some preparatory ear training, and she can hold an independent part reasonably well. In ‘normal’ circumstances, this is an influential factor for success in aural singing (Bannan, 2013).

The type of harmony singing Sian wants to learn is ubiquitous in multiple genres yet barely referenced in most musical curricula (McKenry, 2009). To augment melody, harmony singers select their parts by ear. This requires facility in listening and musical memory, excellence in part-singing, and a practical understanding of genre-specific musical syntax. Traditionally, this is a situated learning practice (Lave & Wenger, 1991) passed on informally through contextual immersion, imitation, and participation (Folkestad, 2006). Visual and sonic nuance is crucial. While formal lessons cannot recreate this learning scenario, teaching face-to-face with a practice group of at least three students is the closest approximation (Priest, 1989; Robinson-Martin, 2010).

Sian and I drew from some of the key principles of AR (Winter, 1996) to focus our intentions and reflections: 1) creating plural structures by encouraging various accounts and critiques rather than a single authoritative interpretation; 2) risking disturbance by understanding our taken-for-granted processes and willingly submit them to critique; 3) obtaining internalization of theory and practice.

Procedure

We planned our iterative action into Sian’s regular lesson time over 6 weeks (Figure 3). Reflective and critical sessions were scheduled for both teacher and student after weeks 2, 3, and 6. Our objectives were to: 1) investigate solutions to the difficulties of developing audiation skills in online synchronous settings; 2) trial

pedagogies for the VLE; and 3) improve lesson experience through technological adjustments. Drawing on the findings of King et al. (2019), and Kruse et al. (2013), I chose a synchronous platform as the most suitable for replicating the ‘live’ teaching environment. Superior sound setting options led me to select Zoom over other platforms.

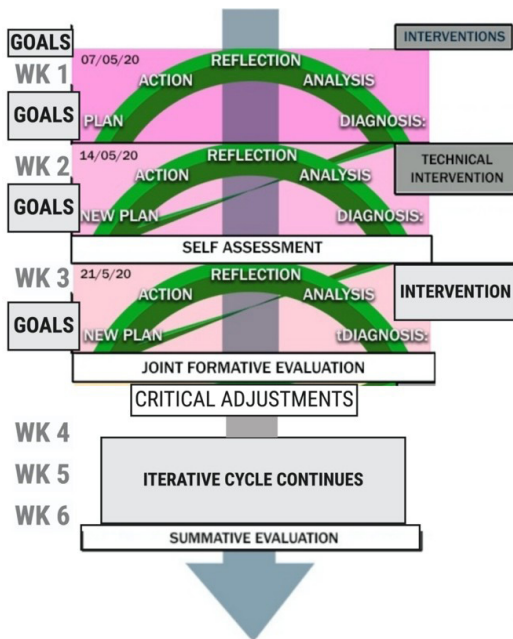


Figure 3. The iterative cycle over 6 weeks.

Data

Our data consisted of participants’ dialogue, elements of the participatory action research (PAR) process captured through video, audio, and blog, recording and transcript of lessons, a blog detailing observations and research, informal student questioning, analysis of time used in lessons, and a formal, semi-scripted feedback session. I chose qualitative analyses for our inductive discovery, as useful in formative evaluation of research with shifting/undecided goals. The analytical approach was inductive, drawing on Winters’s key principles of AR (Winter, 1996), prioritizing the co-creation of learning and valuing the emergence of disruption to established methods. Our analysis used qualita-

tive data from elements of the AR process itself, existing theory, and participant dialogue. Rather than coding, we explored impressions and agreement between data sources, using Sian’s experiences and my insights to guide interventions.

Results

The iterations focused on 4 issues: 1) technical considerations in the VLE; 2) combined synchronous and asynchronous learning; 3) effective time use; and (4) learning theories suitable for teaching this content. Revelation and learning accordingly unfolded in phases. Phase 1 (P1) contained overcoming obstacles in the technical platform which allowed in (P2) the augmentation of learning with asynchronous resources. In (P3), the subsequent evaluation led to the incorporation of ‘flipped’ learning (Bergmann, 2016), and in (P4), only then could we focus on ear learning (content) techniques. Time use is represented in Figure 4 (Week 1–3) and Figure 5 (Week 3–6).

Phase 1: Technical improvements

In week 1, we dealt with a range of technical issues in two broad categories: those needing optimization through testing and setup (e.g., device choices and general settings) and those inherent in the platform (e.g., delay in sound transmission).

Platform Optimization

Despite the time taken to optimize the device, hardware, and internet settings, I often couldn’t hear Sian. She would ‘disappear’, and her overall level was low. Despite troubleshooting, it badly affected the flow of the lessons. Eventually, I discovered a setting that was automatically suppressing her volume over preset dB and fixed the issue.

Intervention: In week 2, I shifted from the planned dual stream of inquiry to a single focus: improve the sonic experience. I selected Zoom for the ‘original sound’ option, which overrides the standard optimized compression settings and allows all frequencies to be heard. Unfortunately, the user interface does not surface this setting intuitively. Despite the guidance, Sian failed to operate it until week 4.

Improvement: Interestingly, I later discovered that Sian liked that I couldn't hear her: "It takes the pressure off, doesn't it?" and had been turning herself down at will. Understanding this was a crucial paradigm shift, prompting a commitment to critical dialogue. Pedagogy was altered though providing uninterrupted 'practice' time during the lesson.

Playing with the Limits of Latency

Following Rofe and Reuben (2017), I designed a sequence of explorations of latency. In W1: I used a canonic piece with a drone, and voice overlap, e.g., simultaneous sound. At 42m we moved the lesson to a phone call, expecting less pronounced latency. It wasn't, but we found attunement easier, nevertheless. We considered several possible causes: 1) the phone's familiarity as a form of intimate communication; 2) the visual void emphasizing our aural sense; and 3) the reduction of vocal volume. In W2, we sang an arpeggio together with staggered entries at various tempi, attempting to match the latency length and work with it musically. This experiment failed, it was so variable that the task was impossible.

Improvement: I noticed that Sian, uninhibited while focusing on the timing task, was perfectly pitching intervals, and counting her own time without assistance. This development suggested that sonic difficulties in some way encouraged vocal and aural autonomy, thus building confidence, perhaps? Prioritizing listening increased her ability to adjust to the moment.

Phase 2. Asynchronous Resources

In W1, sonic and visual modeling issues in Zoom prevented the achievement of our normal learning level. Literature confirmed this problem's universality, suggesting that adaptation of teaching focus augmented with alternative resources could help (Koh, 2019). I, therefore, designed a simple asynchronous resource to scaffold Sian's experience.

Intervention: In W2 I prioritized improving Technological knowledge (TK) by reducing engagement with Pedagogical content knowledge (PCK). We used familiar warm-ups and traditional material closer to Sian's Zone of proximal development (Vygotsky, 1978), scaffolding her learning with score/backing. Her enjoyment increased without the need for effort in audiation and musical memory.

Improvement: In W3 I removed the visual aid (score) and sent Sian the backing in advance. By controlling playback, Sian could hear each part separately without connectivity issues. Without the score, she had to work aurally. In W3, I provided a similar backing track for the new tune and visual resources designed to prompt aural imagination. Sian engaged more confidently and performed better.

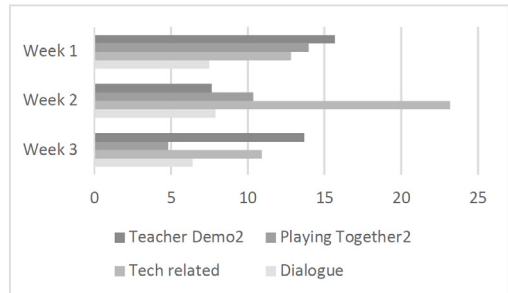


Figure 4. Time use weeks 1-3.

Phase 3: Change to 'Flipped' Learning

Dissatisfied with slow progress, and without data to compare our previous 'face to face' (F2F) lessons with digital delivery, I altered my adapted coding categories from existing studies to informally analyze my time use. Subjective analysis of weeks 1-3 showed playing together reduced, and teacher demo time increasing, echoing research reflecting difficulties in simultaneous musicking. Investing time in technical troubleshooting (W2) facilitated an overall decrease in tech-related activities. The activity consistently used most time was rote learning of repertoire. This technique is criticized as 'instructivist' by some (Brinson & Demorest, 2012; McGill & Volk, 2007), suggesting a lack of emphasis on the engaged questioning (constructivism) I had anticipated.

Intervention: To enable deeper content engagement, I 'flipped' (Bergmann, 2016) Sian's learning, sending Sian parts for a new song via WhatsApp video and demonstrating a specific learning sequence for developing her musical memory. This discussion reframed her anxiety – "It takes me ages to learn" – as growth: "We are building the muscle of your musical memory".

Improvement: In W5 this intervention was transformative. Sian described how she visualized the lines and then sang all three parts, both unaccompanied and with backing. She reported that she “really enjoyed herself”.

Changing to ‘flipped’ learning successfully repurposed lessons’ time for deeper engagement to finesse singing technique, investigating phrasing, timing, and blend. Sian improved technical control and increased the habitual repetitive practice, which is the route to good performance (Burwell, 2020).

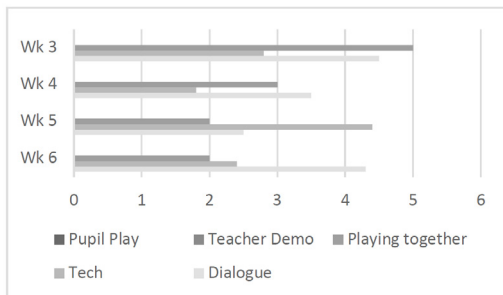


Figure 5. Time use weeks 3–6.

Phase 4: Content Learning

Enjoyable lessons and deeper content engagement marked this phase. Having refined our working environment using technological and pedagogical knowledge, we enjoyed addressing the specific art of harmony singing together.

Discussion

Did we find a remote way for Sian to improve at harmony singing? As discussed, group rote learning via aural, visual, and physical transmission is the preferred technique for acquiring an expert understanding, but this is impossible in times of enforced social distancing. Lack of aural feedback and visual nuance appeared not to affect student progress adversely. Although Zoom was designed for business conferencing, we found that through experimenting with a setting, approaches, etc., we found a new approach to overall cognition – that Sian could increase her capacity to be good at harmonizing not just through contextual immersion but through improvements in the transferable skills needed to succeed.

Core Data Findings

The most successful pedagogical strategy was a combined asynchronous–synchronous approach, with the transmission of content and technical skill best achieved via rote learning.

Centering the iterative cycle around the TPACK framework was useful in focusing our interventions, prompting a change in technological choices, pedagogical paradigms, and ultimately, content delivery. ‘Flipped’ learning allowed time for conceptual understanding and habitual practice, enabling improvement of aural skills, technical fluidity, and reproduction of stylistic nuances via repetitive engaged listening. Mastery of the ‘flipped’ learning sequence appeared to improve accuracy, speed of repertoire internalization, and length of phrase memorization. The use of imagery improved Sian’s audiation and self-critique skills. Sequentially introducing melodic visualization, through metaphor (W3) and visual art (W4) enabled setting-specific audiation by W5.

Co-constructed and Unexpected Knowledge

Investigating together revealed fresh insights into learning styles and transmission methods. For example, Sian unexpectedly reported enjoyment of sonically inconsistent conditions. “But I like that you can’t hear me!”, she gleefully shouted during one especially frustrating lesson. “It really takes the pressure off!” However, despite gains in confidence, and significant technical improvements, she often reported, “I don’t really know what I’m doing!” suggesting that without contextual feedback, she was unaware of her own competence.

After W5, Sian joined me for a formative assessment session. Here Sian described the relative value of each of these techniques, linking that technique to her ‘before-learning’ of looking at scores. She reported feeling improved and showed evidence of metacognition, potentially indicating a cognitive apprenticeship learning trajectory (Varvarigou & Durrant, 2011). Fascinatingly, having perfectly performed the practical tasks given to her and correctly answered

related technical questions, she told me that she did not understand what she was doing, prompting me to ask, “If you do not understand it, how are you doing it?”

This revealed a disconnect between her conception of ‘know-how’, ‘know-what’, and ‘know-that’. She clearly tacitly understands the technique but cannot yet know that she understands it. How can we understand this disjunct between tacit and declarative knowledge? There are at least three possible explanations: 1) Sian will only realize her improvement in an authentic harmonizing situation; 2) her classical background promotes reliance upon reified, score-learned music, leading her to mistrust the evidence of her ears; or 3) Sian’s learning style is theoretical rather than practical, requiring me to adjust my explanations.

Limitations

There was some casual evidence of student improvement in pitch accuracy and musical memory, but frustratingly, the nature of our inductive approach led to the lack of crucial comparative data after the fact, and I was unable to substantiate my impressions. For example, I had not predicted the need to assess of efficiency of our new pedagogical techniques. Lesson use timings were possible to reconstruct from recordings, but proper coding of ‘the quality of’ lesson time use was not established until W3. In assessing our content learning, it was necessary to rely on my remembered estimates for the length of Sian’s musical phrase memory or the accuracy of her pitching.

Potential Next Steps

The TPACK framework allowed the sequential merging of content, pedagogical and technical knowledge. Sian enjoyed herself and improved, but to maximize success, a remote learning framework must find new ways of engaging with the student, not reproduce the F2F model. We realized that more is possible in this new environment than simply replicating existing strategies.

The question can now become not ‘What is impossible in this environment?’ but ‘What is only possible here?’ Not only, how can technological solutions fill the gap created by social distancing, but what new affordances might they offer?

Conclusion

Despite significant progress in understanding harmony singing technique and syntax, we did not ‘fix’ the challenges of teaching aural skills through remote learning. However, the process led to a more dialogic relationship, uncovering insights about pace, learning styles, and transmission methods, and tentatively suggested some aspects of aural learning might be able to be absorbed remotely.

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