USE OF WEB-BASED TOOLS IN MUSICAL COMMUNITIES
FROM THREE PERSPECTIVES

A Dissertation in
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by

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ABSTRACT

The purpose of this multi-project research was to explore uses of web-based technologies in musical communities from three perspectives. I wanted to learn how those technologies impacted musical collaboration, tools for teaching, and communication between orchestra directors. The first study was an examination of how high school string players, from an existing chamber group, viewed online music collaboration. This case study revealed that these high school students preferred to utilize technologies with which they were familiar, in particular, Facebook and Spotify. The second study determined which mobile apps Pennsylvania music teachers used in their classrooms. The questionnaire returned results from 342 app users, and 392 app non-users. In addition to a robust list of apps being actively used by K-12 music teachers, I also gained an understanding of why more than half these teachers did not use apps in their classrooms. The third study investigated uses of the Youth Orchestra Directors Facebook page and explored user perceptions of the (researcher created) page. This case study revealed that there was great interest in this Facebook page, but the page needed more activity to be helpful for the population. In addition, I gathered personal and professional attributes (via questionnaire) from these group members to learn more about who made up the youth orchestra director community. These three exploratory studies helped me understand perceptions of technology in the orchestra community from students, teachers, and youth orchestra directors. These studies also helped me recognize how much work we, as music educators, need to do to understand the impact technology has on our classrooms, particularly as technology advances rapidly.
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CHAPTER 1
INTRODUCTION

The potential of technology in the music classroom is immensely intriguing. It is a popular topic at conferences and in other professional development opportunities. It can cause heated discussions among teachers who may be most comfortable using established curriculums and activities, who may not have technological resources available, and who may not see technology as applicable to their classrooms. These conversations are not unique to music classrooms; they occur in other fields of education as well.

Larry Cuban wrote *Oversold and underused: Computers in the classroom* to share his “qualitative study that would combine a history of school technologies, surveys, and interviews with statistical data collected at the school site and direct observation of classroom practices” (2001, p. 243). He detailed experiences in early childhood, high school, and university classrooms in Silicon Valley, California in the late 1990s. He considered how teachers and students used the computers in classrooms for instruction; whether/how teaching and learning changed as a consequence of the technologies; and whether the investment in computers was worth the cost. Cuban saw teachers struggle, or simply not try, to use the technology. But then,

The maverick computer-using teachers I have identified…sought to substantially change their instructional practices. They welcomed computers with open arms, took courses on their own, incessantly asked questions of experts, and acquired the earliest computers available at their school or for home use. They did so because they sensed that these machines fit their pedagogical beliefs about student learning and would add to the psychic rewards of teaching. (p. 170)

However, one of his primary findings was, “When a small percentage of computer-using teachers do become serious or occasional users, they – contrary to expectations – largely
maintain existing classroom practices rather than alter customary practices” (p.171). It is surprising that even teachers who appeared excited and motivated to try new technologies maintained old habits and classroom practices.

These points resonated deeply with my experiences. I saw few music teachers truly embrace technology in their classrooms. If they did use technology, it was often forced upon them by administration. And, as Cuban found, the music teachers I have observed “largely maintain existing classroom practices rather than alter customary practices.” I did not see much creativity in the way teachers were incorporating technology into the classroom. But in 2017, 16+ years beyond Cuban’s research, I focused my curiosities on web-based technologies. Web-based technologies were relatively new technology in the 2010s, as compared to computers which were relatively new during Cuban’s research in the 1990s. My curiosities were similar to Cuban’s though: what technologies were teachers and students using; how were they using it; and did they find it worth the time and effort?

**Influences of Web-Based Technologies on Education**

Although it can be interesting to study specific technologies and applications, these tools are outdated and replaced relatively quickly. Consider that Apple released updates to iOS 10 (operating system for iPhones and iPads) on average more than one per month since iOS 10 was distributed to the public (Apple, 2017). So, it is perhaps more interesting to look at a broader influence of technology over our communities. That influence has great impact on learning. Technology has been changing the form of the communities students are part of since at least the 1990s. This communal shift goes by many names. Community of practice (Wenger, 1998), communities of place vs. communities of interest (Collins & Halverson, 2009), friendship-driven participation vs. interest-driven participation (Ito, et al., 2009), idea or ideal of belonging, and
physical place vs. relationship among people (Waldron & Veblen, 2008), to name a few. This change in educational community inevitably changed the nature of learning. Students no longer had to learn from, and with, the people physically near to them. Instead they could learn from, and with, people all across the world, with the assistance of the Internet. Simply stated by Curtis Bonk, “Anyone can now learn anything from anyone at anytime” (2009, p. 7).

As teachers, our professional organizations also took notice of this shift. There is an International Society for Technology in Education, and they produced a set of standards for teachers (ISTE Standards, 2008). Many of these standards referenced this communal shift. They encouraged teachers to model collaborative learning “with students, colleagues, and others in face-to-face and virtual environments” (p. 1). Teachers should “collaborate with students, peers, parents, and community members using digital tools and resources…” (p. 1). And although there are many other examples from these standards, one final example that speaks directly to a shift in community is that teachers should “participate in local and global learning communities to explore creative applications of technology to improve student learning” (p. 2). Previously a mandate to participate in global communities would have been impossible to achieve. But as of 2008 when these standards were written, it is commonplace and expected of teachers thanks to the technology available.

Much of the shift in this view of community came from the prevalence of web-based technologies. As this shift began, these technologies were often referred to as Web 2.0 technologies. Harris & Rea (2009) described these technologies this way:

Web 2.0 technologies encompass a variety of different meanings that include an increased emphasis on user generated content, data and content sharing, collaborative
effort, new ways of interacting with Web-based applications, and the use of the Web as a social platform for generating, repositioning and consuming content. (p. 137)

As these resources continue to grow in popularity, the way that students learn and communicate will continue to change. The ability to interact and learn as part of changing communities makes education quite different from the solidified, isolated classrooms of the past.

With information systems (IS) classrooms quickly filling with the Google/Facebook generation accustomed to being connected to information sources and social networks all the time and in so many forms, how can we best use these technologies to transform, supplement, or even supplant current pedagogical practices? (Harris & Rea, 2009, p. 137)

The question “how can we best use these technologies” is one that many researchers and teachers were trying to answer. Magoulas and Chen (2006) dedicated an entire book to looking at web-based educational practices. From their abstract:

Web-based education has influenced educational practice, fostered initiatives to widen participation, increased learner autonomy, and facilitated informal and workplace learning… This book presents recent advances in Web-based education from various countries around the world that aim to accommodate the needs of individual learners. (p. ix)

Harris & Rea (2009) also explored how to best use these technologies. They shared some of the advantages and disadvantages of (what they call) Web 2.0 tools in the classroom.

Advantages included: students become part of the lesson, the world becomes the classroom, collaboration and competition increases learning, and the classroom is available 24/7.

Disadvantages included: computing resources may not be available, web resources can be vandalized, and students possess different levels of openness. From Harris & Rea in 2009 to my
more recent research (Fulcher, 2017), all “new” forms of learning still bring advantages and disadvantages. It is up to the teacher to decide what is best for their students and their classroom.

Harris & Rea mentioned “classrooms quickly filling with the Google/Facebook generation.” These students were used to being social and being connected to one another. Brown & Adler (2008) addressed the idea of “open education” and how being social can be a great tool for students.

…social learning is based on the premise that our understanding of content is socially constructed through conversations about that content and through grounded interactions, especially with others, around problems or actions. The focus is not so much on what we are learning but on how we are learning. (p. 18)

They went on to explore the importance of small group learning and being a community. In many different formats, they saw that learning as part of a group was incredibly beneficial. In particular, people who learned in this way “learned to be” more than “learned about.” They learned how to be a full participant in the field instead of just learning the content. “The emphasis is on building a community of students and scholars as much as on providing access to educational content” (Brown & Adler, 2008, p. 26). I feel that this is a goal of many music educators I know. They want their students to be part of the community and be an invested member of the ensemble, not just be able to spout facts or hash out notes and rhythms.

Also intriguing when considering a music setting was the “long-tail” of learning (Brown & Adler, 2008). This concept began in commerce when comparing physical retail stores to e-commerce sites like Amazon. Amazon was able to offer consumers a much “longer tail,” wider variety, of merchandise because it did not have to pay to maintain inventory in a physical space. Amazon could offer vast catalogs of less-popular items, i.e. the “long tail,” when physical
retailers could not. In education, “whereas traditional schools offer a finite number of courses of study, the “catalog” of subjects that can be learned online is almost unlimited” (Brown & Adler, 2008, p. 27). What an awesome proposition for music education! Students could be encouraged to pursue styles of music that many teachers would not have time to cover explicitly in class. Violists could investigate jazz. Trombonists could experience mariachi. Pianists could explore the polka. And if the teacher had time to encourage and explore these often lesser-known genres that would be, of course, all the better. But if the teacher did not have time, the student need not be denied knowledge on these topics of interest. This is only one way that web-based technologies have great potential in the music classroom.

Influences of Web-Based Technologies on Music Education

Dr. Thibeault (2012) sparked my interest in these topics. He discussed the transition to “ubiquitous learning, a paradigm for learning transformed by the Internet and mobile computing” (p. 196). This was the first time I had been exposed to the phrase “ubiquitous learning” and it was very intriguing. As an orchestra teacher who enjoyed seeing her students in class, in rehearsal, daily, what did ubiquitous learning look like for my students? Thibeault suggested,

Online lifelong learning need not exist for every instrument. It may be more important that educators be attentive to new relationships and learning cultures made more probable via online learning communities, and that they consider how they can be incorporated into the classroom. (p. 204)

Similarly,

This notion of ensemble can be extended along the lines suggested by ubiquitous learning: Ensembles can be anytime, anywhere, and synchronous or asynchronous, and
they are not limited by geography or grade level. They can organize virtually but come
together to play physically, or create a performance completely mediated by the Internet
and studio techniques, as does, for instance, Eric Whitacre’s virtual choir. (p. 205)

These notions were very new to me. Although an avid technology user and lover, I had not given
full consideration to using these tools in my classrooms. I was inspired to investigate how others
(students, teachers, youth orchestra directors) in music education used and perceived technology.

As mentioned previously it can be interesting to read about the impact of specific
technologies. Looking specifically into music education, I found it particularly interesting to see
how technology was growing and/or changing. For example, sixth grade music students in
Portugal reacted very positively to creating podcasts as part of their music curriculum (Coutinho
& Mota, 2011). And elementary students in South Korea who experienced teaching and learning
mediated by digital technology, were generally more self-motivated to be engaged in music
class, and their perceptions of music were more positive (Kim, 2013). Salavuo (2008)
investigated the use of social media in higher education, as a possible force for pedagogical
change in music education. He found,

The key to the successful implementation of social networking in formal learning settings
is to allow students to use their own tools in learning or to integrate popular and familiar
tools with the overall e-learning environment. This means providing possibilities for an
online presence and participation and ownership of one’s learning environment. (p. 132)

In all of these studies, and many others in educational technology, the idea of ownership returned
regularly. Student as constructor of knowledge, and teacher as facilitator, became commonplace.
“The instructional approaches of choice in online environments are more collaborative, problem
based, generative, exploratory, and interactive. There is more emphasis on mentoring, coaching, and guiding learning than in the past.” (Bonk, 2009, p. 33)

But, as before, it is important to look at the broader uses and implications of technology on the music education community in addition to these specific examples. One example of web-based technologies directly influencing music education, but with a broader scope, is through professional development for teachers. William Bauer (2010) explored the use of web-based tools to create a personal learning network. Professional development needs for music teachers are not uniform and extended experiences have proven more beneficial than short-term. So, Bauer explored a number of web-based tools to allow teachers to create a personal learning network that would truly enhance their professional development.

Looking for an even broader application of web-based technology takes one, again, to Bauer (1999). There, two of his research questions were focused on how music educators were using the Internet in their professional lives, and ways in which the Internet might be a more useful tool in music education. The details of how educators were using the Internet are not especially transferable to 2017, 18 years later. But the ways in which the Internet could be used in music education are interesting to me, because I expect to see some of these same answers in my research.

The participants in this study also indicated a strong desire to learn additional ways to utilize the Internet as a part of music instruction. Sixty three subjects (90%) expressed an interest in learning more techniques for using the Internet with their students to learn about topics such as music history and composers, music theory, jazz, music composition and aural skills, instrumental music, general music, and MIDI. One subject mentioned
that an interactive web site where students could play music on-line with other students would be desirable. (Bauer, 1999, pp. 57-58)

While the specific technologies are changing, it is interesting that, anecdotally, many music teachers in 2017 use the Internet for some of those exact curricular goals. One of my research studies looks specifically at students playing music online together and this idea was also discussed by Bauer’s participants. Returning to the quote from Cuban, it seems music teachers, like educators broadly, “largely maintain existing classroom practices rather than alter customary practices,” even when incorporating new technologies (2001, p. 171). The topics Bauer discussed in 1999 are still being discussed in 2017.

Thankfully, I am not the only researcher pondering the evolution of music pedagogy (or lack thereof) as it relates to technology. Burnard (2007) set out to integrate “theoretical framing and practical insights into a set of basic principles that may be useful for researching the interrelationship between creativity” and technology (p. 37). She began by posing, “Imagine a music pedagogy that builds upon assumptions about creativity and the instrumental use of technology as unrelated concepts, treated separately or at best where one was made to ‘fit in’ to the other’s way of working” (p. 37). She continued by suggesting other relationships one might see between creativity and technology and then acknowledged that there are many approaches to music pedagogy and how these topics were treated within the curriculum of a classroom.

Her goal was to offer new frameworks that show “creativity and technology may be brought into productive relation as catalysts for change in pedagogic practice, policy and teacher professionalism in music education” (p. 38). Her frameworks showed several very interesting and inventive ways to analyze the interactions between creativity, technology, and the myriad of other things that take place in a classroom. She regularly mentioned the use of web-based tools
and the importance of being in community with others as we discuss these topics. She concluded by saying, “We need to share practice via networked learning communities that can play a critical role in providing opportunities for exploration and familiarization with new technologies in order to boost teacher confidence and solicit commitment to pedagogic change” (p. 50). Yet again, we see emphasis on the importance of community and web-based resources to further the field.

As a music teacher and primarily an orchestra teacher, I was most curious about the impact of these technologies on the orchestra community. Ripp (2014) satiated some of my curiosity by surveying members of the American String Teachers Association and asking them how effective they found various digital technologies, and how proficient they felt they were with those technologies. Many of the technologies she asked them to rate were web-based. The 205 respondents to her survey, presumably all string teachers, found YouTube videos, music websites, social media, podcasts, notation software, SmartMusic, and music apps to be over 74% effective. In most cases they rated their proficiency with those items a bit lower than they rated the effectiveness. It seemed to me, and Ripp, that orchestra teachers are incorporating many different technologies into their classrooms. We were both curious about exactly what makes a tool effective, and also what the student perception was regarding these technologies.

As I continued to ponder web-based technologies in musical communities, an particularly orchestra communities, I wondered how students would use these resources in and out of class to collaborate musically. I wondered if teachers would use “new ways of interacting with Web-based applications,” (Harris & Rea, 2009, p. 137). And I wondered if community youth orchestra directors might use online social platforms as a way to network and develop ideas. The purpose of this multi-project research was to explore uses of web-based technologies in musical
communities. I wanted to learn how those technologies impacted musical collaboration, tools for teaching, and communication between orchestra directors.
References


CHAPTER 2
ONLINE MUSICAL COLLABORATION
FOR HIGH SCHOOL STRING STUDENTS

Schools are an integral part of a community. Students tend to belong to communities inside of schools (e.g., classes, clubs, ensembles) and outside of schools (e.g., neighborhoods, community sports teams). Communities of place, or communities formed on proximity, have been very common in the past, and being in community with people who are physically near is perhaps easy. However, Collins and Halverson (2009) proposed that society is heavily supplementing communities of place with communities of interest, sometimes replacing the communities of place all together. Communities of interest are communities formed by shared desires or concerns. Instead of relying on physical proximity, Collins and Halverson suggested students prefer to commune with people who share their interests, regardless of distance, and that technology makes it relatively easy to find and befriend people who share interests, even if these people are thousands of miles away.

As I read these ideas, watched my students participate in online activities, and even participated in online communities myself, I wondered about the impact of technology on musical communities. As a string player and orchestra teacher, I was particularly interested in how string students who already collaborated in place, might view collaborating musically using technology, removing “place” from the equation. String ensembles are a ‘community of interest’ by nature. They often form ‘communities of place’ out of necessity – they must be in proximity to rehearse. But is that ‘community of place’ to rehearse necessary? And certainly there are other means of creating musical communities, outside of rehearsals. Is proximity required for those?

The purpose of this study was to observe how high school string players, from an existing chamber group, viewed online music collaboration. This information could inform K-12 string
teachers of online music collaboration possibilities and help them encourage their students to continue the musical experience online, outside of class. As I read literature regarding online music collaboration (outlined below), and considered string students forming technology-based, online communities of interest rather than communities of place, the following questions came to mind.

- Which websites did they enjoy using and why?
- Which websites did they not enjoy using and why?
- Did they enjoy collaborating synchronously or asynchronously and why?
- Were string students from existing chamber groups interested in forming online communities of interest?

In this study, the online communities of interest were in addition to time spent as a community of place (rehearsing traditionally during the school day).

**Literature**

The three primary components of this project were the chamber group, the technology, and how/why/if they interact. I began by reading prior research related to these three areas.

**Chamber Groups**

My past experiences indicated that students involved in a chamber group may not become best friends, but they learn to function as a unit and they learn to respect one another and the music that is being made. In an effective chamber group, they learn many valuable lessons and grow as musicians and as people. Many authors have written of various advantages of being part of a chamber ensemble including: the responsibility that one develops, the advanced musical skills that develop (intonation, balance, blend, stylistic considerations), the increased ability to listen and adjust, the ownership of the musical product, the independence (musical and
otherwise), and the confidence that can be developed (Berg, 2008; Johnson, 2011; Latten 2001; Stubbs, 1983). I felt students who participated in chamber music, and who hopefully had some of the above qualities, would be well suited to this research project. This project asked students to explore technologies fairly independently, so it was important that they be responsible, musically motivated, and confident in their abilities.

**Online Collaboration Technologies**

As pervasive as technology is, finding research on the effectiveness of online collaboration, much less *musical* online collaboration, was challenging. A broad consideration of online collaboration by Leonard and Guha (2001) examined how preservice teachers viewed online teacher education courses. The research questions were: “What are students’ beliefs and perceptions about taking online courses?” And, “How do students who have taken online courses perceive their value” (p. 52)?

Students 20-45 years old were enrolled in the courses. Quantitative data were collected through surveys and questionnaires initiated near the end of the semester. From the pilot study, 70% of students agreed or strongly agreed that chat rooms cannot replace the value of a good classroom discussion. It seems these students prefer a community of place, at least for discussion purposes. Perhaps this will resonate with my participants thoughts on rehearsing.

In the full study, 50% of the students believed that the online courses gave them more opportunities to interact with their classmates as compared to a face-to-face course. There appears to be a quality versus quantity consideration arising here. Preference for value of in-person discussion versus preference for a multitude of opportunities to interact. Overall, after participating in these online courses, students perceived online teaching and learning as exciting.
Reflecting on a music-specific example, Thalmann and Gaelli (2006) created a unique opportunity for large numbers of people to collaborate on a piece of music. They developed “software that lets users collaborate in generating multiple musical pieces simultaneously within a modern virtual world. People using this software will have compositional and improvisational possibilities” (p. 73).

This musical world was called *Jam Tomorrow*. The virtual room gave users space to work alone or collaboratively to modify an existing tune or start a new one. More than one user could be modifying the same tune at the same time so the changes were immediately audible to all users.

The authors concluded there is still much to learn about the potential for online collaborative software. They envisioned developing applications for education. They stated there might not be a professional use for this particular software, “but in our time, open source online collaboration becomes more and more reputed among home users around the world” (p. 78).

Another music-specific study comes from Tanaka, Tokui, and Momeni (2005) who presented two electronic creations that facilitated collaborative online music. At the time, the online medium was a recent innovation, but the authors argued collaborative music with or without technology was not new. The authors described past musical work involving networks: composing, radio and telephone to include audiences, remote performance, and even the network created by communicative performers in the same room. Then they discussed the challenges of latency or delay:

It is the same musical concern as when composers consider the acoustical characteristic of the concert space in which their work will be performed… Network transmission
latency viewed in this way becomes the acoustic of the network, to be recognized and exploited as one does when composing for specific resonant physical spaces. (p. 191)

Two projects were presented in the article. One project used an online music-mixing environment and the other involved a specially made mobile device. The first project they described was an environment for music-mixing, using sources available through CC-Remix, a system that subscribed to the Creative Commons license. In addition to the mixing that was always available through the Creative Commons, this environment allowed for a collaborative element and the ability to track authorship and content reuse. The second project, *Malleable Mobile Music*, used devices on wireless networks to connect participants as they selected songs and used gesture to control the software (create loops, rhythms, melodies, change the tempo, etc.).

The authors concluded by looking at these creative projects and the ways they could change the roles of artist, composer, and audience. “We feel that notions of social computing coupled with artistic creation can combine to point out ways in which technology evolution can be assimilated directly in cultural production, ultimately leading to possible new forms of musical content” (p. 197).

Giuli, Pirri, and Bussotti (1998) discussed the value of group music making over the Internet and also the challenge of exchanging synchronous audio data. While live performers received immediate feedback from their own instruments, feedback from collaborating musicians (exchanging synchronous audio data) was delayed. It was possible to compensate for this feedback delay but the average delay caused by the Internet made compensation impractical. Their solution for collaborating musicians to avoid online delays was *Orchestra!*
**Orchestra!** was the collaborative online environment created by the authors. The environment was designed to create the feel of an ensemble and real-time delivery of user-produced audio streams. The authors surveyed the users of **Orchestra!** “Three main users’ profiles have shown to be the most interested in collaborative distance working with music: 1. the professional user; 2. the user for didactic aim (teacher and student); 3. the amateur user” (p. 988). Although my participants were students, their profiles would more likely be considered ‘amateur users’ since they were not using web-based tools with a teacher for didactic aims. I do hope that my findings will ultimately apply to didactic scenarios though.

Finally, McCarthy, Bligh, Jennings, and Tangney (2005) also saw a need for multiple users in different locations to be able to collaborate in the process of music making, primarily through composition. But they were not interested in using standard, Western notation. They were only concerned with the use of technology for collaborative music composition and they proclaimed composition as fundamentally different from performing or improvising, since it involves reflection on musical materials. The platform they created for composition was called *Networked DrumSteps*.

The basic idea behind *Networked DrumSteps* was for two or more people to work together, build a set of steps, and create percussion sounds by dropping a (virtual) ball down the steps. Participants used and evaluated *Networked DrumSteps* by doing basic tasks (drop the ball down the steps), being videotaped, and then interviewed. The data indicated *Networked DrumSteps* provided for positive interdependence among students and overall, working together provided more advantages than working alone. The students also enjoyed working together more than working alone, particularly so that they could consult and make “better” pieces of music. Similar to these researchers, I was not attached to conventional notions of notation and
performance. I wanted to see what types of musical collaboration grew out of the provided web-based tools.

This research seemed to show that quite a few people valued the idea of creating music together online, but the difficulties inherent in the process (mainly lag time) required elaborate fixes of software and hardware. These programs went out-of-date quickly if not maintained or updated, and none of the above-mentioned software were available as of 2013. There was excitement around these possibilities, likely because there was little documented success in this area thus far, but the product was not able to outlive the excitement.

Because there were a number of difficulties with collaborating to perform music synchronously online, my research project took a slightly broader definition of “musical collaboration.” I felt that limiting the study to “synchronous music performance” would not allow the students to explore the variety of collaborative musical activities available online. And in this exploratory study, I wanted to give them space to discover what most appealed to them. Since “collaboration” in my study was viewed as two or more people communicating online about music in any format, it was also pertinent to view studies such as this by Waldron & Veblen (2008). They wrote of the Irish traditional virtual music community and the ways they transmitted music. This community utilized generic technologies like YouTube and Skype, but also had a number of specific webpages and wikis that they built to facilitate the transmission of this music. The authors framed their findings with ideas of ‘hot’ and ‘cool’ media and learning. This was a way to describe the amount of interactive participation that the different Internet sites facilitated between learners in the virtual community.

Through this variety of existing literature, it was clear that “online collaboration” was, and is, a developing and constantly changing concept. Collaboration looks different between
fields of study and even within fields of study. The fact that several studies have been done, looking at specific uses of software and technology to facilitate collaboration in music, confirms that musicians were interested in how technology could advance our opportunities to be musical. I was particularly interested in the collaborative opportunities that young musicians saw in the technology that was available to them.

A Change in Education

Some might ask, “Why does this technology even matter? Can’t the students just sit in the orchestra room and make music together?” Using technology to communicate is the way of the future (or perhaps the present) and many people are writing about significant changes to education in relation to technology, including Collins and Halverson (2009). These authors shared considerable information about the relationship between changes in technology and changes in education (changes which often involved technology). The authors recognized views from “technology enthusiasts” (p. 9) as well as “technology skeptics” (p. 30) concerning the use of technology in education. They asserted that with the rise of available technology, people could take education into their own hands to learn what they desired to know. Before technology provided so many opportunities to learn independently, students were fed information regardless of their interest. Opportunities to learn independently continually change the nature of education.

The “technology enthusiasts’ argument” (p. 9) outlined many ways technology could benefit education. First, enthusiasts recognized that the way people communicate changes daily. They argued that society is moving from communities of place to communities of interest. No longer did physical proximity dictate community. Enthusiasts were excited for learner control, or people deciding for themselves, what is valuable to learn. Enthusiasts championed the possibility for publication of student work (e.g. papers, poems, art work, musical compositions), and for
sharing one’s work with the world, which could be a strong motivator for students. Lastly, Collins and Halverson discussed the role of technology to facilitate the power of reflection for comparing work with others as well as the ability to save and revisit information.

However, the authors cautioned that the views of “technology skeptics” (p. 30) must balance the views of the enthusiasts. Skeptics did not believe technology would become prevalent in schools, partly because skeptics viewed schooling as a “practice of human improvement” (p. 35), very personal and often very hard to reform. Technology could also be costly and difficult for all to access. Lastly, skeptics were concerned about teachers no longer having supreme authority over their classrooms or controlling the flow of legitimate knowledge.

Thibeault (2012) wrote of a music education system changed specifically by technology. He began with a discussion of the shift from a performance era to a sound recording era, including the changes experienced by audience and performer, predicting a move to the computer paradigm and digital media.

The trajectory of music from performance to recording to data has changed music, musician, and audience. The locus of musical experience moved from face-to-face performance, to the world of tangible sound objects and commerce of sound recording, and to an explosion of synthesis and sampling through the rise of new media and computers within which music is digital data. Musicians moved from needing the ability to reliably perform live, to the high expectations and pressure brought about by recordings, to deep participation in creation environments that mix performance with virtual aspects. (p. 201)

Thibeault went on to discuss the transition to “ubiquitous learning, a paradigm for learning transformed by the Internet and mobile computing” (p. 196). This era of learning saw
students who learned wherever they were, mediated by computers instead of a teacher. Then Thibeault returned to musical influence and how ubiquitous learning could, and would, impact the music classroom.

Online lifelong learning need not exist for every instrument. It may be more important that educators be attentive to new relationships and learning cultures made more probable via online learning communities, and that they consider how they can be incorporated into the classroom. (p. 204)

Similarly,

This notion of ensemble can be extended along the lines suggested by ubiquitous learning: Ensembles can be anytime, anywhere, and synchronous or asynchronous, and they are not limited by geography or grade level. They can organize virtually but come together to play physically, or create a performance completely mediated by the Internet and studio techniques, as does, for instance, Eric Whitacre’s virtual choir. (p. 205)

Thibeault concluded with a discussion on likely limits and possible problems of utilizing technology fully. These included race and identity, proprietary and commercial technologies, and intellectual property concerns. He concluded:

What is needed is for the music education profession to begin to take more seriously the need to go beyond performance, to reconstitute ensembles around ubiquitous opportunities, and to adjust practices to better connect with more generous conceptions of music, musician, and audience. (p. 212)

This final quote is the one that fueled my interest in this topic and led to this research project. As I pondered what ubiquitous opportunities already existed for our students, and whether or not current teachers were using those opportunities, I decided to turn to the students themselves. I
wanted to hear their thoughts on the potential of using online tools to collaborate musically, as the purpose of this study was to observe how high school string players, from an existing chamber group, viewed online music collaboration.

**Methodology**

**Participants**

Participants were four high school students in a pre-existing string chamber group. Iris, Charites, Athena, and Nereus (pseudonyms) were all in Chamber Orchestra together (along with approximately 20 other students) but were all also involved in other chamber groups. Chamber Orchestra at this high school was formed through audition and by decision of the teacher. These four students had been making music together in Chamber Orchestra since the beginning of the school year, approximately seven months. They ranged from sophomore to senior grade level. They lived and attended high school near a large northeastern university. Many students in the high school chose to attend the university upon graduation, and many music students took lessons with the faculty at the School of Music. The students were identified by their location, willingness, and availability. As discussed above, I specifically sought out students participating in a chamber group because I wanted students who knew each other, who were comfortable making music together, who were content working in small groups (most online collaboration was designed for small groups at that time), and who had fairly advanced musical skill and independence.

**Design**

Creswell’s (2013) description of a case study neatly explained what I planned to accomplish:
Case study research is a qualitative approach in which the investigator explores a real-life, contemporary bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information (e.g., observations, interviews, audiovisual material, and documents and reports), and reports a case description and case themes. (p. 97)

This group of four students was the bounded case. I only investigated how they collaborated musically online with one another. The multiple sources of information were interviews (group and individual) and journals. This data allowed me to answer my research questions: Which websites did they enjoy using and why? Which websites did they not enjoy using and why? Did they enjoy collaborating synchronously or asynchronously and why? Are string students from existing chamber groups interested in forming online communities of interest?

**Data Collection**

All of the interviews were recorded and then transcribed. The interviews were semi-structured as I had pre-determined questions, but I also developed questions based on journal entries and interview responses. For the pre-study interview I prepared the questions: Have you ever used an online environment to collaborate musically before? If so, what did you think of it and what environments did you use? If not, why not? Were you ever given the option? Are you interested in online musical collaboration?

The study began with a group interview and instruction session (after consent/assent forms were signed). Each chamber group member expressed initial thoughts about the study and what they thought of “online music collaboration” as well as asked questions about the details of the project. The students were given written instructions (for later reference) that included: “collaboration” means at least two members of the group are working together; try to collaborate
at least twice a week online; each time you collaborate each individual should fill out a journal form – fill out the “what did you think” section with enough detail so that you can recall the environment in later discussions.

During that first interview, the students received two lists of online environments to try. One list offered synchronous environments like Google Hangout, Skype, and Soundjack. The other list offered asynchronous environments like Facebook, Noteflight, Spotify, and YouTube. The students were asked to try at least two environments from each list by the end of the project but they were also encouraged to find new environments on their own. See Appendix A for this list.

After the first two weeks, there was a mid-study interview with the chamber group, in which students discussed their thoughts on the websites they had experienced so far. For the mid-study interview the initial questions included: What environments do you remember using so far? Why were they memorable? For the next two weeks do you think you will use some of the same environments again or will you try new things? Why?

The post-study interview, at the end of the four weeks, was an interview with each individual. This gave individuals a chance to share their personal thoughts about the online experiences and their thoughts about collaborating with this specific group. The post-study interview guiding questions included: What environments do you remember using? Why were they memorable? Are there any environments you wanted to try but didn’t? Are there environments you wish existed but don’t seem to? Do you have any other thoughts or observations about your online musical collaborative experience? What, if any, of these websites would you suggest teachers use with their students?
Ideally the students were to engage in online musical collaboration at least twice a week, for a minimum of eight online sessions throughout the course of the study. “Collaboration” was defined as a minimum of two students interacting in a musical experience online. In addition to the interviews, the students were given online access to a simple journal form via SurveyMonkey. Each time two or more of the students from the group met online and collaborated musically they each completed a journal entry on their own. They completed a journal entry for each environment used. The form asked: What website did you use? How long did you spend on the website? Who from your group was present? Where were you physically (library, school, home)? And what did you think of the website? All were open-ended questions. I accessed these journals before the interviews to prepare follow-up questions to learn more about the students’ experiences with the websites.

Results

Before the study began, all four students already used Facebook with their small ensemble(s) to coordinate rehearsal times and/or share links to music. In fact, at our first meeting, Iris suggested that the group create a Facebook page to coordinate their online musical collaboration for this project. Even though this did not ultimately happen, it was immediate evidence of a web-based tool with which they were comfortable. Three of the four students already used Spotify to share music with their small ensemble(s). These students already used Google Docs, Prezi, Soundcloud, and YouTube in music classes, and non-music classes, but not all for collaboration purposes.

Unfortunately, the students did not make much time for musical collaboration between our first two interviews. Iris and Charites were the only two to fill out journal forms in the entire two weeks, and they only wrote about Spotify and Facebook. Athena was not able to attend the
second interview so she answered a few extra questions at the final interview. Granted, we had good discussion at our mid-study interview about Spotify because they were missing some of the collaborative options and I was able to assist. The second meeting also revealed a bit of trepidation toward synchronous collaboration. Iris in particular spoke of bad experiences with lag time and delays.

I think [live] music is really hard to do online. I know Skype always has some lag. Pretty much everything has lag. It’s also not as good at sound quality and you can’t really, like, if you’re in an ensemble you can’t look around and see what the other person’s doing so it’s hard to cue I guess. (Group Interview #2)

I encouraged them to try some of the suggested synchronous websites because some are brand new and some are improved so it is possible the experience would be better if tried again. I also gathered their email addresses at that interview so that I could gently remind them about the project through the coming weeks.

The third interview was actually three weeks after the second (instead of two weeks) because of scheduling conflicts. Through the extra time, Charites was diligent in filling out journal forms and sharing opinions. She continued to utilize Facebook and Spotify often. She tried Chromatik (for organizing/saving/downloading sheet music) but did not find it friendly. Similarly, she tried Soundjack (audio connector between collaborators that attempts to eliminate lag time) but the software did not think her microphone was good enough and would not let her proceed. Charites and Iris both filled out journal forms regarding their attempt to rehearse online. They tried Skype and Charites and Nereus tried Google Hangout. This quote from Charites summarizes all their opinions: “Well, a lot of times I feel like it’s just easier to meet face-to-face and not have to worry about technology and lag time and stuff like that” (Charites, Final One-on-
One Interview). All three students felt the Skype/Google Hangout rehearsals were unsuccessful and indicated they would rather rehearse in person. Charites and Iris both mentioned the possibility of using online rehearsals to collaborate with other people playing the same solo repertoire as them. The chance to perform back and forth for one another, but not necessarily play at the same time, was seen as beneficial. Nereus and Athena never submitted a journal form but were willing to share opinions during the interviews.

Asking the students how teachers could use these technologies elicited interesting responses. They saw great potential in primarily the asynchronous websites. Some of their suggestions were for teachers to create a playlist to share with the class or assign YouTube videos to watch to copy bowings. Athena and Nereus both mentioned using video conferencing (Skype, Google Hangout) to enhance music theory classes. They both saw potential for that form of collaboration to help in traditional academic settings, but not in performance-based rehearsal settings.

From our interviews and their journal entries, I generated a list of the most often used vehicles for online music collaboration. I did not specifically count the frequency of use of Facebook, Spotify, and YouTube because they were pervasive. They were clearly the favorite venues for online collaboration, for these students. These students were on Facebook and Spotify multiple times a day, every day. The remaining venues were easier to quantify from transcripts and journal entries. These four students used these websites and offered these thoughts (in order of popularity):

**Facebook**: mentioned by every student in every interview, used constantly to schedule rehearsals and be in touch
**Spotify**: mentioned by every student in every interview, used regularly to share playlists of relevant music

**YouTube**: mentioned often, used to share musical ideas, specifically bowings

**Skype**: used by two students during this project, lag time made rehearsing impossible

**Google Hangout**: used by two students during this project, lag time made rehearsing impossible

**Chrome Jam**: used by two students during this project, seen as a fun toy but not a meaningful music-making experience

**Chromatik**: used by one student during this project, seen as only useful if you are willing to pay and/or have easy access to a scanner (to scan in personal sheet music)

**Soundjack**: used by one student during this project, intimidating instructions and apparently demands a very good quality microphone

**Google Drive/Docs**: used by one student before this project to share musical links with friends

**Soundcloud**: used by one student before this project to collect music for use in an English project

**Prezi**: used by one student before this project to prepare a history presentation

**Dropbox**: used by one student before this project but he did not find it very useful

**Discussion**

It was clear that these students enjoyed asynchronous forms of online musical collaboration e.g. responding to posts on Facebook and sharing playlists on Spotify. These were websites they were comfortable with and used in their everyday life, both musical and non-musical. The students were not comfortable exploring unfamiliar websites. I was hopeful they would be excited by a list of recommended sites and be motivated to discover new opportunities on their own, but that did not happen as I envisioned. In addition, bad experiences with music
making on synchronous websites frightened them away from this medium, and they had little
desire to give it a second chance. They preferred to use what they knew was reliable.

Though these data were limited by the few reported collaborative interactions, they
confirmed an important fact. Some high school students are already using Facebook, Spotify, and
YouTube to enhance their musical experiences. These services are free and many students
already use them, so teachers should consider using them as well. I recognize that many districts
have strict policies on social media, but if there is an approved method of creating a Facebook
page for a group (e.g. 7th period orchestra) and connecting with students that way, it would be
advantageous to pursue. And if teachers can use Spotify and YouTube to share preferred musical
examples, it will surely prove beneficial.

If, like me, you are interested in having your students collaborate musically online, be
prepared to lead them through the process. If I were to do this project again I would decide on
several websites I want the students to try and arrange a time and space that I could meet with
the students and guide the experience. With better guidance through some of the synchronous
websites I think the students might have enjoyed some of the sites and found them useful for
musical collaboration. I maintain that time to freely explore new technologies, without teacher-
directed-guidance, is also important for high school students (and adults for that matter). But if
my goal is to have them experience successful online music collaboration, and they do not
currently have the skills to achieve that, some guidance is warranted.

It was powerful to hear the attachment these students have to traditional, in-person
rehearsals. Their desire to rehearse face-to-face was not only in response to frustration with
online venues, but it was out of true appreciation for the live musical experience. They spoke of
the importance of seeing one another as you give a cue and hearing and adjusting balance. As
previously noted, they saw the online collaboration options as viable for more academic settings, but in their musical life, they were very attached to face-to-face interactions. On the one hand, I admire this and am grateful for it. I agree that there is great power in making music together, face-to-face. On the other hand, I believe they felt this way because they had not experienced successful music making online. They are in a school with a very strong music program. Their musical desires are met within the school day, every day. They have a strong community of interest that doubles as a community of place. They do not have to look beyond physical space limitations to satisfy their interests, so they are not motivated to do so. However, students in schools without regular music classes, or without any music classes, or without the type of music classes they desire, would likely be well-served by online communities of interest. As technologies advance and spread, it is my hope that students who desire a musical community of interest can always find it somewhere.

**Conclusions**

I am grateful for these four students and the time they shared with me. Iris gave a quote in her final interview that neatly summarizes these students’ current opinions:

Um, so, I guess I’m wondering if music collaboration online at the same time is that great of an idea? It might just be better, um, for people to use it to, like, kind of plan outside of school. But I feel like if you’re actually playing music it should be in person. (Final One-on-One Interview)

I understand their frustrations with the online rehearsal aspect and agree that may not be the best use of online collaboration in 2015. I am impressed by their dedication to music and their attachment to the “feel” of a rehearsal. These thoughts were echoed by Thibeault,
Online lifelong learning need not exist for every instrument. It may be more important that educators be attentive to new relationships and learning cultures made more probable via online learning communities, and that they consider how they can be incorporated into the classroom. (2012, p. 204)

Every instrument does not need to be able to rehearse online, all the time. But there are truly great opportunities for learning through online musical collaboration. Advances in technology will likely make this prospect even more feasible over time. But even in 2015, I see possibilities for teachers to incorporate online musical collaboration into their students’ lives. Teachers can use these resources in the classroom, and also to encourage music-making experiences outside the classroom (Fulcher, 2015).
References


CHAPTER 3
AN INVESTIGATION OF THE APPS USED BY PENNSYLVANIA MUSIC TEACHERS

Since the 1990s, mobile technologies and ubiquitous learning have become more influential in education every day. The way students interact with each other, interact with the world around them, and interact with information continues to reflect the nature of these technologies. As a result, many teachers and educational systems are implementing strategies and approaches to reflect these on-going changes. Personal experience, observation, and literature indicate that many teachers of school-aged youth are using mobile applications (apps) in their classrooms (Doutt, 2013; Schneider, 2013; Sisk-Purvis, 2013). These apps are typically accessed from smart phones and tablets, and many teachers enjoy talking about the apps they use and find effective. Indeed, some teachers write articles for practitioner journals or present at conferences on their favorite apps (Doutt, 2013; Laux, 2013; Riley, 2013; Schneider, 2013; Sisk-Purvis, 2013). Yet, the apps presented are not always helpful to a wide audience of teachers. Which apps are truly helpful to a variety of teachers is of great interest to me and, I believe, to many other teachers. The purpose of this study was to determine which mobile apps Pennsylvania music teachers used in their classrooms.

Literature & Rationale

Music teachers have been working to adapt their teaching methods as new technologies arise since at least the 1990s (Mueller, 1996). Articles in the most popular music teacher practitioner journals reference: (a) primary ideas for using the Internet in class; (b) generic technology suggestions for the classroom; (c) ways to converge old and new teaching methods with the help of technology; (d) how to use recording equipment effectively; (e) strategies for using Skype interviews in class; (f) using technology stations in general music classes; and (g)

Research discussions about adapting general educational practices, specifically for mobile technologies, appear in a few journals; however, it remains an open arena for inquiry. Sheng, Siau, and Nah (2010) mentioned, “The use of mobile technology in [general] education can revolutionize the processes of learning and teaching, and change the learning environment… Despite numerous benefits of using mobile technology in education, research in this area is sparse” (p. 28). Research about mobile technology in music education is even less prevalent, as indicated by this quote, “There is no doubt that mobile devices will have an impact on music education, however, research inquiries of this subject is in its infancy” (Nielsen, 2013, p. 55). Mobile devices are already impacting education, and specifically music education, and additional research will help our field understand the magnitude of this impact.

Two published music education research studies connect to this project. The purpose of Ohlenbusch’s dissertation (2001) was “to identify the role of technology in K-12 music classrooms and to determine the applications in instructional technology for preservice music education majors” (p. i). She surveyed the Texas Music Educators Association (TMEA) membership and also Texas universities and colleges offering a baccalaureate degree in music education. “Respondents of the TMEA survey identified the technology applications being used as instructional tools by music teachers in K-12 classrooms in Texas…” (p. i), which is very similar to my approach. I will survey Pennsylvania music teachers and ask them to identify which mobile apps they are utilizing. Interestingly, Ohlenbusch found that many non-music technology applications were highly utilized and ranked. This corroborates my decision to ask
teachers about all the apps they use, not only the music-specific apps. The concept and design of Ohlenbusch’s study were similar to my research but because the study was conducted in 2001, there was no discussion of mobile apps.

The second study investigated how preservice teachers used iPads in and out of the classroom. Riley (2013) reported lists of apps and quotes from the preservice teachers indicating the effectiveness and relevance of certain apps in their teaching experiences. Participants used apps specific to music:

I used my iPad to teach beginning guitar class using the app WildChords. This app, which is very appealing to middle school students, uses amusing animation and zoo characters to teach chords, and also addresses rhythm, tempo, and musicality. Many students got so excited about WildChords that they came down to the band room during lunchtime just to play it. (Riley, 2013, p. 84)

Participants also reported using more generic apps but tied the use of those apps directly to being effective as music teachers and students:

I use the calendar app to keep homework, concerts, rehearsals, gigs, lessons and meetings organized… I use my iPad to plan for teaching practicum lessons, peer-teaching episodes, and for my Skype lessons. I took notes during choral methods, and jazz history about notable artists, songs, recordings, and videos to investigate. (Riley, 2013, p. 85)

Based on these accounts, preservice music teachers are using apps for many different functions, musical and otherwise. This validates my desire to know about apps with all types of functionality, and also the importance of apps in our music classrooms. As preservice teachers utilize apps, and depend on apps, those apps are likely to become even more influential in K-12 classrooms when those preservice teachers become inservice teachers. It is important to
understand the role that apps play in our K-12 music classrooms.

In addition to these research articles, practitioners including VanWeelden & Heath (2013) have provided lists of favorite/most popular apps in music education journals. Similarly, Doutt (2013), Laux (2013), Schneider (2013), and Sisk-Purvis (2013) presented practitioner sessions at conferences that focused specifically on apps in the music classroom. Some of the ideas presented in these sessions were helpful. But, based on conversations with other attendees, not all of the apps presented were relevant or practical for their current teaching situation.

The research literature has not indicated which specific apps practicing music teachers are currently using. Within this broad question, the literature has not specified whether there are differences in the apps used by teachers of general music, orchestra, band, and choir, or if there are differences by grade level(s) taught. Music teachers traditionally use different teaching materials in different music settings and with various grade levels. Given the nature of these various curricula, it would not be surprising if teachers working with different grade levels and music settings use different apps in their classrooms. Riley (2013) indicated that preservice teachers not only use music apps, but also organizational apps to assist in their teaching and classroom management. If my research can show which apps teachers are using, it can also indicate which functionalities these apps provide. It is important for inservice music teachers to have worthwhile, practical lists of current resources that could be helpful in their classrooms, and this appears to be a void in the current research. Similarly, this research may be useful to teacher-educators as they prepare future teachers. Therefore, the specific problem of this study was to determine which apps teachers in Pennsylvania reported using as well as the functionality of each app.
Method

In this descriptive survey study, I intended to learn which apps Pennsylvania music teachers were using, and also how they were using them. Utilizing an online questionnaire, I was able to gather names of hundreds of apps used by music teachers, as well as the functionality of those apps (as reported by the teachers). Pennsylvania music teachers were a population of convenience as I was a graduate student in Pennsylvania at the time.

Participants

Music teachers employed by public schools in Pennsylvania were invited to be participants in this study. The Pennsylvania Department of Education provided a database of all the public school music teachers in the state in 2012-2013. Unfortunately, this database did not include email addresses. By searching school webpages and other websites, email addresses for 3,280 teachers were obtained.

These teachers were invited by email to participate in an online questionnaire through SurveyMonkey. They received a reminder email two weeks later and then a final reminder a month after the questionnaire opened (days before it would close).

Questionnaire

A questionnaire was designed by the researcher to collect data for this study (see Appendix B). Demographic information was collected first – teachers indicated the grades and settings in which they were currently teaching and whether or not they used apps in their classroom(s). Those who did not use apps were asked a few questions about why they did not use apps. Those who did use apps were asked to discuss one app at a time. They were required to share information about one app and could discuss up to 15 apps. They entered the name of the app and were asked to consider a specific classroom setting where they used that app. They
referenced the setting and grade level and then rated the functionalities of the app within that setting. To rate functionality, teachers selected how often they used the app for each particular function on a Likert-type scale (never, rarely, occasionally, frequently, always). If they used the app with other grade levels, in other settings, they were asked to list the app again. The intention behind asking about each app in one setting at a time was to gather information regarding how the same app might be used differently in different settings.

Operationalizing the function categories was challenging. Apps have been categorized in many different ways by many different organizations. Jung, Chan-Olmsted, & Kim (2013) outlined categorization by the Mobile Marketing Association, Korea Communications Commission, Google Play store, and Apple’s App Store and the subsequent way that they combined these classifications into categories that would work for their study. Squire & Dikkers used the categories of “Games, Tools, Learning, and Social” to categorize the apps downloaded during their study (2012, p. 452). Riley coded “categories of use” based on how her participants used their iPads (including apps) and labeled those categories “rehearsal/performance assistance, creating music, teaching instruments, providing virtual instruments, audio/video recording, listening resources, and organizational support” (2013, p. 83). Considering all of these sources, as well as my own observations, I decided to offer teachers the following labels and descriptions with which to categorize their apps.

- Classroom management (gradebook, lesson plans, seating & behavior management charts)
- Communication/Social networking
- Games (musical or otherwise that do not fit into one of the music categories)
- Multimedia (music to listen to, audio/video recording apps, photos, videos)
- Music Appreciation (general information about music)
- Music Composition (assistance with any kind of notation)
- Music Performance (instruments, instrument trainers, metronomes, tuners)
- Music Theory (interval ear trainers, notation recognition, chord labeling)
- News/Information (news, books, TED talks, podcasts)
- Utilities (address book, calculator, file sharing, word documents, spreadsheets)

Responses were collected from SurveyMonkey, imported into Excel, and then analyzed with descriptive statistics.

**Results**

**Demographics**

Of the 3,280 teachers invited to complete the questionnaire, 734 responded (22% response rate). Respondents were asked to select every setting in which they teach as well as every individual grade. This allowed me to see the great variety of combinations that exist in Pennsylvania music teaching placements. The settings and grades reported by the participants are presented in Table 1 and Table 2.

Table 1

*Settings Taught by Respondents*

<table>
<thead>
<tr>
<th>Settings</th>
<th>All respondents N = 734</th>
<th>App users N = 342 (47%)</th>
<th>App non-users N = 392 (53%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choir + General Music</td>
<td>211 (29%)</td>
<td>90 (26%)</td>
<td>121 (31%)</td>
</tr>
<tr>
<td>Band</td>
<td>122 (17%)</td>
<td>74 (22%)</td>
<td>48 (12%)</td>
</tr>
<tr>
<td>Band + General Music</td>
<td>101 (14%)</td>
<td>49 (14%)</td>
<td>52 (13%)</td>
</tr>
<tr>
<td>General Music</td>
<td>78 (11%)</td>
<td>23 (7%)</td>
<td>55 (14%)</td>
</tr>
<tr>
<td>Band + Choir + General Music</td>
<td>54 (7%)</td>
<td>26 (8%)</td>
<td>28 (7%)</td>
</tr>
<tr>
<td>Choir</td>
<td>36 (5%)</td>
<td>17 (5%)</td>
<td>19 (5%)</td>
</tr>
<tr>
<td>Orchestra</td>
<td>39 (5%)</td>
<td>22 (6%)</td>
<td>17 (4%)</td>
</tr>
<tr>
<td>Band + Orchestra</td>
<td>28 (4%)</td>
<td>12 (4%)</td>
<td>16 (4%)</td>
</tr>
</tbody>
</table>
The only combination of settings unaccounted for was Band + Choir + Orchestra. The teachers also had the option of “Other” for subject. The most common write-in answers for “other” included music theory/history, guitar, piano, music technology, and other ensembles (e.g. handbells, Orff, steel pan, drum line). Because the teachers selected the individual grades that they teach (K, 1, 2, etc.), I have imposed the labels of elementary (K-5), middle (6-8), and high school (9-12) for ease of discussion.

**App Non-Users**

The 392 teachers who indicated they did not use apps in their music classroom(s) were asked two open-ended questions. The first was: *Please share briefly why you DO NOT use mobile apps in your music classroom(s).* The 365 usable responses were analyzed for key terms.
and then coded by those terms. Many responses had multiple codes. In order of frequency, their responses indicated they did not use apps because:

- technology/equipment not available (236 instances)
- can’t/don’t use apps but do use other technology (computers, interactive whiteboards, etc.) (45 instances)
- lack of knowledge (34 instances)
- district/admin policies & rules (“no device”) (30 instances)
- not enough time (planning and/or instructional) (28 instances)
- personally don’t want to, no desire, not necessary (26 instances)
- apps are not helpful, not right for curriculum (24 instances)
- internet access issues, no Wi-Fi, devices banned from school internet (22 instances)
- funding (15 instances)
- no training (10 instances)

The second open-ended question was: *Is there anything that would make you more interested in using apps in your music classroom? If so, what? (Funding, equipment, training, planning time, etc.)* The 353 usable responses were again analyzed for recurring terms and coded by those terms. In order of frequency, their replies were:

- equipment/wireless access (209 instances)
- funding (153 instances)
- training (137 instances)
- time (planning and/or instructional) (74 instances)
- no (33 instances)
- maybe (10 instances)
Finally, the non-users were asked: *How likely would you be to use each of the following types of apps in your music classroom?* They selected unlikely, neutral, likely, or unsure for each of the function categories. These responses were converted to a three-point scale (unlikely = 1, neutral = 2, likely = 3) and the results are presented in Table 3.

Table 3

*How likely would you be to use each of the following types of apps in your music classroom? (3-point scale)*

<table>
<thead>
<tr>
<th>Functionality</th>
<th>Average response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom management</td>
<td>2.35</td>
</tr>
<tr>
<td>Communication/Social networking</td>
<td>1.86</td>
</tr>
<tr>
<td>Games</td>
<td>2.40</td>
</tr>
<tr>
<td>Multimedia</td>
<td>2.81</td>
</tr>
<tr>
<td>Music Appreciation</td>
<td>2.61</td>
</tr>
<tr>
<td>Music Composition</td>
<td>2.55</td>
</tr>
<tr>
<td>Music Performance</td>
<td>2.62</td>
</tr>
<tr>
<td>Music Theory</td>
<td>2.56</td>
</tr>
<tr>
<td>News/Information</td>
<td>2.07</td>
</tr>
<tr>
<td>Utilities</td>
<td>2.20</td>
</tr>
</tbody>
</table>

**App Users**

The 342 teachers who indicated they did use apps in their music classroom(s) provided very specific information about which apps they used and how. Although they were asked to discuss at least one app, 56 did not. These 56 participants were included in the demographic data because they indicated that they do use apps, but they did not provide any app data. The majority of participants (n=139) wrote about just one app, but many others wrote about multiple apps. One participant took full advantage and wrote about 15 apps! On average, each participant discussed 1.89 apps. A few entries had to be removed because of unclear data entry, resulting in information about 669 apps used in Pennsylvania music classrooms.
In the questionnaire, the teacher typed the name of the app and indicated the setting and grade level with which she used the app. Then she was asked: *When you use this app in this specific setting how often is it for this purpose?* She rated the app for each function category, choosing: never, rarely, occasionally, frequently, or always. These responses were converted to a five-point scale. The function ratings are presented in Table 4, beginning with the overall ratings (considering all apps, grades, and settings) and then divided into subsets by grade and setting. These subsets are not based on the teacher’s initial demographics. They are based on where the teacher indicated using the specific app they were discussing. So, a teacher might teach multiple music settings and grades but here they are speaking about one setting and grade at a time, and an app that they use in one particular class. Each category (setting/grade level) indicates how many apps fell into that category. It should be noted that some participants left pieces of information blank. All provided information was included in analysis.

Table 4

*App Functionality Average Ratings (5-point scale)*

<table>
<thead>
<tr>
<th>Subset</th>
<th>Classroom management</th>
<th>Communication/Social networking</th>
<th>Games</th>
<th>Multimedia</th>
<th>Music Appreciation</th>
<th>Music Composition</th>
<th>Music Performance</th>
<th>Music Theory</th>
<th>News/Information</th>
<th>Utilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall (669 apps)</td>
<td>1.50</td>
<td>1.40</td>
<td>1.43</td>
<td>2.12</td>
<td>1.79</td>
<td>1.63</td>
<td>3.17</td>
<td>1.99</td>
<td>1.25</td>
<td>1.25</td>
</tr>
<tr>
<td>Elementary school (229 apps)</td>
<td>1.59</td>
<td>1.25</td>
<td>1.63</td>
<td>2.17</td>
<td>1.98</td>
<td>1.72</td>
<td>2.88</td>
<td>2.02</td>
<td>1.11</td>
<td>1.15</td>
</tr>
<tr>
<td>Middle school (227 apps)</td>
<td>1.46</td>
<td>1.33</td>
<td>1.44</td>
<td>2.14</td>
<td>1.81</td>
<td>1.77</td>
<td>3.37</td>
<td>2.21</td>
<td>1.28</td>
<td>1.32</td>
</tr>
<tr>
<td>High school (211 apps)</td>
<td>1.43</td>
<td>1.63</td>
<td>1.23</td>
<td>2.07</td>
<td>1.57</td>
<td>1.39</td>
<td>3.28</td>
<td>1.69</td>
<td>1.37</td>
<td>1.29</td>
</tr>
<tr>
<td>Band (260 apps)</td>
<td>1.39</td>
<td>1.34</td>
<td>1.27</td>
<td>1.75</td>
<td>1.34</td>
<td>1.26</td>
<td>3.76</td>
<td>1.83</td>
<td>1.13</td>
<td>1.19</td>
</tr>
<tr>
<td>Choir (88 apps)</td>
<td>1.66</td>
<td>1.74</td>
<td>1.20</td>
<td>2.25</td>
<td>1.73</td>
<td>1.61</td>
<td>2.94</td>
<td>1.93</td>
<td>1.45</td>
<td>1.25</td>
</tr>
<tr>
<td>General music (202 apps)</td>
<td>1.68</td>
<td>1.35</td>
<td>1.71</td>
<td>2.57</td>
<td>2.44</td>
<td>2.18</td>
<td>2.42</td>
<td>2.17</td>
<td>1.29</td>
<td>1.30</td>
</tr>
<tr>
<td>Orchestra (64 apps)</td>
<td>1.28</td>
<td>1.33</td>
<td>1.59</td>
<td>2.02</td>
<td>1.54</td>
<td>1.48</td>
<td>3.48</td>
<td>1.98</td>
<td>1.28</td>
<td>1.25</td>
</tr>
<tr>
<td>“Other” Performance classes</td>
<td>1.42</td>
<td>1.25</td>
<td>1.42</td>
<td>2.06</td>
<td>1.85</td>
<td>1.70</td>
<td>3.64</td>
<td>2.34</td>
<td>1.27</td>
<td>1.21</td>
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<td>------</td>
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</tr>
<tr>
<td>(33 apps)</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Other” Academic classes</td>
<td>1.00</td>
<td>1.63</td>
<td>1.56</td>
<td>2.20</td>
<td>1.94</td>
<td>1.56</td>
<td>2.44</td>
<td>2.25</td>
<td>1.27</td>
<td>1.63</td>
</tr>
<tr>
<td>(16 apps)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

After compiling these average function ratings, I reviewed the apps themselves. Participants were asked to provide the name of the app. With that provided name, I searched the Apple and Android app stores to confirm the name and obtain the current cost. Every app that was mentioned two or more times, that I could identify as still available (as of March 2015), is listed in Appendix C with its operating system, price, settings it is used in, and functions for which it is used.

From that long list of apps, I will mention two observations that stand out. Many apps were used for many functions and by many teachers. The following apps are used to address all ten function categories: Doceri Interactive Whitedboard, Edmodo, GarageBand, SmartMusic, StaffWars, and YouTube. Several other apps addressed eight or nine of the categories. I draw two conclusions from this. One, these apps are robust. They must include many features and options that allow them to serve in many capacities and that is partly why they are attractive to teachers. Two, teachers are adept at making tools serve their needs. I would not have expected StaffWars (primarily a note identification game) to be labeled useful for Communication/Social networking and Classroom Management, but several teachers are using it in that way. Teachers have found these apps to be useful, and also likely adaptable, and that is likely why these apps continue to be used in classrooms.

Several of these versatile apps are also in the list of apps reported ten or more times: GarageBand (reported 41 times), SmartMusic (28), YouTube (28), Metronome (23), Cleartune - Chromatic Tuner (20), Mobile Metronome (15), Tenuto (15), Pro Metronome (14), Remind: Safe
Classroom Communication (13), gStrings Tuner (12), insTuner - Chromatic Tuner (12), iTunes (12), TeacherKit (10). As we knew from the overall average function ratings (Table 4), metronome and tuner apps (Music Performance category) were heavily used. This list illustrates that. In addition, this list illustrates the desire for Classroom Management and Communication/Social Networking apps like Remind: Safe Classroom Communication and TeacherKit.

**Discussion**

The specific problem of this study was to determine which apps music teachers in Pennsylvania reported using, as well as the functionality of each app.

**Demographics**

It was very interesting, and a bit surprising, to see the demographics of the participants. To see the variety of teaching situations (grades and settings) occurring in Pennsylvania, was eye opening (Tables 1 & 2). It was interesting that teachers who teach only band seemed more likely to be app users (22% of users) than non-users (12% of non-users). And teachers of only general music seemed more likely to be app non-users (14% of non-users vs. 7% of users). Seeing that apps used for Music Performance functionality were the most common, perhaps the band teachers used apps more because these Music Performance apps fit their classes better than general music classes. Similarly, elementary teachers seemed more likely to be non-users (38% of non-users vs. 27% of users), again perhaps because there are fewer ensembles and Music Performance app opportunities at the elementary level. Two other differences of note were that teachers working at the elementary + middle + high school levels appeared more likely to be app users (14% of users vs. 7% of non-users), as were teachers at the middle + high school levels (17% of users vs. 10% of non-users). It is logical that teachers in middle and high school
settings, who likely teach ensembles, would be likely to utilize Music Performance apps. Since these apps are the most highly utilized, this could account for middle and high school teachers being regular app users.

**App Non-Users**

Although many teachers reported being app users, it was surprising to me the number of teachers who were not. I anticipated that many non-user participants would decide not to finish the questionnaire when they realized it was asking about app use. Their desire to talk about why they do not use apps was surprising and led to a wonderful balance of perspectives. The first open-ended question was: *Please share briefly why you DO NOT use mobile apps in your music classroom(s).* The most popular response was “technology/equipment not available” (236 instances). Research looking at technology in education, and personal experience, supported the claim that equipment was hard to obtain. Perhaps teachers would use apps more if the school provided the technology. However, some teachers may just be unwilling to use the technology. The sixth most popular response was, “personally don’t want to, no desire, not necessary” (26 instances). And when asked, *is there anything that would make you more interested in using apps in your music classroom? If so, what? (Funding, equipment, training, planning time, etc.)*, the fifth most popular response (after the four responses I suggested within the question) was, “no” (33 instances). I did not expect this aversion to using new technologies from so many.

Several participants expounded and mentioned how many years they had been teaching and that they were not interested in learning these new tools. This observation caused me to reflect on the demographic portion of the questionnaire; information about years of teaching experience would have been helpful in analyzing the results more thoroughly. Perhaps a correlation exists between years of experience and desire to use apps. But even after the “no’s” and frustrations expressed
by teachers, their ratings regarding the function categories was fairly high. When asked, *How likely would you be to use each of the following types of apps in your music classroom?*, respondents indicated they were “likely” to use apps for Multimedia, Music Performance, and Music Appreciation, and many of the other function categories were rated nearly as high as these three (see Table 3).

**App Users**

Many teachers (n=342) contributed to a robust list of practical, teacher-recommended apps (n=669) that can be shared with teachers in Pennsylvania and beyond. Additionally, it is helpful to know how teachers are using the apps. As seen in Appendix C, most apps are used for more than one function. Teachers reported using music-specific apps, as well as those that function more broadly for classroom management, communication, and organization. Nearly every app reported was used for multiple functionalities.

The overall function ratings provided by the app users were quite low (Table 4). Many teachers, it seems, treated the ratings as a binary system. They indicated the function for which they “always” use the app and then all other functions were rated “never.” This led to a large number of “never” ratings in the data, which pulled the averages down.

It is noteworthy that Music Performance apps were rated the most highly (apps were used more often for this function than other functions) in every setting except general music. General music teachers rated Multimedia and Music Appreciation apps more highly than Music Performance. In fact, their Music Performance function rating was the lowest of any subset.

For most settings and grades, the lowest ratings were in the categories News/Information and Utilities. But teachers in high school grade levels and choir settings rated Games the lowest.
Participants teaching “other” academic classes (music theory/music history/music technology) rated Classroom Management the lowest.

As expected, most subset groups had ratings both above and below the “overall” function ratings. This made sense since the “overall” ratings were averages. But it was interesting that the band teachers rated every function lower than the overall ratings, except Music Performance, which was the highest Music Performance rating of any subset group. The apps used in these band classrooms are very highly associated with Music Performance. Also curious was that teachers using apps in middle school classes rated every function higher than the “overall,” except Classroom Management and Communication/Social networking. It seemed counterintuitive that middle school classes would not use apps for Classroom Management as often as other grades and subjects, but that is what these teachers reported. General music teachers rated every function higher than the corresponding “overall” rating except Communication/Social networking and Music Performance. Apparently general music teachers thought highly of the functionality of most of these apps. As mentioned previously, it was possible that they rated Music Performance lowly (the lowest Music Performance rating of any subset group) because those apps simply were not as applicable in a non-ensemble setting.

The majority of apps are used for multiple functions within the classroom. This was anticipated and was why teachers were asked to consider one app at a time, in one specific setting. It was hypothesized that apps might be used in multiple settings and the functionality might change between those settings. However, this hypothesis did not bear out by the data. Certainly, apps were used in different ways, but those uses always overlapped. For example, Finale Songbook is used in elementary general music for music composition. It is used in elementary orchestra for multimedia, music composition, and music performance. The orchestra
teacher seems to use the app a bit more robustly, but there is still overlap between the reports. The app is being used in similar ways in these classrooms. I did not find evidence of stark differences between grade levels or settings and the functions of apps used in those classrooms.

**Recommendations**

I would like to revisit this study, or to replicate it elsewhere, and I would ask participants how long they have been teaching. I would like to ask more detailed questions about app use but do not want to make the survey cumbersome for the participants. I think it would be interesting to know on what device(s) the teachers are using apps and whether the teacher alone is using the app or if students are involved. Similarly, an open-ended question for the teacher to describe how they use the app would provide another level of data beyond the function categories. Finally, asking the students and administrators what they think of the app use or non-use would also be an interesting line of research. In a different vein, it would be interesting to coordinate a partnership between teachers and app developers to see what practical, creative tools could be generated.

**Conclusions**

It is exciting that so many teachers were willing to talk about their use or non-use of apps. The use of apps in music classes is likely to continue being a subject of great interest to teachers as districts simultaneously mandate the use of technology and also regulate which technologies can be used. In Pennsylvania, one example of this mandate is seen in the Academic Standards for the Arts and Humanities (Pennsylvania Department of Education, 2002). Academic Standard 9.1.J is “Technologies in the Arts,” and it mentions specific technologies including: CDs/software, audio/sound equipment, recorders, internet access, MIDI keyboards, interactive technologies, musical instruments, and instrument enhancements. As curricula and standards in
other states, and from other governing bodies, incorporate specific technologies it will be important for teachers to have support and resources.

One unexpected and unique finding from the teacher’s demographic data was the variety of teaching situations that exist in Pennsylvania. This information is valuable for teacher educators as they prepare teachers for successful employment. It is vital for undergraduates to realize that they must embrace a well-rounded curriculum that prepares them to teach all grades and in all music settings.

There is potential for apps to be incredibly helpful tools in music classrooms. It is clear that many teachers already use apps in their classrooms. But sadly, many other teachers do not. It seems obstacles to embracing new technologies need to be overcome before apps can be utilized more widely. As music educators work to incorporate technology into their classrooms to enhance their students’ education, it is important to recognize all that apps have to offer and work to make them a viable tool for teachers and students.
References


Laux, C. (2013, March). *Reach your audience with social networking*. Session presented at the meeting of the American String Teachers Association Conference, Providence, RI.


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CHAPTER 4
INSIGHTS FROM THE YOUTH ORCHESTRA DIRECTORS
FACEBOOK GROUP

Background

My journey to this research began by reflecting on youth orchestras and how they provide meaningful musical experiences for K-12 students. My observations are that many music education majors, and current teachers, participated in youth orchestras when they were younger. Personally, a youth orchestra was the only way I could continue playing in ensemble while I attended a middle school with no orchestra program. These American youth orchestras are community-based, determine membership typically through an audition process, and cater to K-12 students (according to their websites). Throughout this research project, “youth orchestra” will refer to ensembles fitting this description.

There are certainly youth orchestras in other countries, some which adhere to a similar model and many which operate differently. This is understandable, given the differences in music education opportunities from country to country (Kertz-Welzel, 2015). In particular, the El Sistema youth orchestra model has spread from Venezuela and is becoming popular in many countries (El Sistema USA, 2017). However, my current interest is in the youth orchestras in America and how they are impacting the music education of the students with which I work. As I searched, I was surprised to find no published research on American youth orchestras. A comprehensive review of literature found no formal investigations of youth orchestra programs, their participants, or their conductors. I did not explicitly search for literature on youth orchestras in other countries, knowing that they often operate very differently.

Initially I set out to investigate youth orchestra repertoire. I began by identifying as many youth orchestras as possible across the country. I emailed the directors of 234 organizations and
requested lists of repertoire performed in the past five years. (I say “organizations” because several of these groups have multiple levels of ensembles that make up the youth orchestra organization or association.) I received many lists of repertoire, but I also received requests for the comprehensive catalogue (Fulcher, 2015). A number of directors were interested in what other youth orchestras were performing and were eager to learn about the results of my project.

Seeing this desire for shared resources made me wonder if there were Facebook groups, or other online communities, dedicated to youth orchestra directors. The School Orchestra and String Teachers (SOST) Facebook page had nearly 6,000 members as of October 2016, providing a venue for discussions between string teachers on a wide variety of topics. The most frequent topic of discussion was repertoire selection (Palmquist & Barnes, 2015). Given the youth orchestra directors’ interest in my comprehensive repertoire list, I wondered if this population would also appreciate an online community that could serve as a forum for sharing resources and discussing relevant topics (particularly repertoire).

I knew that some of the SOST members were also youth orchestra directors, so I asked the SOST group if a Facebook group for youth orchestra directors existed already. I also searched Facebook myself (February 13, 2015) and was unable to find such a group. Although many youth orchestras have their own Facebook groups, there did not seem to be a place for youth orchestra directors to interact online, as a closed group. In addition, six SOST members responded to my question expressing that no such “youth orchestra director” page existed, but they were intrigued by the idea (February 13, 2015). This lengthy progression of events fueled my desire to start the Youth Orchestra Directors (YOD) Facebook page and then study it. I recognized that there would likely be some overlap between members of the SOST Facebook group and members of the YOD Facebook group. But in my experience, there were differences
in these populations. There were obvious differences in the job responsibilities, and there were
often differences in the personal and professional attributes of these people. Perhaps there were
also differences in the ways they preferred to communicate with other members of the
population.

**Rationale**

As I was emailing directors and establishing the new YOD Facebook page, I was also
reading the research that had been done previously on similar topics and sites.

**Previous Research**

**Facebook research.** Using Facebook as a place to gather and become a community of
interest was popular and convenient. There were a number of studies that considered the impact
of Facebook groups on communities. A sample of these studies reveals: people with chronic
diseases (De la Torre-Díez, Díaz-Pernas, & Antón-Rodríguez, 2012), 2008 presidential election
groups (Fernandes, Giurcanu, Bowers, & Neely, 2010; Woolley, Limperos, & Oliver, 2010),
people interested in the buildings and places Perth has lost over time (Gregory, 2015), and
parents of preterm infants (Thoren, Metze, Bührer, & Garten, 2013). Although these studies
explored very different communities, they all investigated the number of members belonging to
the Facebook page, the goals or mission of the page, and often the individual posts on the page.
Results and conclusions regularly used the words: relationships, community, and support. These
Facebook pages were also often referred to as tools. For many communities I think this was an
appropriate description because Facebook becomes a tool for communication and sharing. This
powerful tool gave people an opportunity to communicate with a group that most likely shared
experiences or beliefs.
Teachers on Facebook. Research has also looked specifically at teachers and how they utilize Facebook. Ranieri, Manca, and Fini (2012) discussed their research into five school-related Facebook groups and their implications for teachers’ professional development. In particular, they asked group founders, ‘why use Facebook?’

The choice of Facebook seems to be related to the fact that it promotes visibility and has specific features that can facilitate networking and quicken the sharing of resources. Speed (“speed in communication, asking and answering questions, reporting and sharing”) and social relevance (“for the large number of easily reachable people”) were identified as the main features meaning Facebook was seen as better than other similar services. (p. 760)

Because so many people use Facebook, it is understandable that it would be socially relevant for a large number of people and might be easier to use than a page on a lesser-known social media outlet.

Music teachers interacting online. After reading how Facebook groups are being used for a variety of communities, including teachers, I wanted to know if Facebook use among music teachers had been studied. Not only have music teachers used Facebook to interact with other teachers, but they also used other online resources before Facebook was prevalent. Bauer and Moehle (2008) shared their investigation of the content on the MENC: National Association for Music Education (since rebranded: NAfME) discussion forums. MENC provided a number of electronic bulletin boards on its website, each one targeting a specific audience (band teachers, choir teachers, string teachers, general music teachers). These discussion boards were created to provide professional development. MENC recognized that its members had limited time to spend on professional development, and the opportunities offered to teachers locally were often not
music-specific, so they were less inclined to participate. Thus, MENC created online discussion boards geared to specific topics of interest for music teachers.

Bauer and Moehle (2008) used content analysis to study these discussion boards and found repertoire (within the large category ‘planning and preparation’) to be the most discussed issue. They also believed “the online forum does appear to be a good means of facilitating repertoire discussions among teachers” (p. 79). Overall, they seemed to agree that the MENC discussion forums were beneficial, but they recognized that

…the teachers who utilized the forums were a self-selecting population. They all had a computer, Internet access, and enough technical know-how to be able to utilize this communication medium. They also were willing to detail their problems and concerns in a very public venue. (p. 81)

Therefore, this format for discussion and community may help some, but may not appeal to, or even be possible for, all music teachers.

Brewer and Rickels (2014) completed a content analysis of social media interactions in the Facebook Band Directors Group. Similar to Bauer and Moehle, they were particularly interested in how this group might encourage or provide professional development. Not only did they investigate the topics most often discussed, but they also integrated Wenger, McDermott, and Snyder’s (2002) community of practice theory and analyzed trends in day of the week and mobile device posting data. Brewer and Rickels also found the “Repertoire Suggestions topic code constituted the largest category within curricular codes, and it was the largest single category in the dataset” (p. 12). It seems music teachers of many specialties are likely to take advantage of opportunities to discuss repertoire.
The study that was most closely related to the purpose of my investigation was Palmquist and Barnes’ (2015) research on participation in the School Orchestra and String Teachers Facebook v2 group. This group is now the School Orchestra and String Teachers Facebook group (deleted ‘v2’). There is likely to be some overlap in the population of the SOST group and the newly created YOD Facebook group so it is beneficial to understand trends on the SOST Facebook page.

Palmquist and Barnes (2015) noted that string teachers were in particular need of communities of practice, often found easily online. One reason string teachers sought online communities was their isolation and geographic separation. In addition, because administrators often have to limit the number of music teachers they hire, many orchestra classes are taught by music teachers who are not primarily sting players (i.e. are vocalists, or play band instruments or piano). Palmquist and Barnes’ research questions included: How many (and what percentage of) SOST v2 members initiate posts? And, on what topics do SOST v2 members most frequently post? In addition, the authors were

…interested in describing the geographic distribution of the SOST v2 membership and quantifying the posting behaviour of members (posting frequency and most-frequently posted topics). Using content analysis techniques described by Bauer and Moehle (2008), [they] examined the topics posted on the SOST v2 Facebook group from its inception in March 2011 until August 2012. (p. 96)

Palmquist and Barnes found that people who posted between one and five times contributed the majority of posts. In other words, many members asking occasional questions drove most of the discussions, rather than a select few members tending to monopolize conversations. As in previous studies, Repertoire was the most frequently posted topic (16.5%),
followed by Teaching Advice (sum of subcategories; 15%), Articles and Links (13.8%), Other (relating to music teaching; 8.9%), and Jobs (seeking or announcing opening; 6.6%).

Palmquist and Barnes (2015) concluded that the large number of members speaks to the interest in, and need for, online communities for orchestra teachers. It is my hypothesis that a similar interest and need exists for youth orchestra directors, although the overall population is smaller.

**Purpose & Research Questions**

The purpose of this study was to investigate uses of the Youth Orchestra Directors (YOD) Facebook page and explore user perceptions of the (researcher created) page.

Additional research questions were:

1) How was the YOD page used and what topics arose?
2) Why did these directors choose to join, and use, the page?
3) What are the personal and professional attributes of the page members?

I wanted to investigate not only the page content and page usefulness, but also who was using the page. What were their personal and professional attributes? Since no research has been published regarding youth orchestra directors, this seemed an ideal opportunity to find out more about this population of people.

**Method**

Creswell’s (2013) description of a case study neatly explained what I hoped to accomplish:

Case study research is a qualitative approach in which the investigator explores a real-life, contemporary bounded system (a *case*) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving *multiple sources of information*.
(e.g., observations, interviews, audiovisual material, and documents and reports), and reports a *case description* and *case themes*. (p. 97)

The YOD Facebook page was the case, bounded as a closed, online community. The multiple sources of information were artifacts collected from the page itself (posts and shared resources), interview transcripts, and questionnaire responses (all explained in detail below). This collection of data allowed me to richly describe the page, the page members, and the page members’ thoughts about the page (i.e. my research questions).

Additionally, Yin (2014) said, “you would want to do case study research because you want to understand a real-world case and assume that such an understanding is likely to involve important contextual conditions pertinent to your case” (p. 16). Part of my interest in this research was the context in which youth orchestra directors worked, and how that manifested in their use of a collaborative tool (the Facebook page).

Merriam (1988) also confirmed that case study would be an appropriate methodology for this research. She defined case study as “an examination of a specific phenomenon such as a program, an event, a person, a process, an institution, or a *social group* [emphasis added]” (p. 9). Additionally, “…this design is chosen precisely because researchers are interested in insight, discovery, and interpretation rather than hypothesis testing” (p. 10). And finally, “a third precondition – one that has already been mentioned as a rationale for a single-case design – is the uniqueness of the situation” (p. 30). The YOD Facebook group is a tool for a unique group of people who do not often interact otherwise. The uses of, and interactions on, this Facebook page have potential to reveal many insights into the youth orchestra community, as well as insights into the relevance of social media as a tool for this population.

**Case Description & Participants**
The YOD Facebook group was modeled after the Band Directors Group (BDG, see Brewer and Rickels, 2014) and SOST group (see Palmquist and Barnes, 2015). It is a secret group on Facebook, meaning members can only be added by other members, or by email invitation. This approach has worked well for the BDG and SOST groups and has limited their populations to the intended audience. As written in the Group Description and Pinned Post on Facebook, “For those who conduct community youth orchestras. Artistic directors, repertoire planners, administrative assistants, etc. are also welcome. If you’re part of the Youth Orchestra world and would like to be part of a community just for you, come on in.”

As indicated in the above description, both conductors and administrative directors are welcome in this group. Unfortunately, this led to a bit of nomenclature confusion throughout my study. When I refer to “directors,” I am referring to all members of the group, be they conductors or administrative/executive directors. When I refer to “conductors,” I am referring specifically to those who indicated they conduct a youth orchestra.

The participants for this study were all members of the YOD Facebook group. The page was formed on November 5, 2015, and participants joined on that day up to present day. Not every group member interacted with the page, but all who did were considered participants because their actions were analyzed. All members were invited to complete the questionnaire. A purposeful sample of members were invited to be interviewed. Invitations were extended to:

- three members who originated a thread (posted initial questions or comments)
- three members who replied to a thread with a comment
- three members who responded to a thread with only a reaction emoji (e.g. Like, Love, Haha, Wow, Sad, Angry)
- three members who did not visibly interact with the page at all
These were twelve distinct invitations. The request was sent via private message on Facebook and also via email. Interviewing people who interacted with the page in a variety of ways was maximum variation sampling, selecting diverse individuals based on specific characteristics (Creswell, 2013). This was used to ascertain a broad perspective and variety of feedback on the page’s effectiveness.

**Data Collection & Analysis**

Qualitative research requires multiple forms of data for triangulation and trustworthiness in description and interpretation. Merriam (1988) specified, “…case study does not claim any particular methods for data collection or data analysis. Any and all methods of gathering data from testing to interviewing can be used in a case study…” (p. 10). Additionally, she said, “Qualitative case studies rely heavily upon qualitative data obtained from interviews, observations, and documents. Quantitative data from surveys or other instruments can be used to support findings from qualitative data” (p. 68).

Striving for rich sources, this research involved data from three sources: the YOD Facebook page content, interviews with YOD Facebook group members, and a questionnaire of YOD Facebook group members. As Merriam (1988) said, “methodological triangulation combines dissimilar methods such as interviews, observations, and physical evidence to study the same unit” (p. 69). By using three distinct sources the strengths and weaknesses of each source should balance out and provide a rich description of what is happening in the case.

Yin (2014) reported strengths and weaknesses for sources of evidence. The Facebook page content was an interesting case because it seemed to qualify as multiple types of evidence, and therefore had many strengths and potential weaknesses. The page included links to outside documents and also several stagnant posts where information was shared but no dialogue
occurred. This kind of evidence was seen as a “documentation” source and was strong because it was stable and it was not created as a result of the case study. However, if members found some of the documents difficult to access, that could have been a weakness.

By nature, the page was also an archive of the activity of the group, so an “archival record” source of evidence. In addition to the above strengths, as an archive this evidence was precise. I could see the exact words that were written, and on what date, for every post since the page began. And although Yin (2014) cautions a weakness in archives can be accessibility due to privacy concerns, as long as I am a member of the group I will always be able to access the archives.

Finally, the Facebook content could also be seen as “direct observation” and “participant-observation” evidence. There were exchanges on the page in which I did not participate, I merely observed. But I am a member of the group, and there were times that I participated by responding to questions and/or starting conversations. The strengths and weaknesses for both categories of “observation” are very similar. Observing provided strong evidence because it was immediate, it could cover the case’s context, and (as participant) it could be insightful. The weaknesses of observing were the potential for bias due to participant-observer’s manipulation of events, and it is time-consuming. Yin (2014) also cautioned against weaknesses that are not a concern in this research. Participants could act differently because they are being observed, but these participants were interacting on the page for over a year without knowing that it might be looked at for research. And, thankfully, cost was not a concern because the observations were not extensive enough to require a team of people or hours of paid work.

As Yin (2014) describes, the interviews were considered strong because they were targeted and insightful. They could be weakened by poorly articulated questions, response bias,
or reflexivity (when the interview participant says what the interviewer wants to hear). I worked to counter these weaknesses by having pre-determined interview questions. Once the question was answered, I did occasionally ask follow-up questions, but I made sure to ask the following questions of every interview participant.

- Why did you decide to join the Youth Orchestra Directors Facebook group?
- Why did you decide to post or interact on the Youth Orchestra Directors Facebook page?
- Are you part of any other online communities where you discuss youth orchestra director topics/issues?
  - If so, what are they? How are they different from the Youth Orchestra Director Facebook group?
  - If not, why not?
- Are you part of any other offline communities where you discuss youth orchestra director topics/issues?
  - If so, what are they? How are they different from the Youth Orchestra Director Facebook group (other than the online aspect)?
  - If not, why not?
- Has the Youth Orchestra Director Facebook group been helpful or interesting to you?
  - If so, how so?
  - If not, why not?
- Are there any changes you would like to see made to the Youth Orchestra Director group structure? Is there anything that could make this a more enjoyable and/or effective resource for you?
• Is there anything else you would like to share about your experience with the Youth Orchestra Directors Facebook group?

The questionnaire was fairly straightforward as “documentation” evidence, and was strong because it was stable, it was not created as a result of the case study, and it could ask both specific and broad questions. It was weak because there was some biased selectivity, since not everyone completed the questionnaire, and there may have been (unknown) bias with which I wrote the document. My bias comes from my experiences, and therefore assumptions about the personal and professional attributes of youth orchestra directors. I provided mostly open-ended response opportunities to avoid forcing answers that participants would not find applicable to their situation. The questionnaire is available in Appendix D.

Yin (2014) implored researchers to establish good research habits before collecting data. In particular, he recommended choosing an analysis strategy and criteria for interpreting findings. I approached this case study with a strategy to “develop a case description” as Yin described. “Sometimes, the original and explicit purpose of the case study may have been a descriptive one” (p. 139). I wanted to know more about youth orchestra directors and their use of Facebook. I wanted to be able to describe the trends I saw in this population, both related to Facebook and not related to Facebook.

Before collecting data from the Facebook page, I posted to the page and alerted the members that I would be gathering all interactions from the page to use in my dissertation research. All activity would be kept anonymous, but they had one week to alert me if they did not want their page involvement to be included. No one asked to be excluded. To analyze the YOD Facebook page content I copied each instance of page activity (posts, responses, reaction emojis, and their authors) into an Excel spreadsheet. Because the page is active and can continue
to change daily, it is easiest to pull the data from the page, on a chosen date, and then analyze it elsewhere. This procedure is corroborated by Brewer and Rickels (2014) and Palmquist and Barnes (2015) and their methodologies. I then proceeded with a thematic analysis. “In thematic analysis, the researcher focuses analytical techniques on searching through the data for themes and patterns. One of the important aspects of this work is data coding” (Glesne, 2011, p. 187).

Glesne (2011) further explained:

“[Coding] is a progressive process of sorting and defining and defining and sorting those scraps of collected data (i.e., observation notes, interview transcripts, memos, documents, and notes from relevant literature) that are applicable to your research purpose. By putting pieces that exemplify the same theoretical or descriptive idea together into data clumps, you being to create a thematic organizational framework.” (p. 194)

To code my data, I read through all the posts and labeled them with an applicable code or theme. Then I read through all the responses and coded them separately. As expected, most of the responses to a post were coded with the same theme as the original post. But a few responses warranted a different code. Reaction emojis were coded as responses to the post to which they were attached, and those responses were all positive “likes” (on this particular page). If a post coded for “repertoire” had three likes, those likes were seen as support of the discussion of “repertoire.” I included author name in the data that I pulled from Facebook only so that I could plan my interview invitations (as described under “Participants”).

Six group members graciously agreed to be interviewed. One did not interact on the Facebook page at all. One only interacted by liking things. The remaining four interacted in multiple ways (comments, replies, likes). Each participant was interviewed over the phone and gave permission for the conversation to be recorded. I used the “Call Recorder” app to record the
calls and also to playback the recordings while I transcribed in a Word Document. After transcribing the interviews, I coded the conversations. I began by coding responses per question. For example, my first interview question was, “why did you decide to join the Youth Orchestra Directors Facebook group?” I read the response to this question from each interview participant and coded appropriately. Then I proceeded to the next question and coded it for each interview participant, and so on. As I read the transcripts, I considered the start of “question two” the moment I asked question two. All discussion before that point was considered pertaining to question one (and so on with questions three through seven). Then I read through each participant’s interview and coded it as a unit, adjusting codes if necessary. After these two rounds of coding, I emailed each participant their transcript and the codes I assigned for member checking. “Member checks – taking data and interpretations back to the people from whom they were derived and asking them if the results are plausible” (Merriam, 1988, p. 169). Confirmation that my interpretations were acceptable supported the internal validity of this research.

The final sources of data were the questionnaire responses. All 82 group members were invited to complete an online questionnaire via Qualtrics. These invitations were extended through individual private messages through Facebook to each group member and emails to those members whose email addresses I could find. The questionnaire results were analyzed using theme coding on the appropriate open-ended questions and descriptive statistics on the questions gathering personal and professional attributes. After considering whether additional statistical analysis would be appropriate, it seemed most fitting for this study to use the descriptive statistics to inform the qualitative data gathered through the open-ended questions and through the other data sources. Using quantitative data to support qualitative findings is supported by Merriam (1988), as previously quoted, and this fit with the descriptive approach to
this study. The primary purpose of the questionnaire is to answer the research questions: 2) Why did these directors choose to join, and use, the page? And 3) What are the personal and professional attributes of the page members. I do not believe these research questions require correlational statistics.

Findings

Research Question 1: How was the YOD page used and what topics arose?

Page statistics. The YOD Facebook group was started in November 2015. Page data was pulled in March 2017 (17 months after launch). It was (and is) a secret group on Facebook so new members can only be added by current members. People cannot search and find the group on their own. There were 82 members at the time of data collection and 23 posts. Those 23 posts led to many additional interactions, e.g. replies and likes. The only reaction emoji utilized was the “like.” Posts, replies, and likes were the only activities to take place on the page. There were a few links shared within posts, but no files were shared within the group.

Topics of interest. I analyzed the 23 posts and coded them for themes. The four primary themes were:

- Repertoire – 57 interactions (7 comments, 18 replies, 32 likes)
  - Repertoire – 53 interactions, 6 comments, 16 replies, 31 likes
  - Repertoire (ASCAP license) – 4 interactions, 1 comment, 2 replies, 1 like

- Events – 29 interactions (4 comments, 6 replies, 19 likes)
  - Event (invite) – 4 interactions, 1 comment, 3 likes
  - Event (networking) – 3 interactions, 1 comment, 2 likes
  - Event (planning) – 22 interactions, 2 comments, 6 replies, 14 likes

- Page logistics – 21 interactions (10 items/comments, 5 replies, 6 likes)
• Friendly – 15 interactions (4 comments, 4 replies, 7 likes)

There were several comments that fell into multiple categories and were coded twice. And, as indicated, I initially coded separate types of event and repertoire discussions. It was interesting to see the different types of discussion that arose on those topics, but ultimately, I saw them relating to the larger category of Repertoire or Events. The two codes created but not listed above were Job Post and Rehearsal Videos. Each of those had less than 10 interactions.

A brief explanation of two themes: Page Logistics arose because of the number of times that I updated the description of the page, answered a question about how to use the page, or shared how to navigate to the provided repertoire list. I was not sure that I should include these mundane actions as a code, but many of them received replies and likes. Because these items appear integral to building this community, and led to additional interactions, I decided they were valuable to count. And Friendly arose as a theme because there were quite a few comments that were simply friendly. “Well, this is exciting. Greetings, all!” (November 16, 2015) “Great idea! Glad to be a member and look forward to wonderful conversations and information sharing.” (November 16, 2015)

**Research Question 2: Why did these directors choose to join, and use, the page?**

Answers to this question came from both the questionnaire and the phone interviews. Phone interview responses are labeled with pseudonym initials.

**Joined for community.** Many of the conductors shared that they joined for a sense of community. “I was very interested in the topics that might be discussed among the members, especially in terms of repertoire and programming ideas” (questionnaire response ID 3EpkMkGF5RSapAV). “As a Youth Orchestra Director, there aren't many avenues to seek support and advice from colleagues. This Facebook group serves as a good place to share ideas,
ask questions and not feel so alone as a conductor!” (questionnaire response ID 1IjZxUE6VaV7BX) I heard very similar themes in the interviews.

“I just think that you’re looking at youth orchestras across the country, we don’t have a great way to network with one another. So, I thought it was a fantastic idea because of that networking possibility. And then also I really wanted to know what’s going on in other people’s youth orchestra programs, and some things that they’re seeing problems with, things they’re having success with, just in general to get an idea of what was going on in their worlds to see what was similar to mine.” (WL, interview on April 5, 2017)

**Joined for utilitarian reasons.** A number of people also joined for more utilitarian reasons. They didn’t join so much as they were added. “I was automatically added to it by someone else” (questionnaire response ID 6zd6PtQmykLi2N). Presumably all members joined because they fit the demographic. Several mentioned this as their primary reason for joining: “I joined because of the invitation to do so, and because I'm in the demographic!” (questionnaire response ID br7ir5P9xi7c9QV). Finally, a small few joined solely to obtain access to the repertoire list. This was the list I compiled through previous research (Fulcher, 2015), and I offered access to the list to anyone who joined the Facebook page. “…you had originally asked me to send you concert programs, with the promise of the looking at the spreadsheet to see what other orchestras were performing, and I believe that was, that joining the Facebook page had something to do with that…” (MT, interview on April 14, 2017).

**Used for self.** Learning members’ motivations for using the page was quite interesting. As expected, many of the motivations for using the page were self-serving. Members used the page to access the repertoire list, and also to seek repertoire recommendations from other page members. They desired to gain knowledge and understanding from others’ experiences. They
wanted to feel less isolated. “I would say it’s definitely been interesting, it’s been kind of cool to realize that, like you said, we’re not alone [laughter]. I don’t particularly love being isolated” (GKJ, interview on April 4, 2017). And it was particularly interesting that the themes of self-promotion and ego arose several times. Conductors saw the page as a venue for self-promotion (or that it would be a more effective page if it was used that way) and/or mentioned the role of ego in what questions are posted and answered.

Self-promotion: “I think whether I intend it or not or whether any director admits it or not, we’re always on Facebook to a certain degree for self-promotion. And I think the secret, because you like to keep your name out there, you like to see your name in other places. It’s not always as pathetic as that, we do have altruistic reasons for wanting to get involved in communities as musicians, I mean that’s, but I’m just being really honest with you. The secret to your Facebook page, is to play on the natural instinct of all conductors to self-promote.” (RP, interview on April 5, 2017)

Ego: “And so there’s this sort of sense of like, ya know, I don’t know, orchestra conductors tend to want to think that they know everything. And so putting their thoughts out there on a, in a public forum, that they want advice or help with something, there’s just this, there’s this sense that you’re weak by putting the question out there.” (GJ, interview on April 10, 2017)

**Used for helping others.** In addition to the self-serving reasons for using the page, several participants mentioned using the page specifically to benefit others. They recognized the uniqueness of youth orchestras, and youth orchestra directors, and wanted to share their experience and knowledge to better the profession.
“And then I also, ya know, I’ve been around the block a few times, I’ve been teaching for quite some time and I have dealt with a lot of the same issues that some other people are dealing with, so I’m happy to lend advice or just say ‘this is what I did in my situation, I don’t know if it’ll work for you, but this is what I’ve done’…So it’s as much to give back to other teachers…” (WL, interview on April 5, 2017)

The desire of many directors to not feel so isolated also aligns with the desire to support others. If I feel less isolated because of this community, hopefully you do, too. In discussions about how to make the page more active and more effective, several people who have interacted on the page said they did so, in order to spur others to interact. They used the page partly for reasons printed above, but also partly to encourage others to interact and even to attract new members to a more vibrant page. “Yeah, because I think the more activity the page sees, the more likely it is that people will continue to post and it will grow and hopefully we’ll get even more youth orchestra directors involved in the page” (WL, interview on April 5, 2017).

**Not used enough.** The number one theme regarding use of the YOD Facebook page is that it is not used enough. There is not enough activity for the page to truly be helpful or interesting or meet the needs of the members. There is still a positive attitude toward what this page could be, could provide, but the consensus is that the page has not reached its potential.

“I believe once there is more momentum, it can [meet my needs]. At this time, there are very few postings and discussions and the group does not show up in my FB feed often. It would be great for the page to increase in members and have lively discussions, such as the String Orchestra Teachers fb page.” (questionnaire response ID 8BUksliHmjWCLrL)
“No [it has not met my needs]. It is not active enough to provide a lot of discussion.”

(questionnaire response ID eONm7grh8qoOB)7

“[The Facebook page is] interesting to me because it’s there and I appreciate that because
I think it could be really great. Um, helpful, not really so much, but that’s not your fault. I
mean, it just needs to be a more, um, fertile environment. There’s just not enough traffic.”

(RP, interview on April 5, 2017)

“Yeah [the Facebook group has been helpful and/or interesting]. Perhaps disappointing in
a way just because it hasn’t been as active as I’d hoped, but absolutely it’s been helpful
and even more just exciting for me. I’m very much in love with it. [laughter]” (RW,
interview on April 4, 2017)

**Research Question 3: What are the personal and professional attributes of the page
members?**

Because very little research has been disseminated regarding youth orchestras and their
directors, this seemed an ideal opportunity to learn more about this population. My hypothesis
that this is a unique group, scattered geographically and often isolated by career choices (or
necessities), was confirmed via questionnaire respondents.

**Professional attributes.** Seventeen respondents indicated they were current youth
orchestra directors. Three of those were revealed to be executive/managing directors, not
conductors, illustrating a poor word choice within the questionnaire. Twelve respondents
indicated they were retired, had previously worked with youth orchestras, or held youth orchestra
administrative positions.
The conductors have been with their current youth orchestra(s) for 1 – 33 years, with an average of 9.7 years. They have conducted any youth orchestra for 1 – 33 years, with an average of 14.1 years. Five of those conductors appear to have always worked with the same youth orchestra(s). And when asked how long they have been a conductor, of any kind of ensemble, the range was 5 – 40 years, with an average of 19.2. Four people appear to have been conducting youth orchestras for their entire conducting tenure.

Thirteen conductors listed a string instrument as their primary instrument. Five indicated brass, three winds, and three indicated a combination of instruments spanning these genres. The conductors have played their primary instruments for 12 – 50 years, with an average of 31 years.

When asked about education, the participants reported the education levels and specialties shown in Figures 1 and 2 (all participants, not only conductors).

Figure 1: Education Levels Obtained by Participants

- No degree (2)
- Bachelor's (2)
- Master's (15)
- Doctorate (9) PhD: 5, DMA: 3, Certificate: 1
The majority of respondents (54%) have a Master’s degree and 40% of all the degrees earned were in Music Education.

I was particularly interested in the combination of jobs that these directors occupied to create their careers. As expected, the responses were wide-ranging and not generalizable. Two youth orchestra directors were full time in their youth orchestra position (both are conductors, not administrative). In addition to their youth orchestra work, seven directors also taught private lessons. Five were college/university music education faculty. Three were college/university conducting faculty. Three were administrative employees for professional orchestras. Two were K-12 orchestra teachers. Two were freelance musicians. The other jobs indicated were: full-time DMA student (music education), professional orchestra conductor, college/university studio faculty, symphony summer camp artistic director, music journalism, bookkeeper for private clients, and a symphony musician (viola).

**Personal attributes.** The more personal questions saw varying response rates.
Understandably some people chose not to share personal information, and no questions were marked “required.” Participants (all respondents, not just current conductors) range in age from 25 – 66, with the most popular age bracket being 46 – 50. Respondents wrote their age in an open-ended box. I have imposed the 5-year brackets seen in Table 5 out of curiosity. Overall there were 14 female respondents (54%), one genderqueer (4%), and 11 male (42%). White was the most reported race (25 participants, 96%) and Asian was the only other indicated race (one participant, 4%).

Table 5

*Age and Gender of Participants*

<table>
<thead>
<tr>
<th>Age</th>
<th>Gender distribution within age</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 – 30: 2 participants</td>
<td>2 F</td>
</tr>
<tr>
<td>31 – 35: 5 participants</td>
<td>3 F, 2 M</td>
</tr>
<tr>
<td>36 – 40: 3 participants</td>
<td>2 F, 1 M</td>
</tr>
<tr>
<td>41 – 45: 3 participants</td>
<td>1 F, 2 M</td>
</tr>
<tr>
<td>46 – 50: 9 participants</td>
<td>4 F, 4 M, 1 Genderqueer</td>
</tr>
<tr>
<td>51 – 55: 0 participants</td>
<td></td>
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<tr>
<td>56 – 60: 2 participants</td>
<td>1 F, 1 M</td>
</tr>
<tr>
<td>61 – 65: 1 participant</td>
<td>1 F</td>
</tr>
<tr>
<td>66 – 70: 1 participant</td>
<td>1 M</td>
</tr>
</tbody>
</table>

Participants were asked to identify the state in which they live, and also list the zip code of the location of their youth orchestra. There were a few data discrepancies (incomplete zip codes), but it appeared that all directors lived in the same state in which they worked (with some understandable crossover between NY and NJ). The states represented by respondents were: AL, CA (2 people), CT, IA, IL, IN (2 people), MA, NC (2 people), MA, NV, NY/NJ, OH (3 people), PA, SC, TX (2 people), UT, VT, VA, WA, and WI.
Discussion

I am passionate about youth orchestras and the opportunities they can provide to young students across the country. I also recognize the unique role many youth orchestra directors hold. Finally, I am surprised that no research has been disseminated regarding this important piece of music education, or at least music making, in our country. This research has confirmed some of my assumptions about youth orchestra directors, and has revealed ways that I, and others, could do more to support these musicians in our communities.

It was not surprising that Repertoire was the most-discussed topic on the Facebook page. Research on the SOST Facebook page (Palmquist and Barnes, 2015) and the BDG Facebook page (Brewer and Rickels, 2014) revealed the same is true of those populations. Musicians, especially those working with young students, are consumed with repertoire decisions. It can be quite a challenge to find music at an appropriate difficulty level, that is engaging for musician and audience, and fits the provided instrumentation. And the very fact that this group was started as a response to requests for a repertoire list made it likely that repertoire would be a topic of interest.

I was pleasantly surprised that so many participants mentioned joining the group because they were excited by the possibilities. Similarly, I was intrigued by the creation of the Friendly code for some of the Facebook interactions. It seemed that many in this population were eager for community and wanted to support one another. That was my hope! However, that desire to give and receive support did not automatically form a community. As the creator of this page, I struggled with how much to insert myself and prompt interaction. From the questionnaire responses and interviews, it was clear that I needed to prompt more. And most of the members will likely be ok with that. If it leads to richer discussions and a stronger sense of community,
they will not care that it is often me prompting the interactions. And, hopefully, over time that
will shift.

A number of people mentioned they were eager for this page because they did not know
of any other communities for youth orchestra directors. “Honestly I haven’t found anything else
that really kind of meets that need” (WL, interview on April 5, 2017). The only online
community that was mentioned (several times) was the discussion board hosted by the League of
American Orchestras. But in order to be a member of that group the youth orchestra must be
affiliated with a professional symphony, which is associated with the League. Therefore, several
conductors mentioned that they know of this resource but are not in a place where they have
access to it. And several others mentioned having access, but that it often focuses on
administrative concerns and is not very helpful to them as conductors. In short, there does not
appear to be any online community for youth orchestra directors, other than the YOD Facebook
group.

Offline communities were equally hard to find. WL mentioned a clinic that she was part
of in 2017 where a few youth orchestra things were discussed (interview on April 5, 2017). GKJ
mentioned a youth orchestra festival that her state puts on each year where she gets to commune
in-person with a handful of other directors (interview on April 4, 2017). And MT has heard of,
but not yet attended, the New England Orchestra Consortium, which is only for executive
directors (interview on April 14, 2017). A few other participants mentioned seeking out friends,
colleagues, and mentors with whom they communicate about youth orchestra topics. That
communication could be in-person but was more often via phone, email, text, or an online
messenger service (often Facebook). Other than these few scattered opportunities, there were no
known, regularly occurring, offline communities for youth orchestra directors to gather and network.

There were a few comments about the age of the youth orchestra director population and how that might be impacting the influence of the Facebook group. “And frankly, when I think of our conductors, um, I don’t know that any of them are very active on Facebook. [laughter] So, ya know, we’re all of a certain age” (MT, interview on April 14, 2017). When discussing the possibilities of the Facebook page versus an email listserv, GKJ said, “I do think that there are enough old-fashioned-y people, ya know, that, there are young up and coming people that are doing youth orchestras, but as I look around the table at that meeting every year, they’re gettin’ old [laughter]” (interview on April 4, 2017). She felt that an email listserv would reach more people and be more effective than the Facebook page, for many of the “old-fashioned-y people.”

In at least three of the interviews, the notion of self-promotion and/or ego came up, unprompted. It seemed that some youth orchestra directors were very interested in promoting themselves and their ensembles, and less interested in building a community to share knowledge. Or, at least, they saw the accolades as something that would appeal to egos and persuade others to be more active on the page. But, at the same time, respondents shared their fears of posting too many questions, or certain kinds of questions, because they did not want to be judged. So, ego may be the answer to draw people to the page, but it may also be the force that stops people from posting on the page. As one participant explained,

“There’s a little bit more of a maestro thing happening in the orchestra world. Which is good and bad I guess. I think that might be one of the reasons that there’s less participation in this type of thing, not just your Facebook page, but about this type of thing in general. The maestro complex.” (GJ, interview on April 10, 2017)
The high level of education among these respondents impresses me. I did tell them that this research is part of my dissertation, so it is possible that some responded in solidarity. I am intrigued by the high number of Music Education degrees, and the smaller number of Conducting degrees. Particularly at the doctoral level, six degrees were in Music Education while only one was in Conducting. Again, perhaps this is due to solidarity or maybe because those with performance-based degrees (e.g. conducting) have other communities for support.

I was very intrigued by the gender distribution. I expected to see a higher percentage of male directors, especially at the older ages. But the distribution was very even, throughout all stages of life. And I am grateful one participant felt comfortable labeling their gender as genderqueer. It is important that we recognize the ever-expanding variety of personal attributes held by our colleagues and students. It is my wish that, as a profession, we would look at the lack of racial diversity and make a conscious effort to expand the diversity of the leaders in front of our students.

**Recommendations**

This research does not provide finality or generalizability. It is simply a starting point for lines of research that are long overdue. Youth orchestras play a significant role in educating many young instrumentalists in this country and I believe it is important that we gain a better understanding of these ensembles and the inspiring musicians that lead them. I hope the insights I have gained might motivate others to investigate additional aspects of the youth orchestra community. One additional aspect of the youth orchestra culture worth investigating is the actual lack of community. Perhaps additional studies can be done on this Facebook group or on other avenues where youth orchestra directors can network. Will Facebook remain a popular tool for networking and developing community? Or will its focus change in coming years?
In addition to learning about the directors of these ensembles, there would be great value in learning more about the participants. How many K-12 students use youth orchestras to supplement their musical experiences? How many participate in youth orchestras because they do not have an ensemble at school? How many participate in multiple youth orchestras? How many attend public/private/charter schools? How many go on to study music in college or continue playing after high school? There are endless avenues for research to discover the impact that these ensembles have on music education in our country.

Conclusions

I am glad so many directors see potential in the YOD Facebook group. I am glad they desire to be in community and help each other and learn from one another. Further, I am glad they shared their desires and opinions with me so that I have practical ideas of how to make the page more active, and therefore more effective. It is my hope that it can be made a helpful resource for those who want to use it.
References


CHAPTER 5
MULTI-STUDY DISCUSSION

I used technology as a high school orchestra director. I used technology as a graduate student. I continue to use technology as a professor in higher education. I use technology in my personal life. I enjoy it. I am challenged by it. I see great possibilities for myself and my students in the growth of web-based tools and opportunities. As I actively used technology in these ways, and read how others were using and researching technology, I wondered specifically how students would use these resources in and out of class to collaborate musically. I wondered if teachers would use “new ways of interacting with Web-based applications,” (Harris & Rea, 2009, p. 137). And I wondered if community youth orchestra directors might use online social platforms as a way to network and develop ideas. The purpose of this multi-project research was to explore uses of web-based technologies in musical communities. I wanted to learn how those technologies impacted musical collaboration, tools for teaching, and communication between orchestra directors. And I wanted to hear from three distinct, but intertwined populations within our musical communities: the students, the teachers, and the youth orchestra directors.

Research Summaries

Online Musical Collaboration

The purpose of this study was to observe how high school string players, from an existing chamber group, viewed online music collaboration. Four students participated in this case study. They joined in online musical collaborations, of their choice, to varying degrees and reflected on those experiences in interviews and also electronic journal entries. It was clear that they enjoyed asynchronous forms of online musical collaboration e.g. responding to posts on Facebook and sharing playlists on Spotify. These were websites they were comfortable with and used in their
everyday life, both musically and non-musically. The students were not comfortable exploring unfamiliar web-based tools.

Though these data were limited by the relatively few collaborative experiences attempted by the students, they confirmed an important fact. High school students were using Facebook, Spotify, and YouTube to enhance their musical experiences. These services are free and many students already use them, so teachers should consider using them as well. If, like me, you are interested in having your students collaborate musically online, be prepared to lead them through the process. With better guidance through some of the synchronous websites I think the students might have enjoyed some of the sites and found them useful for musical collaboration.

**Apps Used by Pennsylvania Music Teachers**

The specific problem of this study was to determine which apps music teachers in Pennsylvania reported using, as well as the functionality of each app. Teachers were invited to fill out an online questionnaire, sharing which apps they used and also rating the app for functionality. The first interesting result was the number of app non-users that responded to the survey. These 392 respondents answered several open-ended questions. The top five reasons they did not use apps were: technology/equipment not available (236 instances); can’t/don’t use apps but do use other technology (computers, interactive whiteboards, etc.) (45 instances); lack of knowledge (34 instances); district/admin policies & rules (“no device”) (30 instances); and not enough time (planning and/or instructional) (28 instances). And the top five responses to, *is there anything that would make you more interested in using apps in your music classroom? If so, what? (Funding, equipment, training, planning time, etc.)*, were: equipment/wireless access (209 instances); funding (153 instances); training (137 instances); time (planning and/or instructional) (74 instances); and no (33 instances).
The next unique result was the detailed app data provided by the 342 respondents who did use apps in their classrooms. I now have an extensive list of teacher-approved-apps (Appendix C) to share with music teachers. Not only can I share names of apps, but I can share how teachers were using each app. I can share how music teachers rated the functionality of the app; how they actually used it in their classrooms instead of just how the app programmer envisioned the app being used.

As a string specialist, and recognizing my other two projects were related specifically to the orchestra community, I would like to share a few more details about app use, as demonstrated by orchestra teachers in Pennsylvania. There were 64 apps reported as being used in orchestra classes, only 10% of the total reported apps. But considering all app-user respondents, 17% had orchestra as some portion of their teaching load (only 6% taught exclusively orchestra). With that perspective, 10% of reported apps coming from orchestra classrooms was very reasonable.

Because the orchestra sample was fairly small, it was difficult to draw broad conclusions about how orchestra teachers used apps. It appeared that orchestra-exclusive teachers were more likely to be app users (22 people, 6% of all users) than app non-users (17 people, 4% of all non-users). When considering the orchestra teachers who also taught in other settings, the ratios of users to non-users swings back and forth.

As with nearly all other subsets of setting and grade level, apps used in the orchestra classroom were rated highly for Music Performance functionality. Orchestra teachers reported using apps that fit the description: instruments, instrument trainers, metronomes, tuners. And as with most other subset groups, the next highest rated function for orchestra apps was Multimedia (music to listen to, audio/video recording apps, photos, videos). As compared to the overall ratings earned by each function category (Table 4 in Chapter 3), apps in orchestra classrooms
were mostly used for the same functions as the apps in other music classrooms. There were two intriguing differences though. Games were the seventh most highly rated functionality (out of 10) for apps overall. Within orchestra classrooms, Games were the fourth most highly rated. It appeared that games were used more often in orchestra classes. And Classroom Management apps were rated sixth most highly for apps overall. But in orchestra, Classroom Management was the eighth mostly highly rated. It seemed that apps were not used for classroom management as often in orchestra as they were in other music classes.

Finally, a look at the individual apps being used in orchestra classrooms. The apps reported two or more times in orchestra classrooms, at any grade level, were: GarageBand, gStrings Tuner, insTuner – Chromatic Tuner, iTunes, Metronome, Mobile Metronome, Pro Metronome, Remind: Safe Classroom Communication, SmartMusic, Tuner – DaTuner (Lite!), Violin Multi-Tuner, and YouTube. This list corroborates the above findings nicely. Orchestra classrooms used many Music Performance apps. But it was interesting that the slightly elevated Games rating in orchestra classes (as compared to overall app ratings) came from a handful of expected game-apps, but then also from tuners, metronomes, and iTunes, being used in a “game” capacity. This further demonstrates my finding in Chapter 3 that teachers are resourceful and will find ways to make a tool effective in their classroom, even in ways it was not intended to be useful.

Pondering how members of the orchestra community used web-based technologies led me to think about orchestra teachers using apps. As demonstrated by the orchestra teachers in Pennsylvania, many orchestra teachers did, indeed use apps. They were using web-based tools to help their orchestras perform, experience multimedia, learn music theory, and play games. They were utilizing robust apps (GarageBand, SmartMusic) to accomplish a variety of tasks with one
tool. And even when using a presumably limited tool (a tuner or metronome), these orchestra teachers were finding ways to be creative and use the resource to accomplish additional classroom tasks.

**Youth Orchestra Directors on Facebook**

The purpose of this study was to investigate uses of the Youth Orchestra Directors Facebook page and explore user perceptions of the (researcher created) page. I modeled this page after similar Facebook pages that have been created to foster community. Knowing, anecdotally, that youth orchestra directors tend to be isolated geographically, and also by career demands/choices, I wondered if a Facebook group would be a helpful tool for networking. The group had existed for 17 months when I analyzed the page content. There were 82 members and 23 posts (leading to many additional interactions). In addition to this data, I interviewed six group members and sent an online questionnaire to all 82 members (30 responded, 37% response rate) to achieve rich case study data.

As for the Facebook page, the primary responses from participants were that the page had lots of potential, they were excited about the page, they were grateful for the space to be in community, but the page was not active enough to be helpful or effective. From both interviews and questionnaires, I received many good suggestions for how to improve the page and engage members more effectively. With more time, and more dedicated prompting, I hope the page will grow as a resource.

I wanted to investigate not only the page content and page usefulness, but also who was using the page. What were their personal and professional attributes? Since no research has been published regarding youth orchestra directors, this seemed an ideal opportunity to find out more about this population. The participants had been conducting youth orchestras for an average of
14.1 years and playing their primary instruments (majority being string instruments) for an average of 31 years. The majority (54%) had a Master’s Degree and 40% of all degrees reported were in Music Education. In addition to being the director of a youth orchestra, these directors also taught private lessons, taught at the college/university level, taught K-12 orchestra, conducted professional symphonies, and were administrative employees with professional symphonies, among other things. The age range was 25 – 66, with the majority falling in the 46 – 50 year bracket. 54% were female, 42% were male, and 4% were genderqueer. 96% were white and 4% were Asian. Even these fairly basic demographic questions had not been asked of youth orchestra directors, and then disseminated.

Discussion

My intent in this multi-project research was to explore uses of web-based technologies in musical communities from three perspectives. Although a broad topic, it is where my brain returned time and time again. How are the many different people I interact with using web-based tools? These resources are expanding so quickly, and are so regularly part of our daily lives, how are they manifesting in practical, professional ways? How are students using them – perhaps more creatively than I could even imagine? How are teachers using them – or not using them? And how are youth orchestra directors using them? (Are there opportunities for professional development/networking here, as there are for so many other music teachers using web-based environments?)

Because all three research projects were exploratory in nature, there are few answers or finalities to report. However, I believe my explorations are an important step toward understanding the role of technology in musical communities. Piece by piece, we need to understand what tools are currently being used so we can assess, discuss, and continue to
improve our resources for the good of all. “Despite debates still raging today about best approaches, there is no one best technology and no one best instructional approach. There are so many options” (Bonk, 2009, p.93). This research investigated a few of the current options in order to share their benefits and concerns.

All three research studies have findings illustrated by the following vignette:

Several years ago a professor at a large research institution prepared to deliver her first on-line course. The activities had been planned meticulously, the software to be used had been tested, and hopes were high. One week after the course started, the professor in frustration pulled students back into the classroom and delivered the course in its traditional format. The problem? The students were unable to figure out how to use the software. (Danielson, Lockee, & Burton, 2000, p. 118)

When high school students were given a list of carefully chosen web-based tools and asked to “go explore online music collaboration,” they defaulted to the sites with which they were comfortable. In some cases, they were literally unable to figure out the “software” suggested to them. When teachers were asked why they don’t use apps in the classroom, they said they lacked the knowledge, they didn’t want to, apps are not right for the curriculum, and/or they had no training. I see this as being unable to figure out the “software” and how it could be effective in the classroom. And when youth orchestra directors were asked how they felt about the Facebook group dedicated to them, they said the idea was intriguing. Some have tried to use it, some are not interested, and all agree it is not active enough. They want “others” to get the momentum going so they can benefit. Again, it seems that some key pieces of information about how social media (the “software”) works are missing for these group members.
New technologies must be taught. This is not a revolutionary idea, but is one that arose repeatedly in my research projects. There must be a plan for integrating new technologies and approaches. A plan for the students, for the teachers, and for anyone else who might be expected to use the resource. As I witnessed anecdotally, and then saw within my research, “go explore” is rarely effective in encouraging adoption and effective use of new technologies. As Spector and Davidsen (2000) eloquently explain,

Let us be realistic. Learners often desire structure and guidance. Learners do not magically become scientific explorers or investigative inquirers. Technology is fascinating. However, technology does not automatically support exploration, investigation, sustained interaction, and such activities often associated with education.

(p. 243)

As I mentioned in Chapter 2, I do believe there are times where “go explore” is important and students should be encouraged to figure things out on their own. But if one is hoping to accomplish specific goals, using specific technologies, she should have a plan to implement said technologies. As demonstrated by the app non-users in Chapter 3, time is crucial in working with new technologies. To incorporate technology effectively, time is required of all involved parties. Inservice teachers (including those in higher education, teaching future teachers) need time to learn (and/or be taught) the technology and decide how it will best influence their pedagogy. Students (including collegiate students, preservice teachers) need time to learn (and/or be taught) the technology. Ideally all parties would receive specific training, but at the very least they need time to explore, learn, and implement.

In Chapter 1, I discussed Bauer’s (1999) study showing some ways teachers wanted to use the Internet in their classrooms. I expected to see similar responses from my participants.
90% of his respondents “expressed an interest in learning more techniques for using the Internet with their students to learn about topics such as music history and composers, music theory, jazz, music composition and aural skills, instrumental music, general music, and MIDI” (pp. 57-58). Many of the apps used by teachers in Pennsylvania (reported in Chapter 3) are used for music appreciation, music composition, music performance, and music theory. These categories closely mimic the topics reported in Bauer’s study. Additionally, Bauer had one subject mention “that an interactive web site where students could play music on-line with other students would be desirable” (1999, p. 58). Websites for synchronous musical collaboration were discussed in Chapter 2 and although students report some continued challenges with these sites (lag time), they are sure to evolve and improve as technology advances. Finally, to return to the quote from Cuban, it seems music teachers, like educators broadly, “largely maintain existing classroom practices rather than alter customary practices,” even when incorporating new technologies (2001, p. 171). This is evidenced by the Music Performance functionality for apps being the most highly rated function out of the 10 possible functions. This indicates that Pennsylvania music teachers are using many tuner and metronome apps (and the list of app names confirms this as well). Teachers are maintaining their classroom practices (of using tuners and metronomes), but are using newer options for those tools (apps instead of physical hardware). Between Bauer’s (1999) study and Cuban’s (2001) ideas, it does indeed seem that many ideas and discussions about technology in music education have stayed the same in the past 20 years. This seems impossible given the advances that have occurred in technology in that time. I hope that we will continue to expand our discussions and think creatively about the new ways technology can be involved in our classrooms.
As musical communities, our use of web-based resources is incredibly varied. If we have not been given structure and guidance, we often do not explore new technology on our own. As indicated in my study of Pennsylvania music teachers using apps, nearly half of the respondents had no desire/time/ability to use apps in their classrooms. The students who spoke with me regarding online music collaboration spoke of classroom experience with web-based tools mostly in hypotheticals because their teachers used very few of these resources. Their teachers used some, but very few. And although I have no way of knowing how many youth orchestra directors are truly on Facebook or not, and what their exact levels of comfort are with the technology, it became clear from my interviewees that they see a generational divide in Facebook use. Even if they see value in the Facebook page, they are aware of many other conductors who are not on Facebook or, even if they have an account, they do not use it regularly to interact.

As music teachers, we are accustomed to teaching a variety of ability levels at one time. We have students in class who have been singing since they were born, and we have students who have never heard music played at home. We have students who have played the violin since they were five, and we have students who cannot keep a steady beat. It is our job to find the tools that best fit each student, and do our best to help each student be successful. I see the use of technology in the same way. There are people in the orchestra community who have used Facebook since they were legally allowed, and there are people who will never use it. There are people who understand the term “web-based tools,” and people who will always look for the disc required to install new software. It was my intent to explore what musicians currently know and use within web-based tools, share that information, and help musicians find the tool that is best for their situation. I believe technology can be incredibly effective in most situations, if the tool
is right for both the person and the circumstance. That was the goal of this research, to explore what technologies were being used, what people were using them, and whether that interaction was effective, in their contexts.

**Suggestions for Implementing Technology**

As a high school orchestra director, I took my students to the school computer lab to show them how to use specific technologies. Then I would reference those websites and tools in class and/or offer a knowledge refresh via classroom projector. But if it was a tool I wanted to make sure students could manage on their own, I made sure they had time on an individual computer to feel confident. In higher education as a teacher of preservice teachers, I adhere to a modified model. I encourage students to bring laptops, tablets, or smartphones if I am going to introduce technology that may be unfamiliar. Then I demonstrate using the classroom projector as they mimic on their own device. Of course, this is after I have worked with the technology to ensure my own understanding and demonstration abilities. Regardless of the exact pedagogy model, the teacher must be prepared to demonstrate the relevant features of the new tool and also give the students time to absorb the information. Even if the technology is being used to accomplish other curricular goals, learning how to use the technology will become an objective all its own.

I also see a number of ways that teachers could use technology to entice students into music classes. Technology gives us the ability to reach more students, both within our schools and outside our schools. Obviously, this depends on the availability of the technology hardware, but technology gives us the chance to tempt students with musical opportunities that may be more interesting than what we currently offer. Students within our schools may find web-based tools that assist with music production, composition, recording, and mixing more applicable to
their interests than band and orchestra instruments. Students outside our schools may not have many (or any) music classes available to them. Music teachers can provide instruction via YouTube videos, video conferencing, emails, GoogleDrive folders, or many of the other services explored in Chapter 2. Technology gives music teachers additional opportunities to reach students with topics relevant to their current interests.

A few other ideas for using technology to entice students include offering instrument exploration and style exploration. When students may not know what instrument appeals to them, the opportunity to perform many instruments via tablet may help them discover which instrument timbre they prefer. Tablets, and other technologies, offer students a way to experience a variety of instruments before they commit to a specific one. As mentioned in Chapter 1 with the idea of the “long tail” (Brown & Adler, 2008), music teachers can use technology to broaden the scope of their classes, even the traditional classes. Band students interested in Dixie-land jazz, polka, and/or rock can explore these styles via websites and videoconferences with experts. Orchestra students curious about fiddling, jazz, mariachi, and/or free improvisation can use technology to learn more. Students may already be exploring these topics outside of school with their personal technology. The chance to do this exploring in a school-sanctioned manner, with guidance from an expert, could be quite appealing and rewarding. Chapter 4 illustrates youth orchestra directors using Facebook to reach out and ask for guidance in areas they are less confident (repertoire, event planning). And Chapter 2 discusses high school students using YouTube to prepare bowings ahead of rehearsal and using Spotify to find recordings they want to emulate. Musicians at all ages and stages indicated using web-based tools to expand their knowledge, whether “forced” in class, or of their own volition. Using technology to expand horizons and deepen understanding is a valuable skill for music teachers to pass along.
As I consider implementing technology in the music classroom and what that entails pedagogically, I return once more to Cuban’s (2001) comments that teachers “largely maintain existing classroom practices rather than alter customary practices,” even when incorporating new technologies (p. 171). This was supported through my research projects, but I hope to help teachers see how changing their pedagogy to incorporate technology more explicitly can lead to great curricular enhancement. These pedagogic changes do not need to be drastic, but they should be intentional.

Considering the findings from my online musical collaboration study, those web-based tools could be used to facilitate performance critiques. Many music teachers do not make much time for peer-critique, or self-critique, in class. But using online video conferencing or video sharing, students can peer- and self-critique outside of class as homework. Students could use video conferencing and/or video sharing to share improvisation and composition ideas. Even if performing synchronously presents challenges, asynchronous performance and subsequent feedback is very feasible. Composition ideas could then be notated, shared, and edited using Noteflight (online notation service discussed in Chapter 2 and Appendix A).

An idea straight from my participants in Chapter 2: music theory and music history, the more academic aspects of music classes, could be taught via video conferencing, YouTube, files on Google Drive, and/or school-provided learning management and content management systems. The non-performance elements of music class could be managed primarily outside of class/rehearsal. Even if they occur inside class time, they can be facilitated via web-based technologies to give students experience with these tools. Particularly for teachers who find it challenging to relinquish rehearsal time for academic topics, these tools provide an excellent way
to meet all objectives. Students can obtain the academic information, and also maximize rehearsal time.

Many of the apps reported in Chapter 3 were metronomes and tuners. I hope that teachers are not only using these apps themselves, but also training students how to use these apps. Many teachers, orchestra especially, grow frustrated with the amount of time spent tuning instruments. If teachers train students to use these apps properly, students can become more independent and that rehearsal time can be reclaimed. Likewise, teaching students how to use a metronome while practicing will encourage them to use the tool at home instead of seeing it only as an ensemble rehearsal tool.

Similarly, we can teach students to use apps for listening to music, watching music videos, writing music, practicing music theory, and communicating/collaborating with others about music. Students may not realize the power of their mobile devices. When a music teacher uses an app in class, he should also make time to teach the students about the app. If students know which apps are beneficial, and are encouraged to use the apps outside of class, they will expand their musical abilities with the help of web-based tools. Even inside of class, these apps can be used to occupy a section of students while the teacher is working with another section. A teacher could set a precedent, “if I’m not working with your instrument section, you may use your mobile device for one of these three purposes.” That way students are engaged in web-based musical activities instead of being bored while they are not actively rehearsing.

In addition to engaging students, teachers should also be aware of the powerful resources available to assist with the logistics of running a classroom. Just a few examples are the apps TeacherKit, Doceri Interactive Whiteboard, and ClassDojo. TeacherKit allows teachers to set up classes/groups of students, take attendance, create seating charts, mark behavior notes, log
grades, view performance charts of all these items, and even share the information with parents. Doceri allows you to turn any projector and computer into an interactive whiteboard system (using an iPad). Perhaps the greatest advantage of this system is that teachers are free to move around the room and guide behavior via proximity, while still controlling the computer and navigating through the lesson. And ClassDoJo is designed to foster communication between teachers, students, and parents as teachers post pictures of work happening in class, behavior updates, attendance logs, and student portfolios. These are only a few of the apps recently designed to assist teachers. I mention them because music teachers in Pennsylvania specifically reported using them (see Chapter 3). But a search of any app store reveals many other apps with similar functions. App developers are attempting, and often succeeding, to create apps that will assist teachers with the more mundane aspects of teaching so that they can focus on their curriculum, pedagogy, lessons, and students. I encourage teachers to explore these tools and see if one is right for their particular teaching situation.

Finally, when considering how to most effectively implement technology in classrooms, it is important to talk with students and parents and consider the input of all involved parties. If Spotify is popular among students, consider using it to share playlists of music because students will already be familiar with the interface. If Facebook has fallen out of favor with students and parents, do not waste time setting up class Facebook groups. With the evidence that students, teachers, and youth orchestra directors all gravitate toward technology with which they are comfortable, it is important to consider utilizing these comfortable technologies. Web-based tools that are less familiar can be implemented (and may be very effective) given time, but initially it may be best to meet the audience where they are, and then guide them toward a new tool.
Recommendations for Research

There are many avenues for future research because technology is changing daily. As technology shifts to be more mobile and more web-based, the research opportunities are vast. “There is no doubt that mobile devices will have an impact on music education, however, research inquiries of this subject is in its infancy” (Nielsen, 2013, p. 55). Given this infancy, future research can be done to look at the use and effectiveness of specific technologies (hardware, apps, websites). Future research can investigate whether teaching with a web-based tool delivers different results than teaching without a web-based tool.

And future research can look at technology in music education more broadly. As Burnard (2007) is doing, we can create frameworks for understanding how teaching and learning are changing, because of technology. I do hope we will move beyond exploratory studies, like mine, and recognize as fact that technology is here to stay. It is clear that many teachers are using technology, either out of desire or because they are required to do so, so we do not need additional studies to confirm “technology is being used.” I believe it is time to look deeper into the how and why, and study the outcomes of technology being used in our music classrooms.

In terms of the “why,” I have referenced several times that administrators are often requiring and/or expecting teachers to utilize technology. This is from personal experience as a high school orchestra director, personal experience as a student teacher supervisor who was required to “check the box” for technology, conversations with current K-12 teachers, and knowledge of academic standards in several states (Pennsylvania Department of Education, 2002). However, I have not seen these personal experiences specifically corroborated by published research. A research study investigating requirements of technology use for inservice, and preservice, teachers would be interesting. In addition to the requirements, is there training or
preparation for these technology requirements and what pedagogies make that training effective?

Related to these recommendations, I raise another point of discussion. Research in academia tends to move slowly. It takes time to plan a research study, gain IRB approval for the research, execute the study, analyze the findings, write the paper, submit the paper to a journal, revise the paper per reviewer comments, and finally see the results disseminated. When looking at technology, a topic that changes and develops with great speed, what can we do to be more effective researchers? As I look over my reference list with published research articles, and even practitioner articles, it seems so outdated. I hope that one day we will see changes to our research and dissemination practices so that findings might be shared more quickly. “Online first” journal releases are a step in the right direction. Sharing findings via blog post and online-only publication is another possibility, but those avenues are not always peer-reviewed. As stated above, my current recommendation is to focus on the how and why, and study the outcomes of technology being used in our music classrooms. Perhaps focusing on broad applications of technology, instead of specific technologies that may be quickly outdated, will provide findings that withstand the lengthy dissemination process.

Conclusions

To conclude this multi-project research, I must return to the paper that inspired my fascination. Thibeault discussed the transition to “ubiquitous learning, a paradigm for learning transformed by the Internet and mobile computing” (2012, p. 196). His thoughts on ubiquitous learning for music ensembles were the first time I was exposed to some of these ideas:

This notion of ensemble can be extended along the lines suggested by ubiquitous learning: Ensembles can be anytime, anywhere, and synchronous or asynchronous, and they are not limited by geography or grade level. They can organize virtually but come
together to play physically, or create a performance completely mediated by the Internet and studio techniques, as does, for instance, Eric Whitacre’s virtual choir. (Thibeault, 2012, p. 205)

I was already invested in using technology in my classroom as regularly as possible. But the technology was typically set on top of curriculum that was already in place. I was not particularly creative with my uses of technology. But reading Thibeault’s ideas caused me to realize how many opportunities existed that I had not yet considered.

Through this research, I tried to consider some of those ubiquitous opportunities. I felt it was important to see technology from multiple perspectives (student, teacher, youth orchestra director) and I felt it was important to see multiple technologies in use. I wanted to see what I was missing. I wanted to see how others were utilizing technology, perhaps more creatively than me, and learn from their experiences. And now, of course, I want to share those findings with others so that research in music education technology can expand. With increased understanding, use of technology in musical communities can become more practical and effective. This technology has the potential to influence music education pedagogy and practice.
References


Appendix A

Suggested websites for online musical collaboration:

Synchr**onous** (working together at the same time)

**Chrome Jam** – requires you to invite friends by sharing a link with them – can be done over instant message, email, phone – email address not required but might make things easier. You can also invite friends by using Twitter, Facebook, or Google+.

Chrome Jam is a new service that Google has created. You get to choose an instrument and by clicking on parts of the instrument you get to “play” it (click on the drum head and it makes a sound, click on the guitar string and it makes a sound, etc.). You can invite friends to join your “band” and all play together online. There is a chat function to “talk” while you’re playing too.


**NINJAM** – requires download

NINJAM software allows people to make music together in live time (just audio). You play your instrument (or sing) and your computer records it and shares it with everyone else. It tries to compensate for online audio delays and skips by making the delays so long you can actually count them and prepare for them. You have to download & use their software.


**Llcon** – requires download

Llcon software allows people to make music together in live time (just audio). There is a server running the software, which collects the audio from each person, mixes it, and sends the mix back to each person. You have to download & use their software.

[http://llcon.sourceforge.net/index.html#About](http://llcon.sourceforge.net/index.html#About)

**Soundjack** – requires download

Soundjack software allows people to make music together in live time (just audio). There is great information on this site about lag time (delays) and how to lessen it. There are also some great demo videos of groups jamming through the Internet (note: they are using other services to have a video connection, Soundjack is just the audio). You have to download & use their software.

[http://www.carot.de/soundjack/](http://www.carot.de/soundjack/)

**Google Hangout** – requires email address

Google Hangout is a way to videoconference with one another.


**Skype** – requires download and email address

Skype is a way to videoconference with one another.


**FaceTime** – built into many Apple products, requires AppleID

FaceTime is a way to videoconference with one another.
Facebook – requires email address, advertisements are part of sidebar
Facebook can be a really great way to collaborate/communicate online. But I ask that you use it very music-specifically (for this project). Maybe set up a page for your chamber group that you use to talk about only musical things. Or use the chat or private message functions to talk about specific musical things. It’s a great & fun service but I only want to know how you use it for musical collaboration (if you use it at all). Can also be used asynchronously.

www.facebook.com

Google Chat – requires Gmail email address
Google Chat is the chat or instant message function through Gmail. If you have a Gmail address, and are online with other people who have a Gmail address, you can chat with one another. Like Facebook, this can be a great tool to collaborate/communicate. But I ask that you use it very music-specifically (for this project). Can also be used asynchronously.

http://www.google.com/talk/intl/en-GB/about.html

Twitter – requires email address
Twitter gives you the ability to chat with people back and forth through Tweets or Direct Messages. Like Facebook, this can be a great tool to collaborate/communicate. But I ask that you use it very music-specifically (for this project). Can also be used asynchronously.

www.twitter.com

Messages/iChat – built into many Apple products, requires AppleID
Messages is the chat or instant message function through Apple products. Like Facebook, this can be a great tool to collaborate/communicate. But I ask that you use it very music-specifically (for this project). Can also be used asynchronously.

Asynchronous (working together on the same project but at different times)

Noteflight – requires email address
Noteflight allows you to compose music and write it with traditional notation. You can share and edit documents with others.

http://www.noteflight.com

Spotify – requires email address and download, occasional audio advertisements
Spotify allows you to search for, and listen to, recordings of music. You cannot download them (with the free service) but if you’re willing to listen to the occasional advertisement you can listen to virtually any music you want for free. You can also create playlists and share them with friends who also have Spotify.

http://www.spotify.com/us/
Soundcloud – requires email address
Soundcloud is a place to upload and share music with others. This is used mostly by lesser-known artists/composers. But there are great musicians to discover and you can add your recordings to share with others. Similar to Spotify, you can also create “sets” of music to share with others.
https://soundcloud.com/

YouTube – requires email address to upload videos (not to view them)
YouTube allows you to view & share videos.
http://www.youtube.com/

Google Drive – requires email address
Google Drive gives you a place to upload documents, videos, pictures, audio files, etc. and share them with other people. Other people can also be given permission to edit some of those documents. Can also be used synchronously.
http://www.drive.google.com

Dropbox – requires email address and download
Dropbox gives you a place to upload documents, videos, pictures, audio files, etc. and share them with other people.
https://www.dropbox.com/

Prezi – requires email address
Prezi is used by many people as a presentation tool – kind of an online PowerPoint. But it can also be used as a “notebook,” a place to write ideas, upload files, upload pictures, etc and then share them with other people. You can share your Prezi with other people and give them permission to edit.
http://prezi.com/

Chromatik – requires email address
Chromatik allows you to upload and share sheet music and recordings with others. You can also purchase sheet music so that you always have it electronically.
http://chromatik.com/

Kompoz – requires email address
Kompoz allows you to work together to create musical projects. It’s really that broad. You can upload music and/or video and
http://www.kompoz.com
# Mobile Technology in PA Music Classrooms

## Demographics

1. Which of the following types of music classes do you teach? Select all that apply.
   - [ ] General (Classroom) Music
   - [ ] Band
   - [ ] Choir
   - [ ] Orchestra
   - [ ] Other (please specify)

2. At which grades do you teach music classes? Select all that apply.
   - [ ] K
   - [ ] 1
   - [ ] 2
   - [ ] 3
   - [ ] 4
   - [ ] 5
   - [ ] 6
   - [ ] 7
   - [ ] 8
   - [ ] 9
   - [ ] 10
   - [ ] 11
   - [ ] 12

3. Do you use mobile applications (apps) in your music classroom(s)? These apps can be on any mobile device or tablet.
   - [ ] Yes
   - [ ] No
# Mobile Technology in PA Music Classrooms

**No Apps**

*4. Please share briefly why you DO NOT use mobile apps in your music classroom(s).*

*5. Is there anything that would make you more interested in using apps in your music classroom? If so, what? (Funding, equipment, training, planning time, etc.)*

*6. How likely would you be to use each of the following types of apps in your music classroom?*

<table>
<thead>
<tr>
<th>Category</th>
<th>Unlikely to use</th>
<th>Neutral</th>
<th>Likely to use</th>
<th>Unsure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classroom management (gradebook, lesson plans, seating &amp; behavior management charts)</td>
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<td></td>
<td></td>
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<tr>
<td>Communication/Social networking</td>
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<tr>
<td>Games (musical or otherwise that do not fit into one of the music categories below)</td>
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<tr>
<td>Multimedia (music to listen to, audio/video recording apps, photos, videos)</td>
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<td>Music Appreciation (general information about music)</td>
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<tr>
<td>Music Composition (assistance with any kind of notation)</td>
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<tr>
<td>Music Performance (instruments, instrument trainers, metronomes, tuners)</td>
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<tr>
<td>Music Theory (interval ear trainers, notation recognition, chord labeling)</td>
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<tr>
<td>News/Information (news, books, TED talks, podcasts)</td>
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<td></td>
</tr>
<tr>
<td>Utilities (address book, calculator, file sharing, word documents, spreadsheets)</td>
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</tr>
</tbody>
</table>
Thank you for participating in this survey!
Please click "next" below to submit this survey.
# Mobile Technology in PA Music Classrooms

## App #1

You indicated that you DO use mobile apps in your music classroom(s). Please think of the apps that you use most often. On the following pages you will be asked to think about each app, one at a time, and the way that you use it in specific classroom settings. (You will be required to write about one app and may write about up to 15.) You will write the name of the app and then provide information about the setting in which you use that app and the way in which you use the app. If you use an app in more than one setting please feel free to list the app more than once.

**7. App #1: Please write the name of a mobile app you use in your music classroom.**

**8. Please consider a specific classroom/setting where you use this app. What grade level are you teaching? (If you use it with multiple grade levels you may list the app again later.)**

- Elementary School (K-5)
- Middle School (6-8)
- High School (9-12)

**9. Still thinking about that same classroom/setting, which type of music class are you teaching when you use this app?**

- General (Classroom) Music
- Band
- Choir
- Orchestra
- Other (please specify)
Selecting “yes” would allow participants to repeat questions 7 – 11 until they had reported on 15 apps.
Thank you for sharing information about the apps you use. Many of these apps are going to be shared in a presentation for music teachers at the PMEA Annual In-service Conference in March. If you would be willing to be part of a panel of teachers who will briefly share some of their favorite apps at this conference, please share the following information. You are only indicating interest, not commitment.

Thank you again for participating in this survey!
Please click "done" below to submit the survey.

81. Your name: 

82. Your email address: 
## Appendix C

### Apps Reported Two or More Times

<table>
<thead>
<tr>
<th>App Name</th>
<th>OS*</th>
<th>Price</th>
<th>Reported X times</th>
<th>Reported use in:</th>
<th>Reported at least occasional use for:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blob Chorus Ear Training</td>
<td>Apple, Android</td>
<td>Free, 3.19</td>
<td>2</td>
<td>MS Choir Elem General</td>
<td>Games Music Performance Music Theory</td>
</tr>
<tr>
<td>Camera</td>
<td>Apple, Android</td>
<td>Free</td>
<td>3</td>
<td>MS Choir Elem General MS General</td>
<td>Classroom Management Communication/Social Networking Multimedia Music Performance</td>
</tr>
<tr>
<td>Charms Parent/Student Portal</td>
<td>Apple, Android</td>
<td>Free</td>
<td>2</td>
<td>HS Band HS Choir</td>
<td>Classroom Management Communication/Social Networking Multimedia News/Information Utilities</td>
</tr>
<tr>
<td>ClassDojo</td>
<td>Apple, Android</td>
<td>Free</td>
<td>7</td>
<td>MS Band (2) Elem General (3) MS General HS “all my classes”</td>
<td>Classroom Management Communication/Social Networking Multimedia Utilities</td>
</tr>
<tr>
<td>Cleartune - Chromatic Tuner</td>
<td>Apple, Android</td>
<td>$4</td>
<td>20</td>
<td>Elem Band (2) MS Band (10) HS Band (7) MS Orchestra</td>
<td>Music Performance Music Theory Utilities</td>
</tr>
<tr>
<td>Decibel 10th</td>
<td>Apple, Android</td>
<td>Free</td>
<td>3</td>
<td>HS Band HS Choir HS Orch</td>
<td>Music Performance News/Information</td>
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<tr>
<td>Doceri Interactive Whiteboard</td>
<td>Apple</td>
<td>Free</td>
<td>2</td>
<td>MS Band HS Class Piano</td>
<td>Classroom Management Communication/Social Networking Games Multimedia Music Appreciation Music Composition Music Performance Music Theory</td>
</tr>
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<td>App Name</td>
<td>Platform</td>
<td>Price</td>
<td>License</td>
<td>Courses Available</td>
<td>Categories</td>
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<tr>
<td>Dropbox</td>
<td>Apple, Android</td>
<td>Free</td>
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<td>Elem Band, HS Band, MS Choir, Elem General, MS General, HS Theory (2)</td>
<td>Classroom Management, Communication/Social Networking, Multimedia, Music Appreciation, Music Composition, Music Performance, Music Theory, News/Information, Utilities</td>
</tr>
<tr>
<td>Drum Kit Pro</td>
<td>Apple</td>
<td>$2</td>
<td>2</td>
<td>MS General, MS Band</td>
<td>Music Performance</td>
</tr>
<tr>
<td>Edmodo</td>
<td>Apple, Android</td>
<td>Free</td>
<td>9</td>
<td>MS Band, MS Choir (2), HS Choir (2), HS General (2), MS Orchestra, HS Guitar</td>
<td>Classroom Management, Communication/Social Networking, Games, Multimedia, Music Appreciation, Music Composition, Music Performance, Music Theory, News/Information, Utilities</td>
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<tr>
<td>Erol Singer's Studio - Voice Lessons</td>
<td>Apple</td>
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<td>2</td>
<td>MS Choir (2)</td>
<td>Music Performance</td>
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<td>Facebook</td>
<td>Apple, Android</td>
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<td>Finale SongBook</td>
<td>Apple</td>
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<td>Fingering</td>
<td>Apple</td>
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<td>Flashnote Derby - Musical Note Flashcards!</td>
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<td>Elem General (4)</td>
<td>Games, Music Appreciation, Music Theory</td>
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<td>Apple</td>
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<td>insTuner - Chromatic Tuner</td>
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<td>Elem Band (4)</td>
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<td>HS Orchestra (2)</td>
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<td>Utilities</td>
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<tr>
<td>App</td>
<td>Platform</td>
<td>Price</td>
<td>Subscription</td>
<td>Practice/Applications</td>
<td>Subscriptions</td>
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<td>iReal Pro - Music Book &amp;</td>
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<tr>
<td>iTunes U</td>
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<td>Free</td>
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<td>MS General HS Theory</td>
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<td>Jelly Band</td>
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*OS is an abbreviation for operating system.
Appendix D

YOD Facebook Group Member Questionnaire

Q1 Please share briefly why you decided to join the Youth Orchestra Director (YOD) Facebook group. Why was this group appealing to you?

Q2 Has the YOD Facebook group met your needs? Why or why not?

Q3 Which discussion topic do you find most helpful on the YOD page?
   ☒ Repertoire (1)
   ☒ Concert/Event Planning (2)

Q4 What topic(s) would you like to see discussed more on the YOD page?

Q5 What other resources would you like to see on this page or accessible via this page (besides the repertoire list)?

Q34 Are you currently the director of a youth orchestra?
   ☒ Yes (1)
   ☒ No (2)

Condition: No Is Selected. Skip To: End of Block.

Display This Question:
   If Are you currently the director of a youth orchestra? Yes Is Selected

Q6 In the official job description, is your current position as youth orchestra director a full time job?
   ☒ Yes (1)
   ☒ No (2)

Q7 In your current position as youth orchestra director, do you select the repertoire for your ensemble(s)?
   ☒ Yes (1)
   ☒ No (2)

Condition: Yes Is Selected. Skip To: Considering the youth orchestra(s) yo....

Q8 What is the job title of the person who selects the repertoire?

Q9 Considering the youth orchestra(s) you direct right now, how many rehearsals do you have a week and how long are they?

Q10 Considering the youth orchestra(s) you direct right now, how many performances do you have per school year?
Q11 Considering the youth orchestra(s) you direct right now, do you have time in the schedule for sectionals?

- Yes (1)
- No (2)

Condition: No Is Selected. Skip To: How many years have you been the cond....

Q12 Who leads the sectionals (You? Youth orchestra staff? Volunteers? Etc.)

Q47 How often do the sectionals occur, and for what duration? (e.g. half a rehearsal, 3 times a year)

Q16 How many years have you been the conductor of your current youth orchestra(s)?

Q17 How many years have you been a youth orchestra director (overall, with any youth orchestra organization)?

Q18 How many years have you been a conductor (overall, of any ensemble)?

Q35 Please describe your involvement with youth orchestras.

Q37 Please answer the following questions to the best of your ability, considering the youth orchestra that you associate with (or previously associated with). Remember, you may leave responses blank. Any information you can share will be much appreciated. What is the job title of the person who selects repertoire for this youth orchestra?

Q36 How many rehearsals does this youth orchestra have a week, and how long are they?

Q38 How many performances does this youth orchestra have per school year?

Q39 Does this youth orchestra have time in the schedule for sectionals?

- Yes (1)
- No (2)

Condition: No Is Selected. Skip To: End of Block.

Q40 Who leads the sectionals (Conductor? Other youth orchestra staff? Volunteers? Etc.)

Q50 How often do the sectionals occur, and for what duration? (e.g. half a rehearsal, 3 times a year)

Q41 Please list the zip code where your youth orchestra is based (main office and/or primary rehearsal space).

Q42 Do you know of other currently functioning youth orchestras in your state?

- Yes (1)
- No (2)

Condition: No Is Selected. Skip To: What do you consider your primary ins....
Q43 How many youth orchestras are currently functioning in your state, that you know of, including your own? (Please just share what you currently know. Extra research time not required!)

Q20 What do you consider your primary instrument/voice?

Q19 How many years have you played your primary instrument/voice?

Q21 What is your age?

Q22 What is your gender identity?

Q24 What is your ethnicity?
- Asian (1)
- Black/African American (2)
- Native American (3)
- Pacific Islander (4)
- White/Non-Hispanic (5)
- Hispanic (6)
- Other (Please specify) (7) ____________________
Q25 In which state do you currently reside?

- Alabama (1)
- Alaska (2)
- Arizona (3)
- Arkansas (4)
- California (5)
- Colorado (6)
- Connecticut (7)
- Delaware (8)
- District of Columbia (9)
- Florida (10)
- Georgia (11)
- Hawaii (12)
- Idaho (13)
- Illinois (14)
- Indiana (15)
- Iowa (16)
- Kansas (17)
- Kentucky (18)
- Louisiana (19)
- Maine (20)
- Maryland (21)
- Massachusetts (22)
- Michigan (23)
- Minnesota (24)
- Mississippi (25)
- Missouri (26)
- Montana (27)
- Nebraska (28)
- Nevada (29)
- New Hampshire (30)
- New Jersey (31)
- New Mexico (32)
- New York (33)
- North Carolina (34)
- North Dakota (35)
- Ohio (36)
- Oklahoma (37)
- Oregon (38)
- Pennsylvania (39)
- Puerto Rico (40)
- Rhode Island (41)
- South Carolina (42)
- South Dakota (43)
- Tennessee (44)
- Texas (45)
- Utah (46)
- Vermont (47)
- Virginia (48)
- Washington (49)
- West Virginia (50)
- Wisconsin (51)
- Wyoming (52)
- I do not reside in the United States (53)

Q26 Have you completed a Bachelor’s degree?
- Yes (1)
- No (2)

If No Is Selected, Then Skip To What job(s) do you have...

Q27 What Bachelor's degree(s) and major(s) do you have (e.g. BM in Violin Performance)?

Q28 Have you completed a Master’s degree?
- Yes (1)
- No (2)

If No Is Selected, Then Skip To What job(s) do you have...

Q29 What Master's degree(s) and major(s) do you have (e.g. MM in Conducting)?

Q30 Have you completed a Doctoral degree?
- Yes (1)
- No (2)

If No Is Selected, Then Skip To What job(s) do you have...

Q31 What Doctoral degree(s) and major(s) do you have (e.g. Ph.D. in Music Education)?
Q32 What job(s) do you have? Please select all that apply and indicate what percentage of your overall vocation is held by each role you indicated (e.g. Youth Orchestra Director 20%, Private Lessons, 60%, Conductor of adult, paid ensemble 20%)?

- Full-time student (please specify the degree you are currently pursuing) (1) ____________________
- Youth Orchestra Administrative Employee (please specify role) (2) ____________________
- Youth Orchestra Director (3) ____________________
- Conductor of community-based student ensemble, other than your youth orchestra (musicians are primarily under 18) (4) ____________________
- Conductor of adult, amateur ensemble (adults as beginners) (5) ____________________
- Conductor of adult, volunteer ensemble (6) ____________________
- Conductor of adult, paid ensemble (includes professional orchestras) (7) ____________________
- Conductor of intergenerational, volunteer ensemble (8) ____________________
- Private lesson teacher (please specify the instrument(s) you teach) (9) ____________________
- K-12 teacher: orchestra (10) ____________________
- K-12 teacher: band (11) ____________________
- K-12 teacher: choir (12) ____________________
- K-12 teacher: other form of music (13) ____________________
- College/University faculty: instrument/voice studio (private lessons to college students) (14) ____________________
- College/University faculty: conducting (15) ____________________
- College/University faculty: music education (16) ____________________
- College/University faculty: other form of music (17) ____________________
- Other (please specify) (18) ____________________
VITA – LINDSAY J. FULCHER

Education
Doctor of Philosophy in Music Education – Ph.D., August 2017
   Pennsylvania State University
Masters of Music Education, 2013
   Pennsylvania State University
Bachelor of Music Education, 2007
   Baldwin Wallace University

Teaching
University of Northern Colorado, 2016 – Present
   Assistant Professor of String Music Education
Ball State University, 2015 – 2016
   Assistant Professor of Music Education
Pennsylvania State University, 2011 – 2015
   Teaching and Research Assistant for Music Education
   Orchestra Director

Research, Scholarship, and Creative Works
Juried Publication
      Teacher, 65(1), 24-28.
Non-Juried Publications
   2 Book Reviews
   16 Music Material Reviews
Juried Professional Presentations
   18 Research Poster Presentations at local, state, and national conferences.
   10 Practitioner Sessions offered at local, state, and national conferences.
Non-Juried Professional Presentations
   6 Research Poster Presentations at local, state, and national conferences.
   2 Practitioner Sessions offered at local, state, and national conferences.
Active K-12 Guest Conductor (PA, OH, CO)
   Performer on viola in a variety of ensembles

Service
2017 – Present, National ASTA Student Committee Chair
2016 – Present, ASTA Student Chapter advisor at the University of Northern Colorado
2013 – Present, LGBT Support Network Member
2013 – Present, Presider at various state and national conferences
2017, Member of Recruitment Specialist Search Committee
2015 – 2016, ASTA Student Chapter advisor at Ball State University
2014 – 2015, CIC (Big Ten) Music Education Website Creator
2014 – 2015, Publicity & Website Assistant and Eastern Division & Thompson Symposium
Research Coordination Assistant at Pennsylvania State University
2014, Curriculum Writer for The Collaborative Music Ed Series