Research Article

Crossfading music education: Connections between secondary students' in- and out-of-school music experience

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Abstract

In this case study, the author investigated intersections of secondary students' musical engagement in a Songwriting and Technology Class (STC) and outside of school. The study traces the experiences of three individual participants and three participant groups (six embedded cases in total) in the creation, performance, recording, and production of original music over the course of a culminating class project. Findings suggest that the STC allowed students to experience smooth transitions between their musical engagement and learning in and out of school. Key factors that contributed to participants' engagement in the STC were (a) their experience with instruments and software outside of school and (b) use of popular music. Participants' engagement in the STC (a) informed and influenced the ways they listened to music outside of school, (b) broadened and deepened their aesthetic preferences, and (c) provided an environment in which participants could experience and negotiate their perspectives on issues related to popular music and the music industry. Participants also saw the STC as related and connected to their current and future lives as musicians. The study supports the inclusion of curricular offerings that allow for crossfading or overlap between students' in-school and outside-school musical experiences.

Amid a widening gap between students' in-school and out-of-school musical experiences (Kratus, 2007; Rodriguez, 2004; Williams, 2007), a growing number of scholars are addressing forms of musical engagement and learning outside traditional models of band, orchestra, and chorus (Davis, 2005; Green, 2006, 2008; Jaffurs, 2004; Seifried, 2006; Söderman & Folkestad, 2004). A focus on popular music and students' informal musical learning practices (Abramo, 2009; Davis, 2008;

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Folkestad, 2006; Green, 2006, 2008; Jaffurs, 2004, 2006; Lebler, 2007, 2008; Väkevä, 2006) has proven fruitful in helping to bridge this gap. Foreshadowed by Campbell's (1995) study of two garage bands, music education has seen an increase in ethnographic work focusing on young people's engagement with popular music outside of schools. The majority of these studies focus on young people involved in garage bands (Davis, 2005; Jaffurs, 2004; Miell & Littleton, 2008); however, Söderman and Folkestad's (2004) research on youth hip-hop groups demonstrates the potential for a broader focus on popular music practice.

The medium of garage bands has captured music educators' attention and framed popular music processes and practices in a particular context. Abramo (2011) argued that the majority of studies on popular music in music education, particularly those focusing on garage bands, have focused on boys/men and therefore presented a skewed perspective of popular music practices. In addition to focusing primarily on young men, ethnographic research in popular music and music education centers on rock and related genres of music. Green (2002), herself focusing on one particular style of music and type of group, argued for a broadened research agenda "look[ing] into the precise learning practices of musicians in different areas of popular music" (p. 10).

Green's (2002, 2004, 2005, 2006) research informed the development of a pedagogical approach based on the idiosyncratic informal music learning processes of "English popular musicians involved in Anglo-American guitar-based rock" (Green, 2002, p. 9) and led to additional studies of similar informal learning practices (Davis, 2005; Jaffurs, 2004). This discourse focuses primarily on performance as the form of engagement and aside from recent emerging work (Abramo, 2010, 2011; Green, 2008), few empirical studies have examined what and how students learn in the context of working specifically with popular music in K-12 schools.

While the notion of informal learning practices has been useful in helping music educators address popular music, several music teacher educators have expressed concern regarding the way in which informal learning practices are framed in music teaching and learning. Allsup (2008), for instance, critiqued the equation of informal learning practices to specific styles of popular music. He argues that "conflating informal learning with a genre-specific art form, as Green does when she designed her Musical Futures curriculum around the practices of 'Anglo-American guitar-based music makers' (2001, 12) may lead to the unintended consequence of narrowing of musical possibilities rather than expanding them" (p. 3). Both Folkestad (2006) and O'Flynn (2006) pointed to the diversity of musical practices across the world's cultures while also cautioning music educators against thinking of informal music practices too narrowly. While Folkestad sought to broaden the notion of informal learning practices and introduced the notion of informal and formal learning situations, O'Flynn eschewed the concept, relying instead on the term "vernacular" as more encompassing (2006, p. 141).

Contesting a dichotomous perspective in which learning is considered informal when located outside of school and formal when taking place within the walls of a classroom, Folkestad (2006, p. 142) framed formal and informal learning as operating along a continuum distinguished by

> [w]hether the intentionality of the individuals is directed towards music making, or towards learning about music, and of whether the learning situation is formalised in the sense that someone has taken on the role of being 'the teacher,' thereby defining the others as 'students'.

He argued that while teaching is always formal, teachers can create environments conducive to students' informal learning processes.

Veblen (2012) suggested that a framework of nonformal learning and practices may be helpful to address contexts outside of educational structures in which adults engage in musicking and learning that is "systematic and deliberate but less regulated" (p. 248). While the notion of nonformal music practices and learning is more present in discourse surrounding adult and

community music, it may be helpful to describe learning situations that occur in less formal structures ranging from after-school programs to community centers. As Veblen argued, however, "in reality, intentional and incidental music learning systems may be porous, fluid, and combined" (pp. 245–246).

Thus, a continuum of formal and informal learning that addresses where learning takes place (situation); the character, nature, and quality of the learning process (learning style); who owns the decisions (ownership); and the focus of the engagement (intentionality) (Folkestad, 2006, pp. 141–142); along with the modes of transmission (Veblen, 2012) and issues of social, historical, and cultural contexts, may be most helpful to frame popular music practices in terms of music teaching and learning. As music educators integrate popular practices in their curricula, confusion may ensue as to the meanings and uses of concepts such as "informal" and/or "vernacular" practices and situations. Studies of educators including informal learning practices derived from popular music ensembles in the context of school music programs may assist in clarifying these distinctions.

Several existing studies focus on informal and popular music practices within the school context, such as when applied within instrumental music programs (Allsup 2003, 2004; Davis, 2008). Green (2008) has offered the most comprehensive look at the integration of a curricular model involving popular music and informal learning practices in schools to date. Green found that students negotiated their choices of music and discussed its sonic properties within their groups in greater detail than they might normally discuss music in class. A core premise of Green's is that students' informal engagement with inter-sonic[1] elements of the music resulted in an enhancement of students' listening skills and musical appreciation which she felt would not occur with more formal approaches in the context of popular music.

Abramo's (2011) research on popular music ensembles in school focused on gendered differences regarding students' preferred musical practices and power dynamics. His work provides a detailed look at how male and female participants communicate and create music differently. Male participants communicated primarily through musical gestures rather than spoken language, whereas the female participants demonstrated "a clear delineation between 'talking episodes' and 'performing/singing episodes'" (p. 31), compartmentalizing their musical and verbal acts. Abramo suggested that the primary mode of rehearsal discussed in music education research aligns more closely with the boys' preferred rehearsal strategies than the girls'. He found that these preferred musical practices were points of tension in mixed-gender groups. Additional research on K-12 music classrooms integrating popular music is needed to better understand the types of informal learning practices enacted and the potential for their expansion and modification for school music programs. A critical aspect of this work is determining how students' in- and outside-school musical experiences might intersect.

Purpose

Heeding Allsup's (2008) call for research focusing on the intersection of popular music and public education, this study investigates students' creation and production of original music in a secondary music classroom. It addresses the following research question: In what ways do students' musical engagement in a Songwriting and Technology Class (STC) intersect with their musical engagement outside of school? This question serves to unpack the influences that students' engagement with music outside of school has on their engagement with the STC and aims to illuminate the role that the STC plays in connecting students' in-school and out-of-school musical experiences. By investigating students' engagement with popular music in a school context, this study offers additional understanding of the intersection between school and popular music, as well as insight into the ways informal/formal learning practices operate in a music classroom. This work

also expands beyond a focus on garage bands and performance to broaden understanding of popular music practices.

Method

Background and design

This intrinsic single case study (Stake, 2005) focused on a four-week culminating class project of a Songwriting & Technology class at a Southwestern suburban high school. The final project addressed in this study was designed by music teacher Ron Wittwill[2] as an opportunity for students to synthesize and apply curricular content covered throughout the year by creating and recording an original song.

Ron designed the STC as an introductory course to prepare students with a foundation for continuing work related to creating original music, live and studio audio production, and the skills and knowledge needed to work in the music industry. Students had access to a variety of acoustic and electric instruments, MIDI controllers, microphones, computers, and the software program Pro Tools. During projects, Ron assisted students with technical issues when requested but otherwise rarely involved himself in their work. While students had opportunities to play instruments such as keyboards, guitars, or drums and sing, Ron did not provide instruction in relation to performance and instrumental or vocal technique.

Participants were selected through purposeful sampling during their work on a penultimate project and served as six embedded cases. In order to ensure the sampling was purposeful, participants were selected based on the following criteria: (a) the extent to which I felt I could learn the most from them (Stake, 2005, p. 451); and (b) the extent to which participants "show[ed] different perspectives on the problem, process, or event I want[ed] to portray" (Creswell, 2007, p. 75). Sampling was also based on researcher observations, interviews, teacher input, and theoretical issues such as students' demographics, including gender and ethnicity.

Three participant cases consisting of individuals in period one included:

- Alice, a White female working on the music *IV League*
- Esmerelda AKA "The Thunder," a White female working on the music *Rage and Love*
- Sara, a White female working on the music *Solid Ground*

Three participant-group cases in period two included:

- Marcus and Liz, a White male and female working on the music *Here*
- John, Carl, and Jay, Two White males and one Asian/White male working on a Doom Metal Song and the music *Little Green Men*
- Mark, Bert, and Jebidiah, a Mediterranean[3] male and two White males working on the music *Eyes Inward*

Data generation and analysis

Data were generated over the course of a month during the final project as video recordings, computer screencasts, interviews, field notes, and video-based shared reflections (VBSR)[4] (Tochon, 2007). Materials ranging from curricular documents to project rubrics were also collected. A total of six analytical layers (Ash, 2007; Green, Skukauskaite, Dixon, & Cordova, 2007) were used

iteratively and recursively throughout each stage of the study. Each of these layers were used in both within and cross-case analysis to help build a rich picture of the STC and each participant and participant-group case, and to answer the research question.

The first analytical layer, narration and organization, focused on generating and organizing data. Researcher memos were often recorded immediately after site visits, serving as preliminary analysis while the fieldwork was fresh in the researcher's mind. Field notes, already in digital format, were archived and expanded into field reports or additional researcher memos. Graphic organizers created with the application MindManager were used to facilitate the organization and analysis of data and synthesize participants' engagement and significant events for each site visit based on (a) the researcher's observations and (b) participants' descriptions from interviews.

The second analytical layer, transcription, focused on transcribing video and screencast data. Transana (2010) was used to create two types of transcripts, one focusing on discourse and the other on actions. Video data were first viewed with minimal manipulation to create a narrative transcript of gestures, forms of engagement, interactions, and events (Engle, Conant, & Greeno, 2007; Hall, 2007). In cases where little dialogue took place, discourse was combined with the narrative transcript. Additional passes through the video data led to the generation of discourse-based transcripts. The transcripts served as text-based descriptions or transformations of the digital video/audio data. The third analytical layer, significant event selection, focused on identifying and selecting significant events related to the research questions. After reviewing transcripts and digital video data, significant events were selected and converted into more manageable segments or clips (Ash, 2007; Barron, 2007).

The fourth analytical layer, coding, focused on analyzing data at a deeper micro level. Serving as a continuation of event analysis (Grbich, 2007), significant events (with related transcripts), interview transcripts, VBSR, and material culture were coded. Researcher memos were also coded when appropriate. The coding loosely resembled that of grounded theory (Glaser & Strauss, 1967). The coding process occurred simultaneously with other layers, most specifically layer three, and recursively between layers. The analytical layers were not designed to operate in a linear chronological order and did not function as such in the study. The aforementioned graphic organizers assisted with this recursive process and provided a way of looking across the participant and participant-group cases to provide a holistic picture of the STC. All coding was accomplished using the qualitative software program HyperResearch and rich-text file versions of the transcripts created with Transana.

The fifth analytical layer, code verification, focused on reviewing, analyzing, and modifying codes that were generated and applied during layer four. This was accomplished through running reports that checked for instances of code combinations via HyperResearch and creating a graphic representation of codes with the software program MindManager. Researcher memos were used to provide additional insight. Graphic organizers assisted in coordinating between data and the various time frames of the study. This particular layer was important in identifying and clarifying emerging themes.

The sixth analytical layer, interpretation and theorization, focused on thematic analysis and mind mapping (Grbich, 2007) to interpret, link, and organize data, codes, themes, and theories (both those from the literature and those generated by the researcher/participants). A beginning stage of writing occurred throughout this analytical layer, drawing upon emerging themes and snippets of writing that took place throughout each of the previous five layers. It was the sixth layer, however, that pulled these various snippets, memos, and themes into more cohesive ideas.

In all, three lenses were used to triangulate and analyze data while addressing the research question. They are as follows: a monological, subjective,[5] and dialogical lens (Campbell, 1999; Carspecken & Apple, 1992).[6] Each lens offers a way of framing data from a particular position

rather than a particular step in the analytical process. The monological lens offers a third person or etic perspective, that of the researcher, during the generation and analysis of data. The researcher using this lens "produces an account monologically without entering into dialogue with the people being studied" (Carspecken & Apple, 1992, p. 513). A subjective lens (Campbell, 1999) was used during unstructured and semi-structured interviews, as well as VBSR. Through this lens students relayed their first-person subjective experiences (Campbell, 1999, pp. 17–19) of their engagement with the STC while the music teacher relayed his perspective of the students' engagement and learning. The dialogical lens consists of generating data (Carspecken & Apple, 1992) and constructing narratives (Campbell, 1999) through conversations between researcher and participants. This includes semi-structured interviews, unstructured interviews throughout the study, and VBSR. Along with assisting with analyzing and interpreting data, the use of multiple data sources, within and cross-case analyses, and the three analytical lenses provide thick description and serve as triangulation measures to provide trustworthiness.

Overview of student projects

The STC final project required students to create and submit a refined recording of an original song. Though students could mix and process their music as they saw fit, it was not a project requirement. Participants used instruments such as guitars, keyboards, or MIDI keyboard controllers, drums, and voice along with the application Pro Tools. While some participants, such as Sara and Marcus and Liz, focused first on creating their music away from a computer prior to recording, editing, and mixing their music, others, such as Alice, used the computer throughout their entire creative process. Participant groups such as John, Carl, and Jay and Mark, Bert, and Jebediah reflected musical engagement and creative processes consistent with research on young people engaging in garage band-type groups (Davis, 2005; Jaffurs, 2004; Miell & Littleton, 2008). Detailed descriptions and analyses of participants' project work are reported in Tobias (2012).[7] All participants presented their original music during the STC via Pro Tools as part of the final project. Several participants performed their music live at Songwriter Night, a school concert.

Findings and discussion

Findings suggest that the STC's open-ended structure allowed students to experience smooth transitions between their musical engagement and learning in and out of school. The course included formal learning situations, such as during Ron's presentations throughout the year, and informal learning situations during projects. Participants' musical engagement outside of school largely involved informal learning situations such as Mark's work learning a riff from watching a video tutorial on metalkult.com or Alice's remixing of a Nine Inch Nails song at her home. Given the soft boundaries between their musical experiences in and out of school (Jorgensen, 2003), the relation of course content to their musical lives, and the informal nature of their project work, participants' in- and out-of-school musical engagement was characterized by intersections and overlaps. Key themes that emerged from the data are discussed below and summarized in Figure 1.

Experience with instruments and software

Participants had formal instrumental and vocal experience in school prior to the STC, as well as formal and informal instrumental experiences outside of school, that factored into their creative work in class to varying degrees. Table 1 outlines participants' experiences with instruments, voice, and technology in and out of school and their engagement in the final project.
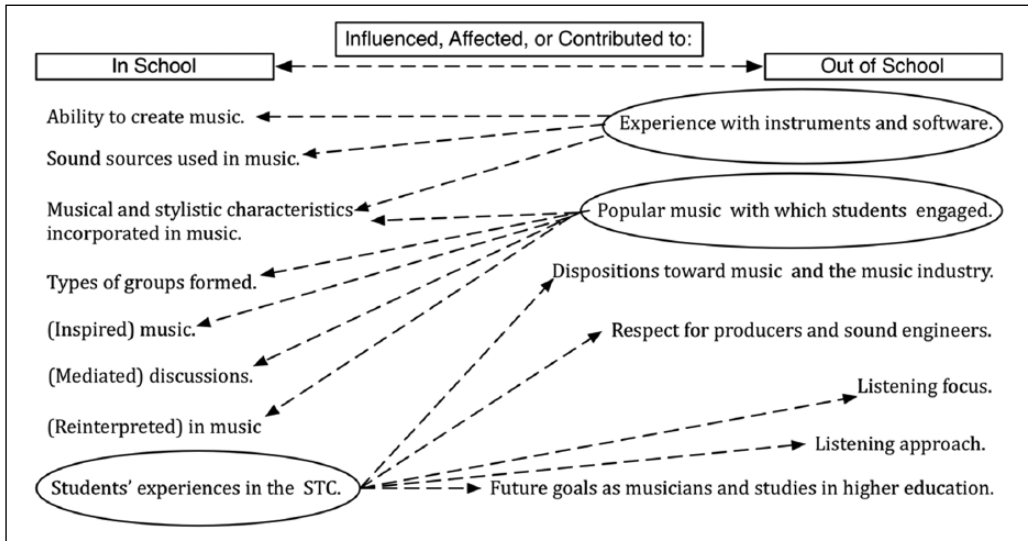
Figure 1. Summary of findings including factors of students' musical experience in and out of school.
Note: Following an arrow from its base to its point demonstrates the relationship between participants' experiences and dispositions.

While some participants had at some point engaged in private instrumental lessons outside of school, most learned instruments related to the STC informally through listening to recordings and watching videos on YouTube or genre-specific websites such as metalkult.com. Some participants such as Sara and Esmerelda mentioned how their knowledge of instruments from school helped them with music theory, which informed their music. Though Sara did not know many chords on the guitar, she could figure them out because "[she knew] what it should sound like and how to make the chord" from her experience on the violin. This helped her with the piano as well, which she used to create music during her project. Esmerelda suggested that while skills developed in orchestra, such as playing in time and cooperating with others, transferred to her engagement in the STC, "playing the drum set is completely different than playing a notated instrument like the xylophone." Few participants mentioned a relationship between instruments they learned in school and their work in the STC and any connections mentioned were minimal.

In several cases participants' technique and skills on the instruments they learned outside of school were idiomatic in nature due to their learning specific genres of music. For instance, since Mark taught himself guitar by listening to technical metal music, he played the instrument in ways that centered on this music's stylistic attributes. Similarly, Liz's guitar playing reflected the types of chord changes and strumming patterns that were typical in what she described as mainstream music. Liz made the point that she was able to write songs faster and with structure since her acoustic guitar playing helped her know "how it is supposed to be and what should happen in the song." She felt this was due to her fluency with chord progressions. As she explained: "I play mostly mainstream stuff so the typical chord progressions and typical strumming patterns that go with those chord progressions make songwriting easier." Participants' technique on their instruments influenced the harmonic, melodic, and rhythmic material they integrated in their original music.

Several participants played instruments at home but did not use them in the STC. For instance while Jay and Carl played the drums and acoustic guitar at home, respectively, neither participant

Table 1. Participants' experiences with instruments, voice, and technology in and outside of school and the STC.

Participant	In school prior to STC	Outside of school	Engagement in STC final project
Alice	• Piano (3rd–7th grade) • Flute (4th–5th grade) • Electric Bass (8th–9th lessons)	• Guitar ("recently") • Bass (8th–current) • Laptop, MIDI controllers, and Ableton Live LE (recently)	Primarily used MIDI keyboard controller in conjunction with Pro Tools to create music.
Esmerelda	• Percussion instruments (orchestra and marching band 9th grade)	• Piano (private lessons "for several years") • "African Drums" (in temple) • Steel drums (camp) • Drum set (private lessons for nine years) • Guitar ("recently")	Learned guitar to work on her own for STC projects. Primarily used guitar, voice and Pro Tools to create music.
Sara	• Violin (orchestra 4th–9th grade)	• Violin (help from mother and private teacher) • Bass, piano, and guitar ("all around lessons with private teacher")	Primarily used a keyboard, MIDI keyboard controller, and Pro Tools to create music.
Marcus	• Trumpet ("at one point") • Guitar (9th grade)	• Piano ("for several years") • Guitar (taught himself) • Pro Tools and Cubase music software	Primarily used guitar, voice, and Pro Tools to create music.
Liz	• Voice (elementary school) • Recorder (elementary school) • Guitar (9th grade) • Piano (10th grade)	• Guitar (taught herself during middle school and now plays in a band) • Piano, Electric Bass, and Drums (a little bit) • Trumpet, Trombone, flute, harmonica, and violin ("to a lesser degree") • Cubase music software	Primarily used guitar, voice, and Pro Tools to create music.
John	• Saxophone (8th grade)	• Guitar • Bass	Rarely played instruments in class and sometimes sang to create music.

Table 1. (Continued)

Participant	In school prior to STC	Outside of school	Engagement in STC final project
Carl	• Trumpet (6th–7th grade)	• Guitar (taught himself since 7th grade) • Keyboard (taught himself "recently")	Primarily used keyboard, MIDI keyboard controller, and Pro Tools to create music.
Jay	• Drums (middle school–9th grade band)	• Drum set (taught himself since the age of two)	Primarily used keyboard, MIDI keyboard controller, and Pro Tools to create music.
Mark	• Recorder (elementary school) • Voice (elementary school) • Trumpet (4th–7th grade) • Guitar (9th grade)	• Guitar (taught himself since 8th grade and in metal band)	Primarily used guitar and Pro Tools to create music.
Bert	• Drums (7th– 8th grade band) • Drum kit (high school jazz band)	• Drum set (private lessons during 6th grade and taught himself since 7th grade and in metal band)	Primarily used drum set to create music.
Jebediah	• Voice and flute (elementary school) • Bass (middle school jazz band and orchestra)	• Bass (private lessons for a short time)	Primarily used bass to create music.

used these instruments in their creation of music for the final project, instead relying on Bert and Mark to provide these instrumental parts for their music. In these cases, it was unclear to what extent students' experience with instruments outside of school played a role in their creative work. In some cases, participants' engagement in the STC catalyzed interest to pursue learning an instrument or develop a particular technique. Sara asked her private guitar teacher to teach her how to play barre chords after observing a peer do so during a Songwriter Night. Esmerelda taught herself guitar in order to work independently on projects in the STC.

While no participants had used Pro Tools prior to their experience in the STC, several worked with music software at home. Mark and Liz both used the software program Cubase, which had similarities to Pro Tools. Alice's use of Ableton Live Limited Edition provided her with a foundation for creating music with computers that she built upon while in the STC. This may have been reflected in Alice's ability to work independently without having to ask for assistance. Alice explained that although the programs were different, she was able to translate similar concepts and processes from one to the other. Data support that each of these participants used Pro Tools with confidence. Marcus's work with Pro Tools in the course led to his interest in acquiring associated hardware and the application to use at home.

Use of popular music in the STC

In accordance with other findings related to students creating original music, participants drew upon influences from the popular music to which they listened outside of music classes and school (Abramo, 2009; Hickey, 2009; Kaschub, 1999; Ladányi, 1995; Stauffer, 2002). Though not always made explicit, the term "popular music" typically refers to a rock genre in much of the music education discourse. As Bowman (2004) suggests, popular music resists static definition and ought to be considered in the context of larger fields of music and culture. Furthermore, popular music is an overarching category inclusive of a broad spectrum of music and musical practices.

Participants rarely if ever used the term "popular music," instead referring to particular songs such as *Around the World* and *Boom Boom Pow*, musicians such as Gojira, Attack Attack, or Nine Inch Nails, and genres such as electro, techno, or technical metal. Thus, in the context of this study popular music refers to an overarching category of music and musicking inclusive of variegated genres that were mass mediated, located in the context of contemporary popular culture, and popular among participants.[8] Most tangible and observable were the ways in which popular music influenced the inter-sonic aspects of students' music through the musical characteristics and processes with which participants engaged (Green, 2008). Participants' literacy in popular music and culture often mediated their work as they referenced specific bands and songs to communicate their musical ideas.

(Popular) musical gestures and stylistic attributes. Except for Sara, all participants referenced specific aspects of popular music as influences in their songwriting. Their STC work allowed them to explore, draw on, and realize stylistic characteristics in their music. Liz frequently drew upon popular music genres when describing the type of sound for which she was aiming in her song *Here*, such as making the transition from the first verse to the chorus sound like "almost Country but not Country," or speaking about *Here*'s potential as an "Electro" song. Marcus's vocal style and range were similar to that of the group Attack Attack's vocalist, which I would not have known had I not listened to the group's music and watched their videos on YouTube.

Mark, Bert, and Jebidiah drew upon and reinterpreted material from a variety of Metal bands ranging from Gojira to Mastadon. Mark observed that by exploring, drawing upon, and reinterpreting material from a wide variety of Metal bands, techniques, and styles, his group could write

something "sort of original." The degree to which participants were familiar with stylistic attributes of musical genres played a large role in their work. John, Carl, and Jay's attempt to create Doom Metal, for example, was hindered by their lack of experience with this genre.

Using popular music as an inspiration rather than a model for replication. While research suggests that students sometimes emulate specific popular music or musicians (Ladányi, 1995; Tsisserev, 1997), the STC students used popular music as a resource and inspiration for creating their own music rather than reproducing the sound of particular bands or individuals. The STC thus provided a space for participants to work in familiar contexts, but in ways specific to their own musical interests and aesthetic ideals. Creating music influenced by a specific genre or style allowed the participants to experience that music in new ways. Articulating stylistic characteristics through musical and verbal discourse also required close listening to both the music that they drew upon and their own songs. Similarly, assessing the extent to which their music attained the "sound" they hoped to achieve required knowledge of stylistic attributes and the ability to assess their presence in the song.

The diversity of genres upon which STC students drew for their music resulted in a wide range of styles present in the STC. All participants saw this as a positive element of the course, with several mentioning how the diversity of music in particular helped to inspire their own music. The free flow of musical gestures, stylistic attributes, and ideas between individuals and groups in the same class created a rich environment and provided a space for STC students to encounter and engage with a range of musics outside their typical listening choices and develop as musicians.

The influence of music to which participants listened outside of school also played a role in their creative processes. The genres with which participants were familiar factored into the types of groups they formed, the styles of music with which they worked, and their choice of sound sources. Each of these factors were interrelated and ultimately impacted participants' music. Allsup's (2003) finding that students' choice to engage in a manner similar or dissimilar to that of a jam band or garage band greatly impacted their creative processes and musical products also held true for participants in the STC.

Popular music and culture as a form of musical (D)iscourse. Popular music and culture played an important role in mediating participants' musical understanding by providing them with a shared vocabulary to communicate and better understand one another's musical intentions. This typically occurred within groups, providing a medium for building a shared understanding when other references would not suffice and allowing for the development of participants' aesthetic preferences.

When Jay asserted that he did not know what a bridge was, John referred to and sang the song *Around the World* by Daft Punk, which he described as "one beat and him saying around the world the whole song—there's not even a verse or a chorus." John highlighted the concept of a bridge by referencing a song that he felt needed one. The group's friendship and work together throughout the class helped provide shared knowledge of popular music and cultural references that they used regularly to mediate their communication.

These types of conversations, what Gee (2008, p. 155) termed "'discourse' with a little 'd,'" existed within a larger "'Discourse' with a big 'D.'"[9] Gee explained that a Discourse with a capital "D" is composed of the distinctive ways in which one enacts specific socially recognizable identities engaged in specific socially recognizable activities.

The STC was structured in a way such that once students were involved in their projects they could interact with music, equipment, and processes as they wished. Drawing upon their rich knowledge and understanding of popular music and culture in the STC allowed students to work within familiar Discourses from outside of school. The ability of participants to draw upon varied

ways of communicating and "doing" music allowed for fluid movement between their musical engagements in and out of school. Participants' shared musical understanding (Wiggins, 1999–2000) benefited from shared Discourse. STC students thus drew heavily from their engagement with popular music and culture outside of school.

Participants, however, did not always engage in the same Discourse in the STC as they did outside of school. While John, Carl, and Jay frequently used popular music and culture to mediate their communication in the STC, they claimed that what they listened to outside of school did not play a role in their creative process. Carl made the point that he specifically chose not to emulate the music he liked because he idolized his favorite bands and thought that he "could never be as good as them," and thus did not try to do so. Similarly John's, Carl's, and Jay's attempt to work within a specific Metal Discourse led to frustration in their attempts to communicate with Mark, Bert, and Jebidiah, with whom they collaborated, and to realize their sonic ideal. Ron's decision to allow students to develop their own methods and paths for creating their music and engage in the Discourses they found most useful provided opportunities for them to integrate popular music in the STC as a fundamental aspect of their music and creative processes.

The STC informing listening to music outside of school

Students articulated the impact that their engagement in the STC had on the ways they listened to music outside of school. The ability to hear more detail in music was one such change shared among several participants. This ranged from Marcus' ability to "really listen" to music and point out flaws in popular songs such as *Boom Boom Pow* by the Black Eyed Peas to Bert referencing his skill at picking out the kick drum, guitar, or bass in a mix as opposed to focusing solely on the drum set as a homogenous entity.

Several participants also discussed listening to elements of production and considering aspects of recording and mixing as they thought about what went into the creation of a track. Mark discussed a link between his own production work in the STC and a raised consciousness of production elements in music, explaining that:

> There are some things that when you are mixing your [music] you kind of start learning. You are conscious of it. So then once you start listening, you go back and listen to music, you're like, "Oh, that sounds very MIDI or that kick drum is too quiet." Then you start picking up on it. It's kind of cool sometimes. It's like I just want to listen to the music and forget about that but other times it's kind of cool to pick it apart so you can really learn from it. So it definitely affects the way I listen to music.

Jay explained that he sometimes listened specifically for flaws in recordings and, when he did not hear any, wondered how the artists were able to record so flawlessly. Participants' experiences recording and dealing with the associated challenges and frustrations provided them with an appreciation for this process. This experience informed how they listened and thought about professionally produced music. Participants' new ways of listening to music resulted from their hands-on work with songwriting and production in the course.

The STC informing dispositions toward music and the music industry

Several participants discussed changes in their dispositions toward music and a newfound willingness to refrain from immediately judging songs they did not like. Carl explained the following shift in his attitude regarding mainstream popular music on the radio:

> Back in the day when I used to hear a pop song on the radio I would be, "Oh, that's crap. Those songs are really easy to make." But [the STC] made me realize that it's harder than you think to make a song. Even like a really crappy basic repetitive song. It still takes some effort.

John mentioned a similar shift in attitude; however, he respected the producers more than mainstream artists, as he explains in the following interview excerpt:

> I have way more respect for all the producers who produce Britney Spears and Rihanna and all those than the actual artists. 'Cause I mean, if we think that the popular version is crap I would not want to hear the un-produced version of a Britney Spears song because it's got to be horrible. I mean that's all it is, effects, compressors on the voice, and like none of those people sound like that.

John explained that on the radio one does not hear Britney Spears but "Britney Spears singing with computer effects on it." His and others' experience creating and producing music fomented an inside perspective that took into account elements of songwriting and production when assessing music.

For several participants, the STC served as a space in which to negotiate their perspectives toward a potential future as musicians. Though the STC was designed to prepare students for what they might experience in the "real world" of the music industry, they were divided in their interest in continuing along this particular career trajectory. What they experienced and learned in the STC assisted participants in reconciling their aesthetic ideals and realities of the industry as they looked toward their future. Their perspectives ranged from interest in being commercially viable though not necessarily mainstream (John, Carl, and Jay), through the desire to be both commercially viable and mainstream (Liz), to a lack of interest in being commercially viable or mainstream (Mark, Bert, and Jebidiah). Given that participants drew upon their knowledge of contemporary popular music and their formal and informal musical engagement to create music in the STC, the class served as a space for them to practice, experiment with, reinterpret, and reject aspects of western popular music related to commercial viability and aesthetic ideals.

The STC informing participants' future as musicians

Many viewed the skills and knowledge they developed in the STC as related to their future goals as musicians, such as John's wish to create a band demo, Jay's desire to create beats with Pro Tools for original rap music, or Esmerelda's hope to become known by "big companies" and people in the music industry. Esmerelda proposed that her knowledge of live sound and ability to record her own music would allow her a degree of independence not necessarily available to musicians reliant on sound engineers.

Participants who did not plan on careers within the music industry still viewed the STC as important to their musical involvement in the future. Some saw the STC as related to their future studies in higher education, drawing parallels between the resources they were learning how to use in the STC and those available at universities. Carl, assuming that the STC was indicative of music programs in higher education, expressed:

> If you want go to college you will probably be required to take a class about technology. Nowadays, correct me if I'm wrong, that's probably a requirement. If your major is music you have to know something about sound technology.

Carl's assumption might be viewed as a general philosophical position and expectation of students who have similar experiences in their secondary music education. The STC was seen as a means to additional education and application rather than a single course unto itself.

Both Ron Wittwill and the participants often framed the STC as representative of and preparation for the "real world" of the music industry. John saw the STC as a course preparing students to be a new generation of musicians. He and others felt that they were gaining the skills and knowledge needed to make positive aesthetic changes in the music industry. The STC helped participants develop musical discourses, literacies, and an understanding of the tools, techniques, processes, and ways of listening and thinking through music, recording, and engineering critical for gaining and sustaining agency as contemporary musicians.

Connectedness and relevancy to participants' musical lives

All participants saw the STC as an important part of their school experience and life goals. Several participants differentiated the STC from music courses they had experienced in earlier school years, claiming that their large ensemble experience did not help them as musicians whereas the STC had a direct positive impact on their musicianship and deeper connection to their lives due to the opportunity it provided them to create their own music. Sara, who played the violin at home and in the school orchestra before she quit, enjoyed the large ensemble but saw the STC as more relevant to her life. She explained:

> I don't want to have a career in music. I think this class is amazing just because it's such a different experience. And I think they are valuable skills because I think everybody should have a balanced understanding of different areas. I think this class really provides that. . . I think it's something people can connect to more than playing Mozart again. Because, I mean that's great but that's not now. That's not—I don't connect to that as much as I connect to writing my own song.

John contrasted the STC to other courses in school, noting that "this is the class I look forward to, and not just because we mess around. Because we learn things that I think will matter to my life." Marcus also highlighted how being in the STC had a positive impact on his musical engagement outside of school, offering:

> This is my favorite class, not because it's an easy A or something. It's because I work on it and it's what I want to do. I probably wouldn't be where I am in music and have this kind of music without this class. I wouldn't have bought an Mbox. I wouldn't be messing around at home. I wouldn't have been recording songs. It makes me appreciate music a lot more and that's the main thing.

Common across all participants' perspectives was an appreciation of opportunities to engage and view themselves as musicians in ways relevant to their present and future lives (Bolton, 2008; Mellor, 2008; Seifried, 2006).

Conclusions and implications

While participants' knowledge of recording techniques, Pro Tools, and other technical components resulted from their class work, the STC, their musical engagement outside of school, and their life experience all informed and influenced how they applied their knowledge and understanding to the ways they created, discussed, listened to, and thought about music. This dynamic intersection between students' musical engagement in and out of school was afforded by a class environment in which informal learning practices could combine with participants' knowledge and understanding of music. During projects, the STC was characteristic of an informal learning situation within a formal environment (Folkestad, 2006), functioning as a middle ground and connection between school and home (McGillen, 2004).

While the STC provided students with resources ranging from instruments to technology that mediated their learning, a key takeaway from this study is how the class allowed for connections between students' in-school and out-of-school musical engagement and learning. Regardless of one's access to resources such as Pro Tools or MIDI keyboard controllers, music educators can structure their classrooms and curriculum in ways that foster students' ability to apply their musical experiences, interests, and understanding from outside of school while simultaneously addressing aspects of music and musical experience that students can apply directly in the lives beyond the classroom. Furthermore, in addition to providing opportunities for students to make connections between in- and out-of-school musicking and learning, music educators might encourage students to reflect on and act upon these intersections of lived experience, musical engagement, and developing understanding.

Carl encapsulated the majority of his peers' perspectives in stating: "I know I wouldn't be doing any music classes if it weren't for this program." This study suggests that students traditionally excluded from music programs might thrive in music classes where their musical experiences from school and home overlap. Allsup (2004, p. 214) asked, "Can we craft opportunities for young musicians to make sense of their immediate world through sound so that they enjoy the kind of aesthetic understanding that music provides as it relates to friends, love, good times, and bad?" Though referring to the democratization of concert bands, his question might also be applied to school music programs in general. This suggests that all students might be thought of as, or as having the potential to be, young musicians. Allowing for and acknowledging the intersections of students' in- and out-of-school musical engagement forces music educators to think broadly about what it means to be musical and/or a musician. The majority of participants in this study thought of and referred to themselves as musicians regardless of a lack of formal instrumental education or membership of a school ensemble.

Ruthmann (2006, p. 193) argued that "the challenge for educators is to design curricular experiences that are intrinsically motivating, useful to the students, and educational in the sense that they provide a foundation upon which musical understanding can be built." Ron Wittwill did this through projects that allowed participants to connect their in- and out-of-school musical experience with their developing understanding of relevant tools and techniques (Stauffer, 2001). Bridging the gap has been a useful metaphor in helping music educators envision possibilities for connecting students' in- and out-of-school musical engagement (Rodriguez, 2004). While bridges connect different locations, gaps still remain. When mixing and editing their recorded music, STC students often used a technique referred to as a crossfade to create seamless transitions from one audio clip to another, smoothing over gaps and allowing the separate recordings to meld as one. Along with bridge-building, music education might consider the metaphor of crossfading between students' musical experience in and out of school. This suggests that, as in the STC, students' musical experiences in and out of school may inform and influence one another, smoothing over gaps in artful transitions. Creating and researching such curricular opportunities is essential to music education's relevancy in contemporary society.

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Notes

1. Green (2008) used the term "inter-sonic" to denote the aspects of music that are specific to its sound as opposed to extra-musical connotations, which she refers to as delineated meaning (p. 87).
2. All names in this report are pseudonyms to protect the anonymity of participants.

3. Participants self-identified race/ethnicity in a demographic information sheet completed at the end of the study.
4. Video-based shared reflection (Tochon, 2007) consists of participants watching and discussing or answering questions related to video footage of their work.
5. Campbell (1999) used the term "subjectivity lens." I will instead refer to this as a "subjective lens".
6. Carspecken and Apple (1992) referred to monological data collection and dialogical data generation (p. 513), whereas Campbell (1999) referred to monological and dialogical lenses. In this study I make use of Campbell's notion of lenses to make connections between interpretive frameworks and types of data.
7. Participants' creative processes are also detailed in the dissertation upon which this study is based (Tobias, 2010).
8. Popular music in the context of this study did not include jazz or folk music.
9. I will use the same convention as Gee (2008) to make a distinction between discourse and Discourse.

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