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MATTHEW CLAUHS
Ithaca College

Songwriting with digital audio workstations in an online community

ABSTRACT

Digital audio workstations and online file-sharing technology may be combined to create opportunities for collaborations among many groups, including performing ensembles, music technology classes, professional songwriters and preservice music teachers. This article presents a model for a digitally mediated online collaboration that focuses on popular music songwriting activities in school and higher education settings. Using an example from a high school music production class that collaborated with an undergraduate music education course through Google Docs and a file-sharing platform, the author outlines steps towards facilitating partnerships that focus on creating music in an online community. Such collaborations may help remove barriers between our classrooms and our communities as music teachers leverage technology to develop relationships with creators and performers of popular music everywhere.

KEYWORDS

creativity
songwriting
digital audio
workstations
online music-making
collaboration
music teacher
education

INTRODUCTION

One of the most versatile and ubiquitous musical tools of the twenty-first century is the digital audio workstation (Bell 2015), abbreviated as DAW, a term that applies to both hardware configurations (e.g., computers with

audio interfaces and stand-alone devices) and software applications (e.g., GarageBand, Audacity, FL Studio, Pro Tools, Soundtrap and Logic). Many music teachers are developing classroom projects using DAWs (Burns 2006; Clauhs et al. 2019), and because this technology allows multiple users to co-create musical ideas together, DAWs present opportunities to engage popular music students in collaborative work through sound recording and online communities.

Although DAWs can be used to recreate or remix existing works, many users find them to be powerful instruments for creating original content. They can be used to create, produce, write and edit musical ideas individually or in collaboration with others, in physical and/or online spaces. While technology-based school composing and arranging activities are often limited to notation-based software programmes, DAWs offer a space for creative music-making experiences requiring no prerequisite knowledge of music theory or traditional staff notation. A DAW also allows for asynchronous (at different times) and deterritorialized (in different spaces) collaborations (Cremata and Powell 2015).

Professional and amateur musicians use online technologies to collaborate with songwriters, artists and producers from around the world (Hu 2016; Lombardo 2018; Salvaggio 2015; Settles and Dow 2013). In an article titled 'How Dropbox is changing the music business', Forbes.com contributor Cherie Hu (2016) wrote that 'Dropbox has served as a key convergence point for music professionals in recent history, from artists and producers to publishers and curators'. An organization called 'February Album Writing Month' (FAWM) challenges songwriters to collaborate with one another online via their website <http://fawm.org> to create fourteen songs (an album length) in 28 days. The homepage of their organization's website states, '[i]t doesn't matter if you only write lyrics or struggle with them! Find friends and collaborators from anywhere who complement your skills and challenge you as a musician' (FAWM.ORG n.d.: n. pag.). Approximately 5000 musicians registered with the organization and pledged to participate in collaborative songwriting projects in 2019 (FAWM.ORG n.d.). These types of online songwriting collaborations can be recreated in a school music classroom using DAWs and file-sharing platforms. Groups of students playing the roles of songwriters, artists and producers can co-create original work with cloud-based notation software (e.g., Noteflight) and/or DAWs (e.g., Soundation) and share session files, tracks, production notes, charts and other documents through online file-sharing platforms (e.g., Dropbox, Google Drive) in school music projects.

These tools may facilitate the kinds of collaborations between school music students, music industry professionals and institutions that writers of the Housewright Declaration (Madsen 2000) imagined as part of their charge, writing 'music educators should involve the music industry, other agencies, individuals and music institutions in improving the quality and quantity of music instruction'. Online music communities could include industry professionals, students and faculty in tertiary music programmes, and school students in projects that bridge the gap between school music and the music students enjoy in their everyday lives. Therefore, the purpose of this article is to present a collaborative online songwriting project and outline procedures to replicate the model utilizing DAWs and file-sharing technologies. Using a partnership between a high school music technology class and an undergraduate music education course as an example, this article will explore how students at every level can collaborate to compose, record, produce and distribute music of popular genres in an online community.

COLLABORATIVE SONGWRITING AND SHARING IN ONLINE SPACES

Collaborative songwriting projects can transcend our school walls and state borders when we utilize online technologies. As Cremata and Powell (2017) wrote, 'by empowering students to be co-creators of their own network-mediated, deterritorialized learning, they might find new pathways to learn and renew their desire to continue to learn outside the boundaries of school walls, extending music education into life-wide/long practices' (2017: 313). Perhaps one of the most well-known and longest lasting online collaborative composition projects is the Music Composition Online Mentoring Programme (Music-COMP) formerly known as the Vermont MIDI Project. The mission of this organization is 'to serve students in composition through online mentoring with professional composers and live performances of student work' (Music-Comp Website 2014). Students who participate in the Music-COMP programme share notation-based compositions, often created through highly structured Noteflight assignments from their teacher. Mentors then provide feedback on the work through online postings.

Bruce Carter (2013) used a similar mentoring-style online composition approach for middle school (ages 11–13) band students, classroom teachers, undergraduate music majors and professional composers, through the Virtual Composer-in-Residence Programme (VCRP). In this model, middle school classroom teachers incorporated composition exercises into rehearsals, and undergraduate music students mentored students on how to complete weekly composition assignments. Professional composers then provided suggestions and created a ten-minute work for band drawing upon the middle school students' compositions. The VCRP used online technologies such as Google BlogSpot (now Blogger), Noteflight and tonematrix.audiotool.com. The latter allowed students to compose music without using standard notation.

While these online collaborations were specific to musical composition in a western classical tradition, the songwriting process in popular music presents unique challenges and opportunities. Musical composition typically involves traditional five-line staff notation, and students may be limited by their own theoretical understanding of notated music. Put another way, students may only be able to compose music in patterns that are already familiar to them by sight (e.g., familiar rhythms, pitches and chords). A beginning trombone student may only compose in flat keys, and students who are rooted in beginning band/string method books may only compose with quarter notes, half notes and eighth note pairs. Songwriting in the popular music tradition is typically limited only by what the student is able to imagine or hear in their mind's ear, as musical ideas are shared through recorded and/or performed form and not through standard five-line staff notation.

In 'The Composers Workshop', Alex Ruthmann (2007) engaged general music¹ students in collaborative songwriting activities inspired by writers workshop approaches commonly found in academic classrooms. His students learned to express musical ideas through sound first – not using notation – drawing inspiration from a variety of sources (Ruthmann 2007). While the collaboration occurred in real time in a physical learning space, Ruthmann used online spaces to publish and share original student work with others.

Krout et al. (2010) used Skype to facilitate collaborative songwriting activities. Four music therapy students with no prior songwriting experience, attending universities in Australia and the United States, were paired with one another in same-university and different-university partnerships to deepen

1. Teachers in the United States often refer to music classes that are not ensembles as 'general music'.

understandings of the songwriting process through collaborative projects. The researchers found that while participants reported success with the online collaborations, glitches and delays using Skype often disrupted the process. The researchers concluded that Skype should not replace face-to-face songwriting collaborations but could offer 'creative solutions for facilitating songwriting between persons who are not able to do so in person' (Krout et al. 2010: 85).

In an exploratory study of the aforementioned FAWM organization, Settles and Dow (2013) surveyed popular music songwriters ($n=226$) who participated in FAWM projects from 2009 to 2012 about their online collaborations. They found that 'communication, compatible but complementary interests, and slight differences in status are key factors in collab formation; and that balanced efforts from both parties contribute to collab success' (Settles and Dow 2013: 2016). These findings suggest that K-12 teachers of popular music classes and ensembles might seek partnerships with groups that have a different level of experience than their students (e.g., industry professionals or students in tertiary music programmes) and offer skill sets that complement the work of a particular school course or ensemble. Facilitators of the collaboration should also ensure that there is a 'balanced effort from both parties' to maximize the success of the collaboration.

The examples of collaborative online composition/songwriting projects and the research of Settles and Dow informed the model I propose in this article. This article presents a collaborative songwriting project mediated by online file-sharing technology. Musical ideas are created by artists in a high school popular music technology class using a DAW (not notated in five-line staff notation) and shared through the Google Drive file-sharing platform with preservice music educators at a university. This collaboration engages partners at different levels with complementary skill sets, as Settles and Dow (2013) recommended, with a facilitator who will ensure the balance of effort between the two groups.

ROLES AND RESPONSIBILITIES

There are three groups with unique responsibilities in this collaborative online songwriting model: artists, producers and facilitator. Although I provide an example of a collaboration between high school music technology students and preservice music teachers later in this article, these roles could be fulfilled by any group of students and/or educators, regardless of instrumentation, experience or grade level. In this collaborative model, the artists are responsible for writing original songs in a popular music style (e.g., rock, hip hop, R&B). Standard five-line staff notation may not be appropriate for this activity; therefore, notation in the form of chord diagrams, tablature and iconic notation should be used whenever notated parts are necessary. As a nuanced understanding of music theory is not essential to compose popular music, students should use their ears to guide them in the creation of drum grooves, simple chord progressions, bass lines and melodies. There is no standard approach to songwriting, so these elements could be created in any order and revised at any stage of the project.

Producers in this collaborative model would check in regularly with their artists through online file-sharing and discussion tools (e.g., Google Drive, Dropbox). Producers could act simply as advisors or play a hands-on role in the composition process by contributing to the project and editing and mixing

tracks using a DAW; this decision could be made by the producer or the facilitator depending on the situation and the goals of the collaboration. Depending on the partnership sites, a single producer may work with a number of artists, or a single artist could work with a team of producers – such is the case in the example following this section. Ideally, producers would have more songwriting experience than artists but would offer feedback and ask probing questions in a way that did not assume authority.

While high school students may be able to serve in this capacity when working with younger students, this is an opportunity for preservice music teachers to experience a less formal, and less teacher-directed, relationship with an artist-student. In Clint Randles' (2012) words, the producer in a music classroom should

seek to bring out what is good about the musician that is already there [...] these types of teachers transcend tradition for the sake of their students' futures – that is, for this type of teacher, what lies ahead is more important than preserving the traditions that have gone before. (2012: 44)

Producers should carefully consider the personal and musical backgrounds of the artist-student, providing guidance to help artists meet their individual goals.

The third component of this collaborative model is the facilitator or group of facilitators. The facilitator helps establish a timeline, norms, etiquette and generally oversees the project. While artists and producers may be hyper-focussed on one specific song, the facilitator would have a broader vision of all of the artists' and producers' work and offer opportunities for collaborations across artist and producer pairings. For example, if one artist is looking for a saxophone solo for a project, the facilitator may be able to recommend other artists or producers who could collaborate to fill that need. Since the primary communication between artists and producers is conducted online, the facilitator should oversee all of the online dialogue, shared files and frequency of check-ins to ensure the groups are operating with efficiency and professionalism. Facilitators may use a chart, such as the one in Figure 1, to track the communication records of artists and producers. Figure 1 shows that Darcy and Kenneth² were artists (high school music technology students) who had

2. While the communications and activities described in this section are real, the names of schools, artists and producers are pseudonyms randomly generated by www.name-generator.org.

Artist & Production Team	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Darcy	X	X	X	X	X		X	X
Mr. Johnson	X	X		X	X		X	X
Mr. Moore	X	X		X	X	X		X
Ms. Blaze	X	X		X		X		X
Kenneth	X	X		X	X	X	X	X
Ms. Robinson	X		X	X				X
Ms. Martin	X	X		X	X		X	X
Mr. Anderson		X	X		X		X	X

Figure 1: Online communication tally records for artists and producers.

each been assigned to a production team of three producers (preservice music teachers) in this example. The X in each box indicates that there was some communication from that person in each week of the project.

While the producers in this model provide mentoring through online technologies, the facilitator in the physical space can provide feedback to artists about their project, monitor progress on a day-to-day level and if necessary restructure the guidelines for the project. Feedback may also take the form of formative assessments using rubrics and checkpoints for artists, producers and facilitators to reflect on the current state of a project. The following example rubric is adapted from Maud Hickey's (1999) 'Assessment rubrics for music compositions' (Table 1).

Hopefully, the roles and responsibilities outlined here may be useful to readers who wish to replicate similar online songwriting collaborations. This article aims to provide pedagogical suggestions that can inform other educators on how to engage students in creative work that builds community and develops a network of music-makers. This is not a prescribed method, but a single model that could – and should – be adapted to fit the environment and desired population of artists, producers and facilitator. The next section of this article will describe the voices of one artist and a team of producers who collaborated together in an online songwriting project that I facilitated using this model. While several students participated in the collaboration, I chose to focus on this collaborative group that was representative of the class. By focusing on one group, we can see continuity throughout conversations at various stages of the project.

AN ONLINE SONGWRITING COMMUNITY

The heart of this collaboration lies in the dialogue and sharing of work between artists and producers, guided by a facilitator in a small online community. In the following example, music technology students at Lower Perkins High School served in the role of artist, preservice music teachers at Queenstown University served the role of producer and I, a music technology teacher at Lower Perkins, served as the facilitator. The groups in this collaboration communicated through a shared Google Drive folder that included Mixcraft session files, MP3s, notes, correspondence, introductory videos and a communication checklist.

There were eight music technology students at Lower Perkins who participated in this example collaboration. All eight students elected to take a music technology class with a popular music focus, and several of them were self-taught guitarists, keyboardists or drummers. Although it was not a prerequisite for the course, all students were members of at least one school ensemble: two of the students participated in the school orchestra, one participated in orchestra and choir, three participated in band and choir, one participated in band and one participated in choir. Five of the students were female and four self-identified as students of colour. Twenty preservice music educators at Queenstown University participated in this collaboration. The students were primarily white, with an even balance of male and female students. Most of the Queenstown students studied an instrument/voice in the classical tradition, but many were interested in jazz and popular music styles. The Queenstown students were enrolled in a required music education course called 'Creativity and Collaboration in the New Music Community'. The course focused on technologies and pedagogies for life-long learner-centred music education.

Dimensions (Standards)	Intern (Level 1)	Assistant (Level 2)	Producer (Level 3)	Studio Executive (Level 4)
Melodic Content MU:Cr1.1.T.IIIa; MU:Cr2.1.T.IIIa	An incomplete or incoherent melody	A complete melody, but lacks imagination	Musically complete and some creative elements	Complete, imaginative and aesthetically effective
Rhythmic Content MU:Cr1.1.T.IIIa; MU:Cr2.1.T.IIIa	Is erratic and does not make musical sense for the piece overall	Is stable but does not have any variety or does not make musical sense for the piece as a whole	Makes musical sense for the overall form of the composition	Is coherent and makes musical sense; it adds to the aesthetic effectiveness of the composition
Form MU:Cr3.2.T.IIIa	Has no formal structure or clear themes	Has clear themes but not arranged in any formal structure	Is in a formal structure but is underdeveloped	In a formal structure with multiple sections and logical sequence
Aesthetic Appeal MU:Cr3.2.T.IIIa	Does not present an effective general impression; musical ideas do not hold the listener's interest	Includes at least one interesting musical idea; yet, the overall impression is not aesthetically effective	Includes some interesting musical ideas; the general impression is pleasant and moderately effective	Makes strong general impression and has great appeal; would be enjoyed by many listeners; keeps the listener interested
Lyrical Content CCSS. ELA-Literacy.L.11-12.1; CCSS. ELA-Literacy.L.11-12.3	Lacks a clear point of view and logical sequence of information	Lyrics are present, but the main idea is vague; some of the lyrics do not seem to fit and the progression of ideas is unclear	Lyrics are written with a logical progression of ideas; the lyrics are meaningful and relevant to the topic	The lyrics are written clearly and consistently with a logical progression of ideas; the lyrics give the listener a clear sense of the topic
Writing Process CCSS. ELA-Literacy.L.11-12.1; CCSS. ELA-Literacy.L.11-12.3	The lyrics need extensive editing; multiple errors in grammar, punctuation and spelling	The structure is unclear and there are some spelling, grammar and punctuation errors	Clear and well written with minor errors	Clear and well written with no errors; grammar and usage are correct with correct punctuation
Originality MU:Cr1.1.T.IIIa; MU:Cr2.1.T.IIIa; MU:Cn10.0.T.IIIa	The song is mostly pre-recorded loops, with little or no MIDI or recorded audio	The song contains some recorded audio and MIDI sequencing	Most of the song is original, through sequenced MIDI and recorded audio	The song is entirely sequenced and recorded by the student

(continued)

Dimensions (Standards)	Intern (Level 1)	Assistant (Level 2)	Producer (Level 3)	Studio Executive (Level 4)
Collaboration MU:Cr3.1.T.IIIa; MU:Cr3.2.T.IIIa; MU:Cn10.0.T.IIIa; CCSS.ELA-Literacy. SL.11-12.1	Very little communication with experts and classmates	Some communication with experts and classmates, but at a very superficial level	Consistent communication with experts and classmates; written communication demonstrates a willingness to collaborate and grow	Frequent communication with experts and classmates; influence of the feedback is clear in the project and written communication shows growth and critical thought

Table 1: Example rubric for a collaborative songwriting project.

As facilitator, I started the online collaboration by asking artists (high school students) to create a YouTube video about their music department to share online with the producers (preservice music teachers). The artists collected videos and developed a narrated script that described all of the performance ensembles and music electives at Lower Perkins High School. The artists then entered individual information about themselves into a Google Doc template and shared with a team of producers and the facilitator. Darcy, an artist-student at Lower Perkins High School, wrote the following introduction to her production team, using prompts, in bold, provided by the facilitator.

1. **About me:** My name is Darcy. I'm 18 years old and a senior at Lower Perkins High School. I spend basically all of my free time listening to music on my iPod or watching YouTube videos of people playing guitar and drums, or the music videos of the bands I like. I'm a total pop-punk kid, and like more heavy/minor sounding music, and deep, meaningful lyrics more than the bubblegum pop stuff that's typically on the radio... I write poems in a composition notebook sometimes, and like to sit in my room and play guitar. My biggest influences are probably Ed Sheeran, Hozier, the boys from Fall Out Boy, Panic! at the Disco, and I have a weakness for Michael Jackson. I'm kind of shy and awkward, and I like puns and corny pickup lines because I think they're hilarious. I'm really bad at sports. Mountain Dew is my favorite drink (Voltage and Baja Blast), and I have a problem with eating candy. I'm also really, really bad at writing things about myself.
2. **What instruments do I play:** Violin (since 4th grade), guitar (self-taught), drums (bass drum and simple drum set stuff for 2 years), mallet percussion (bells, xylophone, marimba for 3 years), piano (just basic stuff), and singing (since the spring of 7th grade).
3. **What ensembles do I participate in:** Mixed choir (normal choir), chamber choir (advanced choir), show choir, orchestra, and I've been involved in 3 musicals (Footloose, Pippin, and this year, Mary Poppins).
4. **What are my goals after high school:** To be as involved in music as I can (I really want to be in a pop punk band because why not?), and to go on to get a degree in lighting design at a 4-year school.

5. **What about this project excites me?** The fact that I'm going to learn how to make a song, because I've always been a poet, but I've never been able to add the music aspects to any of my work, also the fact that it's a collaboration, which is something I've never really done before, as I tend to work alone on my music stuff.
6. **What about this project makes me nervous?** The fact that I've never written a song before, and every poem I've ever written and been happy with is structured as a free-verse poem, so there's no rhyme scheme, and I'm not as talented as the boys in Panic! at the Disco or Fall Out Boy, and I don't think I can get away with a free-verse song without a lot of help.
7. **What questions do I have for my partners at Queenstown University?** Can you tell me a little bit more about yourself/your personal musical preferences, and what it's like being in college? Also, what do you like to do in your down time (if you have any at all)?

-Darcy

This introduction, combined with the video about the Lower Perkins High School music department, provided Darcy's production team with context about the musical environments Darcy came from both inside and outside of school. This student volunteered information about her personal tastes in music and described herself as a 'pop-punk kid', a description that may not have surfaced in her other music classes or ensembles. Darcy also made it clear that she was interested in receiving help from the producers on her project, noting her limited experience with songwriting, 'I've never written a song before... and I don't think I can get away with a free-verse song without a lot of help'. This Google Doc served as the initial communication between artists and producers, breaking the ice for subsequent dialogue about Darcy's original song. Darcy's production team replied in the same Google Doc, responding to her welcome message and introducing themselves to her. Here is a response from Mr Johnson, a member of Darcy's production team.

Hello Darcy,

I am Mr. Johnson. I am a music education major with a concentration in classical saxophone (all of them). I am originally from South Benton. My musical journey began with my parents. Collectively, they exposed my ears to everything from Beethoven to Benny Goodman to Eminem and everything in between. As I got older, I began to seriously listen to jazz and eventually fell in love with the genre... College has been a wonderful experience. In college, you have the opportunity to learn from some of the greatest minds in a given subject matter... the best advice I can give to anyone going into college is choose the right major for you. Don't choose a major because it guarantees employment or high pay. You will perform best in the field that is right for you. I read your document and am very excited to start making music (or as we music ed majors call it, musicking). I am always happy to get a different musical opinion and see how different musical backgrounds come together to create something beautiful. Let's make some awesome music together!!!!Go forth and enjoy the music in your everyday life!

All the best,

-Mr. Johnson

While the role of producer does not necessarily need to be filled by undergraduate music education students, this experience does provide preservice teachers with an opportunity to work with K-12 music students in a learner-led setting. Note the connections that the producer already made to his music education coursework, writing that he was ‘very excited to start making music (or as we music ed majors call it, musicking)’. This is a reference to Christopher Small’s (1998) landmark work, *Musicking: The Meanings of Performing and Listening*, which described music as an activity and not a thing. It is clear that as a producer, Mr Johnson understood the goal of this project was to actively engage in musical practice. The students in this high school music technology class were not exploring music from a theoretical perspective but rather through participation in musical acts: creating and performing. From the very beginning, Mr Johnson was able to make a human connection with his artist as they each shared a bit about their personal backgrounds and their mutual love for music. Sounding much like a producer, Mr Johnson provided advice to his artist-student about her goals and expressed a genuine interest in collaborating to ‘create something beautiful’ together. The tone of this conversation was perhaps different than you would find in a synchronous teacher-led music classroom; it is more conversational and less representative of an authoritative expert. This changes the relationship of teacher and student from expert and novice to co-learners, with each member contributing a unique skill set to the project.

After the introductions, the artists began crafting their original songs, using some combination of the techniques and strategies outlined in the previous section on roles and responsibilities. As facilitator, I provided guidance and access to resources (e.g., instruments, musicians, recording equipment) and in one case even performed flute on an artist’s track. At this point in the project, I collected suggestions for a concept album from artists at Lower Perkins High School. The artists had all agreed that while they wished to compose music in a variety of styles as individuals, a central focus around a common theme would make the album more cohesive. The artists unanimously voted to create music inspired by Greek gods and goddesses and came to a consensus on a title for their album, *Oasis of the Gods*. The artists settled on the name Twilight Minefield as a title for their collective. After the artists had a general sense of their individual projects, they reported initial ideas to their production teams. Here is another note from Darcy, using prompts in bold that I provided as facilitator.

Hey everyone, I just started my project and will be uploading it here soon. Here is some information about the song:

Tempo: Not sure yet, but it will probably be somewhere between 120 BPM and 130 BPM

Key: A minor

Style: Rock or pop punk (with some brass and string elements added in, probably some blues chords to spice things up)

Form: I don’t really want to go with the 8-bar phrase format that my peers are going with because I don’t know how I would be able to fit lyrics into those 8 bars. Everything is still a work in process.

Title: Nyx (Goddess of the Night)

I'm stuck when it comes to lyrics, but I figured if I gave a little more information on my topic that maybe I could get a suggestion or two. Nyx is the Goddess of the Night, and she lives in Tartarus (the Underworld) with her children. Her brother Erebus (Darkness) is the father of most of her children. Their first child was Hemera (Goddess of the Day), and because Hemera and Nyx create the cycle of day and night, they never are able to meet at home. However, while Nyx makes her journey for the night, Hemera makes her return from her daily trip, and the two meet peacefully.

Also, I have replied to everyone, and want to thank you for your responses once again:)

Can't wait to hear back from you!

-Darcy

In this note, Darcy kept her production team informed about the musical parameters of her composition (e.g., tempo, key, style and form) and asked questions that would help guide her in the next phase of the work, 'I'm stuck when it comes to lyrics ... maybe I could get a suggestion or two'. This note also demonstrates the non-linear approach to songwriting described in the previous section, as Darcy was brainstorming multiple elements of the song at the same time, instead of focusing on completing them as individual tasks. This is a very natural approach to songwriting, as students will rarely invent drum grooves, chord progressions, bass lines and melodies in a sequential manner. Darcy concluded her note with a cheerful thank you and invited her production team to respond. Ms Blaze, a second member of Darcy's production team, responded in the Google Doc.

Dear Darcy,

Thanks for getting back to us! I think you have some great ideas. I like that you want to keep the tempo relatively brisk and that you're willing to experiment with different instrumentations. I hear that your whole class has decided to use a gods/goddesses theme. I checked out some of the gods that you have listed, and I think that's an interesting choice. I had never heard of Nyx before, so thank you for the background story! I think one way to go about spurring some creativity in the lyrics is to think about how you personally relate to the story you have chosen. Why did you choose Nyx, and can you think of any ways in which you and she are similar?

I think to get a better idea of what you want out of your song it would be really helpful, if you feel comfortable, if you would share with us some of your poetry! It seems like you are a very intelligent and unique student, so I am sure your poetry is reflective of that!

Look forward to hearing what you have to say!

-Ms. Blaze

In this response, Ms Blaze asked Darcy probing questions to better understand her connection to the topic. Ms Blaze affirmed that she heard Darcy's voice, 'thank you for the background story', while she offered suggestions on how to move forward with the development of lyric writing 'I think to get a better idea of what you want out of your song it would be really helpful, if you feel comfortable, if you would share with us some of your poetry!' Not only did Ms

Blaze respond to Darcy's request for help with lyric writing, but she is recalled the initial introduction in which Darcy noted she had experience writing poetry. Ms Blaze clearly demonstrated her understanding of her artist-student's background in this response, showing that she cared about her interests and past experiences. Clearly, Darcy was not viewed – as Freire (1996) described in his critique of the banking model of education – as an empty vessel to be filled with expert knowledge in this situation but rather as an expert of her own experience with knowledge and skills that she brought to the project. Darcy and the other artists in her class would continue to share recordings, session files and questions to their production teams over the course of eight weeks. In one case, a producer performed a trumpet solo over an artist's track and uploaded the recording to the shared Google Drive folder. Throughout the project, artists would provide an updated song along with one or two questions, and producers would write back with guidance on how to proceed. Here is an example of one such online communication between Darcy and her team:

Hey guys,
I just posted a new MP3 file with how the song is actually going to sound. I need to re-record the guitar part because the program is a little glitchy at times, and the metronome got off when I was recording that part. I used an acoustic-electric guitar this time around because I actually brought my own instruments into school. In regards to the lyrics, I'm not sure what I want to do with them. That's the hardest part of all of this about it, I think. I don't even really know what I want to do with the meaning to be. I like the story I posted about Nyx and her daughter, but I don't know how to capture it properly. Suggestions?
-Darcy

In this note, Darcy echoed her concern about the difficulty of writing original lyrics and asked her team for suggestions. She also mentioned bringing in an instrument from home, the acoustic-electric guitar, demonstrating one way in which the project allowed for what Tobias (2015) called *crossfades*, connections between school music and the artist-student's personal life. Darcy's production team tried a new feedback approach and responded as a team rather than as individuals.

Hi Darcy,
We all decided it would be more helpful if we gave you suggestions from all of us in one response than from three individuals. If you prefer to hear from each of us, then let us know and we can go back to what we were doing. We all think you've made some great improvements on this sound file, and we're beginning to understand your unique musical voice a little better. Here are some of the suggestions we have:

- Try to balance the voices. When something new comes in, maybe make that voice more prominent since it is going to be the most interesting thing happening for the listener.
- Try to make the rhythm a little more consistent. If you are recording live, it might make it easier to record with a metronome. You can even plug some headphones into a metronome and have it in your ear without it bleeding on to the recording.
- In terms of the meaning of the song, try to find a way that you personally relate to the story of Nyx.

- We would also like to encourage you to think of what part of this song should be improvisatory. Do you have any experience with improvising musically?

Nice work, and we look forward to hearing from you again!

-Ms. Blaze, Mr. Moore and Mr. Johnson

Darcy's production team offered feedback about the technical aspects of the mix, specifically drawing her attention to elements of balance and rhythmic consistency. The team used familiar musical language and jargon-free terms, which were appropriate choices for a producer working with an artist in a popular music setting. The team provided technical strategies (e.g., use a metronome with headphones) but did not seem to directly address Darcy's struggle with lyrics, writing only 'try to find a way that you personally relate to the story'. As facilitator, I recognized that the producers were falling short in providing Darcy the information she needed to write her lyrics. Darcy's experiences with lyric writing were fairly typical of the challenges her classmates were facing. As a result, I incorporated five-minute lyric writing exercises at the beginning of each class, drawing on examples and activities from Berklee College of Music's online songwriting classes shared for free at <https://www.berkleeshares.com/>. As a facilitator I was able to fill in gaps related to the songwriting process, help interpret the suggestions of the producers and guide the artists through creative roadblocks when the producers were unable to do so. Approaching the end of the project, Darcy wrote this final message to her production team:

Hey everyone! Just wanted to let you all know that I uploaded an updated MP3 file of my project (the one that says with harmony vocals). I'm in the process of working on a melody, and I almost have all of my lyrics written (finally!). Things are really starting to come into place.
-Darcy

In this note, Darcy expressed some relief about the lyrics she had written and was glad the song was nearly complete. In the final week of the project, I worked with everyone to determine a song order for the album, ensure that the volume of all of the tracks was consistent and upload materials to a company for distribution through online streaming platforms, including iTunes, GooglePlay, Amazon, YouTube and Spotify.³ Finally, the artists created a commercial to share with producers showcasing the process of creating and recording the individual songs, along with their completed works. Use a QR reader or visit the URL in Figure 2 to watch this commercial.



Figure 2: *Twilight Minefield* commercial, <https://youtu.be/ck-6kH05tyU>.

3. Darcy's final song may be heard on a YouTube channel created by the distributor here: <https://www.youtube.com/watch?v=OelekWdvpC4>. Her classmates' compositions may be heard here: https://www.youtube.com/channel/UCDaxNo8cf51_RoAiwlQpjlw/ featured.

DISCUSSION

The online nature of this model allows for collaborations when local partnerships are not possible, a benefit of online songwriting collaborations identified by Krout et al. (2010). Lower Perkins High School was not located near a university that could serve as a local partner, so the alternative to an online collaboration would have been no collaboration at all. Other popular music songwriting partnerships could be formed across school buildings, or classes and ensembles (e.g., music technology, guitar, keyboard, modern band) that are not scheduled to meet at the same time. In addition to overcoming geographical barriers, online asynchronous collaborations alleviate local scheduling conflicts. Regional collaborations might include partners in neighbouring school districts. National and international collaborative partners could be found through online social networking sites. There are a variety of music teacher groups on Facebook that may be appropriate venues for finding a collaborator. Online file-sharing tools allow artists and producers to quickly share and organize materials related to a songwriting project. While communications could have easily occurred through e-mail, the use of a shared document alleviates privacy concerns, as the document is public and open for the facilitator to monitor. Technologies such as Dropbox, Google Drive and Microsoft OneDrive also allow for the transfer of relatively large file sizes that may not be sent through e-mail.

My primary goal as the facilitator for the case shared in this article was to help my students (the artists) develop a deeper understanding of the songwriting process by working with preservice music teachers (the producers) who were learning about learner-centred instruction, technology and creativity in their university coursework. The case could have been strengthened by another potential benefit of online collaborations: broadening perspectives about the ways in which people think about and create music in a variety of locations. The cultural exchange of ideas, perspectives and traditions could have deepened the existing model if the artists and producers had shared more about their lives and communities outside of school. While this was a missed opportunity for this example, future projects could include prompts and discussion questions that would facilitate such an exchange of ideas. This partnership could be enhanced by engaging artists and producers from varying musical and cultural backgrounds, located in different regions of the world or in different types of communities, deepening an understanding of each other through a collaborative creative project.

A potential limitation of online collaborations is that they may not allow for real-time face-to-face communication. Artists in the example collaboration provided videos of themselves and their work to share with producers, but because of differences in class times synchronous video chat was not an option. And even if it were an option, Krout et al. (2010) found that Skype technology was glitchy, with audio and video delays that negatively affected the experience of the collaborators. A possible solution would be video diaries or pre-recorded excerpts that present the different phases of the songwriting process shared between the artists and producers. This is especially important for collaborators in distant geographical locations, who would appreciate seeing their partners working in their own environment.

This article presented one model for a collaborative songwriting project using online file-sharing and communication technologies, which may be adapted for a variety of K-12, tertiary and/or professional settings. Future

research might examine multiple styles of collaborations with larger sample sizes, testing different variables of interaction-styles and population types to determine how these relationships affect the quality of the songwriting process. While the DAW used in the example of this article was a computer-based software package (Mixcraft), future collaborations might utilize cloud-based DAWs such as Soundtrap to allow artists and producers to co-create songwriting projects together online. By utilizing technology, such as online shared drives, DAWs and video conferencing, there is no limit to the size and scope of this collaborative songwriting project. Music teachers at every level might consider how we can leverage DAWs and online file-sharing and communication technologies to facilitate collaborations that stretch our classroom walls and develop relationships with popular musicians and songwriters everywhere.

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CONTRIBUTOR DETAILS

Matthew Clauhs is an assistant professor of music education at Ithaca College where he teaches courses in modern band and wind methods. He serves on the editorial review board of *Music Educators Journal* and is chair of the New York State School Music Association Research Committee.

Contact: Whalen Center for Music, Ithaca College, 953 Danby Rd., Ithaca, NY 14850, USA.

E-mail: mclauhs@ithaca.edu

 <https://orcid.org/0000-0001-8515-4663>

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