Well, DAW! That’s Why I Don’t Sound Like the Recording: Music Production in Elementary School Music Education

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ABSTRACT

In this dissertation, I discuss how elementary students responded to a music curriculum that foregrounds music production practices. The following question guided this inquiry: How can music industry professionals, music teachers, and students collaborate, share ideas and their experiences to inform a curricular design for public elementary school music education? I theorized that music production practices should be introduced at an earlier stage of learning than discussed by other educators, i.e., at the secondary level. The study consisted of adapting, implementing, and reflecting on a music production curriculum in public elementary school music education through participatory action research, alongside three other music teachers, their students, and two prominent Canadian music industry experts such as recording engineers. The study was adapted in three phases; phase one consisted of music industry experts informing the content of the project; phase two consisted of teacher planning and implementing a flipped classroom design; and, phase three included gathering student input and experiences, leading to the creation of open access video resources. The videos are free and available publicly as an animation series on YouTube called “Dr TooNice.” Specific to this research, North American, or in particular, Canadian public school music education has traditionally focused on instrumental and vocal performance-based programs by using approaches such as Kodály, Orff, and Dalcroze with a limited focus on music production techniques. These techniques are pertinent to students interested in performance-based and non-performance-based settings, underscoring their significance in diverse contexts and environments. To obtain the quality of the sonic features heard on most recordings requires a specific skill set beyond performance. Educators turning to contemporary popular music for song selections are often unaware that they are expecting students to recreate sounds on instruments that have been altered through music production.
techniques. Understanding what one is hearing, and knowing how to create and recreate these sounds, is a crucial element missing in public school music education. The results of my research all lead to the recommendation of beginning music production at an early stage of learning, including, but not limited to, the processes of vocal mixing, beat making, and recording with digital audio workstations (DAWs).

SUMMARY FOR LAY AUDIENCE

As the integration of music production into music education continues to expand, the process of recording (capturing, manipulating, distributing) remains limited in research at the elementary school level. This study demonstrated that elementary-aged students have the potential to produce music professionally by meeting industry quality standards. Moving beyond composing with technology, teachers can guide students in developing a technical ear to understand what it is they are hearing when listening to recordings. Producing music entails comprehension in performance and sonic concepts. The focus of this study was to engage with the process of music production rather than assessing end results.

This participatory action research study consisted of three participating groups. These groups interpreted and reflected on an elementary music curriculum using a music production lens. The first group consisted of music industry professionals informing the study with their expertise from first-hand experiences in the field. The second group consisted of elementary music teachers with various degrees of experience implementing this curriculum in a flipped classroom design. The third group consisted of primary, junior, and intermediate elementary students applying various concepts to music production projects of their choice. Based on this exploration, the following question guided this inquiry: How can music industry professionals, music teachers, and students collaborate, share ideas and their experiences, to inform a curricular design for public elementary school music education that has music production as its core?

Findings indicate that music production interests most students and teachers, however it should complement existing programs rather than being the core. By blending music production concepts within existing programs, students can: (a) develop technical skills beyond performance, (b) develop independence skills, (c) work alongside anyone, regardless of
experience level, (d) collaborate with others anywhere in the world, and (e) produce music of their choice in a welcoming environment. Moreover, teachers can: (a) create a learner-centered environment, (b) learn alongside their students, and (c) meet curricular goals in a modern educational setting. The students in this study developed an understanding that what they hear on recordings might not be reproduced on their instruments without the aid of music production.
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CHAPTER 1

Introduction

After practicing the guitar for numerous hours, my fingers began hurting from the 12-gauge phosphor bronze strings tightly wound on my Tim Armstrong Checkerboard Hellcat Fender electric acoustic guitar. My voice is warmed up, and my original songs are now performance ready. On stage, the guitar technician takes a 1/4-inch tip sleeve (TS) nickel plated patch cord, and plugs one end into my guitar, and the other end into a Digiflex passive direct injection (DI) box. He takes a second patch cord and runs it from the DI box into the guitar amplifier on stage. Next, he takes an external line return cable (XLR), and plugs one end into the DI box, and the other end into the public address (PA) system. My guitar is now amplified, and I am ready to set the tone and effects on a Fender twin deluxe reverb amp for my stage sound, and the live audio engineer is ready to set the tone and volume on the PA system for the audience to hear a similar sound from the speakers mounted on the walls in the concert hall. A Shure SM58 dynamic vocal microphone is placed in front of me, and I am now ready to perform. During this performance, my music will only be heard by those present in the moment. If I want to reach a larger audience, and have others experience these sounds, I will have to record my music and share it online. I wonder, as a performing musician, do I possess the required skills to share my music through recordings, or am I missing something? As I began exploring this question, I realized that popular musicians not only use production techniques in recordings, but they also use multiple production techniques while performing live, and have been for many decades (Sideways, 2020). Furthermore, many popular musicians across multiple genres sing along to their own recorded voices and instruments while performing live (Paychecks, 2019). Moreover, YouTubers are showing listeners how anyone can record a number one hit song without any
instrumental “talent” if they possess music production “talent” (RoomieOfficial, 2017). This makes me wonder, am I oblivious to any other production techniques used in the music industry, and if so, why are these concepts not part of public elementary school music education?

**Background**

In teacher’s college, I was instructed to teach younger students acoustic performance concepts through a structured, teacher-directed process known as formal learning. In this setting, the expectations were for students to practice numerous hours to develop performance skills such as feeling the beat, playing rhythms accurately to a metronome, working on intonation, and developing a specific tone. These performance concepts and expectations for music students in elementary, secondary, and post-secondary schools have been the same since music education’s entry into public schools in Boston in 1838 (Birge, 1938). According to Green (2002), formal learning uses “teaching strategies, which historically developed in conjunction with classical music pedagogy” (p. 29). Therefore, in this setting, teachers are usually the holders of knowledge who “pass” information on to students (Freire, 1970).

Outside of school, many students engage in musical activities in unstructured settings known as informal learning. In Green’s (2008) framework of implementing informal learning in secondary classrooms, she theorized the following:

Learners always start with music that they know and like, the main learning practice involves copying recordings of real music by ear, learning takes place alone, in groups of friends, mostly without adult guidance or supervision, learning is not progressively structured from single to increasingly complex, but holistic, idiosyncratic, and haphazard, and listening, performing, improvising, and composing are all integrated throughout the learning process. (p. 262)
Even though academics have made progress in the field of music education when it comes to the debate between formal and informal modes of learning such as: diversifying teaching approaches by foregoing traditional methods (Allsup, 2016); exploring various musical genres and ensemble sizes (Byo, 2018); encouraging the teacher-as-facilitator role and student-led rehearsals (Green, 2008); and, embracing popular music and culture within pedagogical considerations (Wright, 2017), the primary focus of this debate continues to be dominated by the process of instrumental performance (Green, 2008), as opposed to the process of music production (Bell, 2016; Hodgson, 2019; Kuhn & Hein, 2021; Randles, 2022; Tobias, 2010). In practice, music production can, and should be applied to both ways of learning music, whether it be informal or formal learning, at an early stage of schooling (Bell, 2020; Burns, 2020).

**Purpose Statement**

The purpose of my dissertation project was to adapt, implement, and reflect on a music production curriculum within elementary school music education through participatory action research (Cohen et al., 2018; Lewin, 1946; Merriam & Tisdell, 2016), alongside three other music teachers, their students, and communities of popular music makers such as music industry professionals and independent artists (Mulligan, 2019; Poe, 2012; Rani, 2018; Schafer, 2014). I explored and examined how elementary students responded to a music curriculum that foregrounds music production practices because I was curious to know whether these practices should be introduced at an early stage of learning. Specific to this research study, North American, or in particular, Canadian public school music education has traditionally focused on instrumental and vocal performance-based programs by using approaches such as Kodály, Orff, and Dalcroze (Randles, 2022), with a limited focus on music production techniques, yet calls to
move away from purely performance concepts is ever growing (Bell, 2016; Burns, 2020; Kuhn & Hein, 2021; Randles, 2022; Ruthmann, 2007; Tobias, 2010; Williams, 2007; Zak, 2001).

As an elementary public school music teacher, I am bothered by the contrast between what I am expected to teach in my music classes (Ministry of Education and Training, 2009) and how I, and many others personally experience music outside of school (DeNora, 2000; Mantie & Smith, 2017). Outside of school, we, as a global population, are primarily exposed to recorded, manipulated, and produced sounds, and have been for many decades (Bell, 2018). To obtain the quality of the sonic features heard on most recordings requires a specific skill set beyond performance (Oltheten, 2018). Educators turning to contemporary popular music for song choices are often unaware that they are expecting students to recreate sounds on instruments that have been altered through music production techniques (Green, 2008; Vasil, 2015). Now, more than ever, understanding what one is hearing, and knowing how to create and recreate these sounds is a crucial element missing in public school music education (Corey, 2012).

While schools have mainly focused on instrumental and vocal performance programs, the music industry has mainly focused on the use of music production, either in recordings or live settings (Hall, 2020). These produced sounds have been growing in popularity over non-produced sounds for many decades, steering popular artists away from the stage to focus solely on recording careers (Alexander, 2015; Hodgson, 2021). Drawing on the work of Reimer’s (2009) “crisis of irrelevancy,” Tobias (2010) indicates that there are a limited amount of opportunities for students to pursue music production in school as only “57% of small middle schools, 59% of large middle schools, 35% of small secondary schools, and 20% of large secondary schools [in the United States] offered music courses that expanded beyond performance” (p. 44). He called for expanded curricular opportunities in the music production
field for students. Other academics have also recognized a need for progress in music production education in schools such as Williams (2007) who stated: “we need pathfinding programs in the delivery of relevant new pedagogies, as found in digital media, so tomorrow’s teachers will be prepared for the societal realities they will face” (p. 22). He argues that teachers have ignored these advancements in technology, moving further away from reality in their classrooms, and that “our profession is not prepared to react to, nor seems to care to address [these problems] in any serious way” (Williams, 2007, p. 21). Currently, the progression of popular music education seems to be filling a void for teachers rather than students, since most of the song choices reflect pop music of yesteryears and the focus remains mainly performance-based (Cain, 2013). In any case, the process of learning this repertoire is decades old and teachers must recognize that students experience music differently today.

Students today experience music production in multiple ways and will have various influences that teachers may not be prepared to address in the classroom. For example, Kuhn and Hein (2021) present the scenario that “a student who has made a playlist in iTunes or Spotify has already experienced a form of musical creativity” (p. 4). Even though this may not seem critical to traditional pedagogies, this form of engagement is like how a DJ would begin exploring their musical interests and participating in a creative process. DJs can make thousands of people in a dance club move to the recorded music on their playlists by creatively remixing songs, creating mashups, or moving from song to song without any hesitation and with an even flow. For this reason, and many more, the profession of music education needs to confront the dichotomy between the music production advancements made outside of schools and the instrumental performance focus learned inside of schools. As a musician, one should strive to understand the sonic qualities of a recording and to create music based on this understanding. According to Bell
(2016), “to make PMP [Popular music pedagogy] sustainable, we need to connect with communities of popular music makers to help us find our flaws and pick apart our pedagogies” (p. 9). In response to this call, for my dissertation project, I collected information from the communities of the music industry, adapted the information to the Ontario curriculum, and implemented these concepts with other teachers in the three divisional age groups found in Ontario elementary public schools which are: primary (grades 1 to 3), junior (grades 4 to 6), and intermediate (grades 7 and 8). Then, together with the students, the teachers and I reflected upon the pedagogical process, suggested changes, planned for next steps, and repeated this process. This area of focus at the elementary level remains largely unexamined since most researchers investigate music production at the secondary and post-secondary levels (Emo, 2022; Kuhn & Hein, 2021; Tobias, 2010). This production curriculum was designed to expand Green’s (2008) informal pedagogy through the lens of punk pedagogy (Smith et al., 2017), and critical pedagogy (Freire, 1970; Giroux, 2011).

Expanding Popular Music Pedagogy

The research questions that guided this study were inspired by the dichotomy between my personal experiences with the music industry and my personal experiences as an elementary school music teacher. The music industry is heavily influenced by the use of music production whereas elementary school music education mainly focuses on instrumental performance concepts. I wish to raise this as a pedagogical concern for music educators in public elementary schools when it comes to planning and delivering a modern music program, since music production programs are intended to reflect the musical experiences and interests of students. My investigation consisted of experiencing the process of music production before learning instrumental performance concepts in the elementary music classroom. With the limited amount
of time given to music classes, one may need to consider which option benefits students the most. Using participatory action research, I personally explored this idea with my students and was curious to know how other teachers felt. According to Nugent (2020), participatory action research “encourage[s] the participants to gain a deeper understanding of their world in order to change it” (p. 502). Therefore, the collaborative process of approaching this concern with the participants consisted of planning, reflecting, observing, acting, and repeating this process to obtain data (Crane, 2000, p. 16). Participatory action research asks us to: “[a] draw out the thinking, [b] use critical interpretation, and [c] utilize the experiences of the participants” (Solinger, 2015, p. 29).

Music can be experienced in a live setting or with recordings. When one experiences music in a live setting, it may be acoustic or amplified. In an acoustic setting, sounds are not manipulated in any way. The musician naturally produces the sounds coming out of their voice or instrument. In an amplified setting, the musician’s sounds may be manipulated in various ways by using microphones, amplifiers, effects, and production techniques. When one experiences recorded music, it may be through audio only, such as the music found on platforms like Spotify, Apple Music, or older mediums such as vinyl records. Moreover, one can experience recorded music that is accompanied with video, such as those found on TikTok and YouTube. It was illuminating to learn how participants actively think about how often they experience music in one or more of these scenarios daily and relate it to their learning experiences when it comes to music production or instrumental music.

With the increased access and availability of affordable equipment and modes of sharing music, independent artists have been on the rise (McArton, 2023). An independent artist has a do-it-yourself creative freedom and the skill sets needed to thrive musically. When signed to a
major label, popular musicians have limited creative freedom since numerous people are involved in the creative process when it comes to song writing and producing hit songs (Cala & Caldwell, 2019). Therefore, to inform this study, the industry professionals expanded on these roles, the teachers implemented the concepts in their classrooms, and the students applied the ideas to their projects. Based on these aims, a research question and related sub-questions were created to guide this study.

**Research Question and Sub-Questions**

How can music industry professionals, music teachers, and students collaborate, share ideas and their experiences, to inform a curricular design for public elementary school music education that has music production as its core?

a) What would each of their roles consist of during the design process?

b) What would their roles be when actively engaged in the classroom?

c) What would be some of the possible issues and constraints found in this design, and how would they be resolved?

d) How often would each cycle of PAR (planning, applying, observing, and reflecting) be adapted and repeated? What would the process look like?

e) What are some of the outcomes and expectations found in a music production curriculum and how can it be adapted to the current provincial standards?

**Key Terms and Definitions**

**Music Production**

“Music production is the process by which music is (a) created, (b) captured, (c) manipulated, (d) preserved, so that it can be (e) distributed, and (f) enjoyed” (Berklee Online, 2020).
Examples of these processes include, but are not limited to:

- (a) **Created.** Composition, song writing, arranging, remixing, sampling, recreating (cover), etc.
- (b) **Captured.** Recording, tracking, using conventional and non-conventional equipment to record, using studio techniques such as microphone placement and multi-micing, using a digital audio workstation (DAW), etc.
- (c) **Manipulated.** Mixing, editing, effects, mastering, use of amplifiers, use of a PA system, etc.
- (d) **Preserved.** Mp3, vinyl, cassette, CD, online, YouTube, TikTok, etc.
- (e) **Distributed.** Labels, publishers, managers, promoters, online, social media, independent artists, etc.
- (f) **Enjoyed.** Performance, stereo system, concert halls, speakers, Spotify, Apple music, radio, TikTok, YouTube, etc.

**Public Elementary School Students**

- **Primary.** Grades 1 to 3 (ages 6 - 8)
- **Junior.** Grades 4 to 6 (ages 9 - 11)
- **Intermediate.** Grades 7 and 8 (ages 12 - 13)

**Audio Engineer**

According to Flashpoint Chicago (2022), “an audio engineer (also referred to as a sound engineer) is a trained professional who deals with the technical and mechanical aspects of sound: recording, manipulation, mixing, and reproduction. They use technology to produce sound for film, television, video games, theatre, music recording, corporate events, and more” (para. 1).
Live Sound Mix Engineer

According to Berklee (2022), “live sound mix engineers are responsible for controlling the volume, balance, and EQ of a live performance from a mixing console” (para. 1).

Producer

According to the professionals in my study, historically, “the producer dealt with the artist on the creativity of the song.” They oversaw an entire project whereas, “nowadays a producer has been intertwined with the term beat maker or the person producing the music, making the actual music.”

Mastering Engineer

According to Berklee (2022), “Mastering engineers use technical expertise and superb ears to make the final adjustments to a piece of recorded music before it’s released, heightening its impact and ensuring that it will translate well to the variety of playback systems in use today” (para. 1).

Independent Artist

An independent artist is usually an unsigned musician or a group of musicians who create, record, manipulate, and distribute their music on their own (Kartik & Mishra, 2022).

The Roots, The Radical

The Acoustic Era (1877-1925)

In 1877, Thomas Edison invented the first phonograph (Leake, 2014). Musicians collected sound waves by playing inside a large cone, which recorded on a wax cylinder. People were now able to experience music beyond the concert halls. At the time, Western art music was the most popular genre, therefore most recordings were within this style of music (Volk, 1999).
In music education, “the recording machine [rendered] invaluable services by enabling students and the director to hear the performance as the audience will hear it” (Birge, 1938, p. 14). In other words, recordings were used as a tool to enhance performance skills. Before its invention, the only method to model instruments was through live demonstrations (Kelleher, 2013). A live demonstration is different than a recorded demonstration, yet from the early beginnings of integrating recording technology in the music classroom, there were no distinctions made between the two. The gap between music education’s performance paradigm and the newly invented recording industry began.

**The Electrical Era (1925-1945)**

In 1925, the invention of the microphone changed the recording industry forever (Gronow & Saunio, 1998). From “the invention of the pianoforte to the phonograph, to the Theremin to Fender and Stratocaster guitars and the amplified synthesizer, [recording technologies] spread like an ink drop in water” (Kelleher, 2013, p. 254), and the newly developed profession of audio engineering brought recordings to new heights. Instruments such as guitars were now capable of being heard at equal volumes to the loud horns. Furthermore, microphone singing techniques began separating recording artists from performing artists. However, as the music industry evolved, and new skills emerged, music education remained in its conservatory roots, using recordings mainly as a listening tool for music appreciation and to enhance performance skills, omitting recording techniques (Volk, 2007). The gap between music education and the music industry grew even bigger.

**The Magnetic Era (1945-1975)**

Following World War Two, the allies were walking through post war Nazi Germany and discovered a tape machine (Sormena project, 2017). This machine was brought back to North
America, where music moguls Les Paul and Bing Crosby decided to invest in these tape machines and bring the technology into the recording studios (Huber & Runstein, 2017). From that time, tape replaced discs in the studios and the music industry evolved, using new recording devices such as the 4-track (https://museumofmagneticsoundrecording.org/). Due to these technological advancements, some of the biggest performing artists left their performance careers to solely focus on recording. The Beatles left the stage permanently when they recorded the Sgt. Pepper album (Hodgson, 2021), and classical pianist Glenn Gould, “specialist in the keyboard works of J. S. Bach, left a lucrative and highly successful performing career in his 30s to focus his energies on studio recording” (Alexander, 2015, p. 79). Not only did recording artists make a living in the studio, but audio engineers and producers such as Phil Spector (Spector & Williams, 2003), Rick Ruben (Brown, 2009), and Dr. Dre (Brown, 2006), had successful careers and shaped generations of the popular music we know today. In music education, the technologies entered the schools, but were still used as a listening tool to enhance performance skills and to hear new genres, while professional audio specialists were the only ones to use the recording devices to record performances (Spencer, 2013). Technical ear training and critical listening of recording techniques were not part of classroom pedagogy.

*The Digital Age (1975 - Present)*

According to Hodgson (2019) “most people do not hear what they think they hear when they listen to a record” (p. 1). The digital era of recording is moving at an incredibly fast pace, and the ability to record music has enabled independent artists to change and shape the modern music industry. The invention of the internet has enabled anyone and everyone to share music instantly on a global level. As Hodgson (2019) illuminates, “almost nothing has been written about recording practice [in academia] besides a few notable exceptions, nothing more than a
technological adaptation of ‘live’ performance practices” (p. 3). Even though music classrooms are including a variety of musical genres in their daily practice, recording concepts continue to be limited pedagogically. This may be due to the history of sustained performance practices in schools, and a growing absence of recording concepts in pre-service training, causing many teachers’ technophobia (Kassner, 1988). In many classrooms, teachers often confuse the term music technology with recording practices, neglecting technical ear training, and emphasizing performance outcomes (Thorgersen & Zandén, 2014; Walzer, 2016; Williams, 2014). However, the students may already be acquiring these skills voluntarily and informally outside the music classroom.

In the following chapter, I turn to the theoretical lenses through which the installation of music production as the core of public elementary school music education was examined and understood. To achieve this, I followed some principles of punk pedagogy (Smith et al., 2017), critical pedagogy (Freire, 1970; Giroux, 1978; Green, 2016) and Green’s informal learning pedagogy (2008) as my theoretical frameworks and aligned them with the methodological procedures of participatory action research. First, I provide an overview of the dissertation.

What Lies Ahead

The story in the introduction relates to my personal experiences within the music industry. Interestingly, none of the music production concepts referenced were learned in a traditional Western art music program, nor an informal popular music program. Instead, the concepts were acquired through everyday life and through digital experiences outside of school. Without this knowledge, one would struggle to perform in the community, or online. The fundamental skills described are the very basics of the amplification of instruments and voice. If I want to be a guitarist/singer/songwriter, and I do not know which strings to use, how to amplify
a guitar, use a guitar amp, run my guitar and voice through a PA system, choose a microphone, and hit the power button without experiencing feedback, how can I be ready for the stage or a recording studio? Furthermore, if I cannot create a well-produced recording, and understand the role of social media when it comes to networking and online distribution, how can I engage in modern musical activities? What does this say about my music education? With the advancements of music technology, and its integration into the classroom (Ruthmann & Mantie, 2017), further research in music production practice may improve public school music pedagogy and experiences, especially at the elementary level. My personal example of being a singer/songwriter represents just one of the many different musical backgrounds found in the classroom. In the following chapters, I discuss how industry professionals, elementary school music teachers, and their students have contributed to the creation of a music production curriculum in elementary school, with a focus on process over product.

As previously stated, in Chapter 2, I discuss the theoretical framework from which I conducted this study. To do so, I examined some historical philosophies underpinning critical pedagogy (Bernstein, 2003; Freire, 1970; Giroux, 1978), expanded Green’s (2008) informal learning approach, and applied some principles of Smith et al.’s (2017) punk pedagogy in the classroom.

In Chapter 3, the methodology utilized to apply these theories is examined. Since I chose to be a participant alongside my students and involved community members to co-construct new knowledge, I adhered to the guidelines outlined in participatory action research (Cohen et al., 2018; Creswell & Creswell, 2018; Merriam & Tisdell, 2016).

In Chapter 4, I discuss the findings from the first participating group that helped inform this study, which were the industry professionals. This group comprised of two prominent
Canadian experts deeply involved in various music production roles, who have also assisted in developing many renown artists. Their insights were invaluable, and their expertise helped me develop many ideas in shaping and designing a music production curriculum suitable for elementary school music students.

In Chapter 5, I detail how four teachers, including myself, implemented many of the ideas suggested by the industry professionals, using a learner-centered approach (Caposey & Whitaker, 2014; Costes-Onishi & Kwek, 2023; William & Kladder, 2019) within a flipped classroom design (Keengwe & Onchwari, 2016; Mok, 2014). In the learner-centered approach, students integrated their musical interests from outside the classroom into school projects, enhancing their learning experiences. In the flipped classroom, the teachers provided students with some videos to help guide their music production projects.

In Chapter 6, the students applied the concepts that were introduced to them into a music production project of their choice. At their own pace, they created, re-created, or arranged a song. With the DAW Soundtrap, they recorded their songs using physical or digital instruments, mixed their sounds using the horizontal, vertical, and proximity planes, and distributed their songs with the help of some guiding videos found in their flipped classrooms. The students worked independently, or in groups of their choice, in a do-it-yourself environment.

In Chapter 7, I summarize my findings, which were developed through the exchange of information, and through the implementation and application of the music production curriculum explored with my participants. This resource consists of multiple videos to help guide users through the process of shaping various music production projects. Additionally, in this chapter, I share some discussion points and implications for future research concerning music production in the elementary music classroom.
CHAPTER 2

Theoretical Framework

Musical Meaning

To begin my study, I grounded the ideas of critical pedagogy, informal learning, and punk pedagogy as a framework. Additionally, I examined Green’s (1988) theory of musical meaning. Green posits that students receive and construct inherent and delineated musical meanings, which in turn give rise to experiences of celebration, alienation, or ambiguity. Inherent musical meanings occur in real time as the music is being heard. It reflects how one’s consciousness reacts to the sounds being heard in the moment. Whether the reaction is positive or negative depends on one’s familiarity and experiences with the sounds; it is an individual experience. Inherent musical meanings are influenced by delineated musical meanings. Delineated musical meanings are shaped by historical and social factors. They are collective repeated experiences that create a belief system and values for individuals. These meanings are usually acquired outside of a formal setting such as in everyday life experiences (DeNora, 2000). They are often influenced by the media and the music industry.

When music has a positive impact on one’s inherent and delineated musical meanings, the music is celebrated. In the classroom, if students have a celebrated experience, it means their music is perceived as highly valued and that they are likely to engage more with what they are doing. They will seem musical by institutional standards. When the music has a negative impact, Green (1988) suggests that “the music alienates us” (p. 137). In the classroom, this would mean students may not show interest since their music is not perceived as highly valued and in turn, may not seem musical by institutional standards.
As music educators, we must recognize that inherent and delineated meanings have strong implications when we think of programming and assessment. First and foremost, each educator should engage in self-reflection to consider their own perspectives, biases, and assumptions, as these factors influence their decisions in selecting content and delivery methods. Second, teachers should consider how students are influenced by music today. According to Green (1988), “if inherent sonic materials do not conform to our definitions of music, we cannot experience them as music, and they cannot delineate themselves as music” (p. 33). Over the years, the diversity of genres has changed, instrumentation has changed, and live performances have changed. Arguably, the only consistent method of experiencing music that has not changed in the past hundred years, also termed as the “common denominator” (Bell, 2016), is how we share and listen to music, which is through recordings, hence my reasons for investigating the possibility of music production as the core of public elementary schools’ music education. There are no valid reasons as to why elementary students are learning how to play physical instruments before learning how to produce the music they are so accustomed to hearing on recordings. In any case, it seems more relevant for students to understand the sonic characteristics of recordings at a young age. In the next section, I share how critical pedagogy may help develop the idea of learning music production concepts early on.

**Critical Pedagogy**

For many years, critical pedagogy theorists have made valid arguments when it comes to rejecting the traditional modes of knowledge transfer found in schools (Bernstein, 2003; Freire, 1970; Giroux, 1978). In Bernstein’s pedagogic discourse theory (2003), he metaphorically compares the transfer of knowledge to a relay race, where information is passed from human to human. This information is passed by transmitters, such as teachers, to acquirers, such as
students. The knowledge that is passed, however, is never neutral. It is shaped by the values and priorities of the teacher and is received differently by different students from diverse social backgrounds. In Freire’s banking model (1970), someone appoints themselves as being more knowledgeable, usually the teacher, and acts as a depositor putting knowledge into empty receptacles, which are the students. In such cases, educators are presuming that they know what students need, however, these assumptions may stunt critical thought and the ability to develop one’s own voice. Too often, students are parroting information through memorization when it comes time for teachers to formally assess them.

According to Giroux (1978), teachers often adhere to a hidden curriculum which consists of:

- Rigid time schedules, unnecessary delays, and denials, tracking and social sorting,
- hierarchical relations of dominance and subordination, the correspondence between evaluation and the arbitrary exercise of teaching power, and the fragmented, isolated, and competitive interpersonal dynamics of the educational experience. (p. 149)

Moreover, the hidden curriculum contains expectations set within the status quo, and it’s anticipated that teachers reward students who conform to these expectations. Regan (2010) provides an historical perspective on this topic, highlighting that historians are infamously guilty of silencing the voices of the oppressed “by reinforcing imperialism and colonial attitudes, often unconsciously” (p. 24). Regardless of their backgrounds, students are often forced to intake information in an uncritical and passive manner. Overall, each of these critical pedagogy theorists ask for educators to substitute the teacher-centered approach, to achieve a non-alienating classroom, and to suit the needs of each student.
**Applying Critical Pedagogy to the Music Production Classroom**

In the music production classroom, teachers must reflect on hidden truths and be aware of their surroundings by including diverse and inclusive classroom decor and content. Additionally, teachers must re-evaluate their power relations in the classroom and accept that both teachers and students can learn from each other. According to Wright (2021), “a fundamental principle is that inequalities exist, affecting life chances of individuals within and between societies” (p. 319). Therefore, for a change in classroom power structure to occur, Torrez (2012) suggests that one must begin by “rejecting their privileged places in society and work in solidarity with those forced on the fringes” (p. 135). Teachers can begin this shift by transforming the teacher-centered classroom into a learner-centered environment. This provides students more opportunities to be heard and share their experiences with others. Other inequalities in the classroom derive from disproportions found in society, such as access to resources due to socio-economic status. It is the teacher’s responsibility to address these disparities and provide opportunities, for example, effectively handling the digital divide (Dijk, 2020) by working in groups, or setting achievable deadlines based on in-class time allocation, without relying on students to complete work outside of class.

There is a hidden curriculum buried within popular music education because what we hear in most recordings is generally produced by middle-aged white men (Millman, 2021). The invention of hip hop and other genres diversified who was behind the soundboard (Brown, 2006) yet, diversity continues to be limited to this day, especially when considering gender (Armstrong, 2008; Brooks et al., 2021; Fournet, 2019). There are usually no faces associated with those behind the making of the recordings, therefore a teacher must acknowledge this hidden curriculum when engaging with music production.
Music educators can reject the inequalities found in the curriculum by applying music production since the concepts are diverse and can be personalized to address the interests and needs of every student. Furthermore, this design offers additional opportunities for students beyond “informal learning” (Green, 2008), because students are given the choice to work with songs from any genre, and could choose to work independently, or in collaboration with other students online that are not in their classroom (Cremata & Powell, 2017), and may engage with non-performance roles. However, the informal learning framing proves to be an excellent starting point for moving away from a teacher-centered music classroom and working towards a learner-centered environment. Musicians today create music differently than they did decades ago when Green conducted her 2008 study on informal learning. Therefore, for my study, I chose to expand on her ideas by investigating and examining how students experience music today. I expanded her ideas by investigating the implementation of a music production curriculum in elementary schools. Even though some academics in popular music use hip hop and electronic music when discussing production-based programs (Kuhn & Hein, 2021), I would like to remind readers that all genres, especially when recorded or played live with microphones, are in fact produced. Most popular music studies are investigated at the secondary and post-secondary levels (Anthony, 2023; Stefanic, 2019; Tobias, 2010); however, I applied a frame at the genesis of when one formally engages with music in schools, which is at the elementary level.

**Music Production in Elementary School**

In Ontario public elementary schools, each child receives 40 minutes of music instruction per week at minimum. Therefore, to make this limited amount of time valuable, the pedagogical approach and content provided to students of this age should be carefully crafted through two forms of engagement, known as procedural and substantive (Nystrand, 1991). Procedural
engagement is the process of accurately following procedures. These procedures are generally the rules and routines of the classroom and the basic common understanding students need to complete specific tasks. In the production-based curriculum, procedural engagement would consist of knowing the basics of navigating a computer and how to find and use the common functions of a DAW such as play, record, and stop.

In contrast to procedural engagement is substantive engagement. Substantive engagement consists of achieving personal academic goals and demonstrating a deep understanding of a task. In a production curriculum, students can demonstrate the deep understanding of a task by making conscious decisions and explaining how they obtained the certain sounds they were wanting to achieve when working with a DAW.

Currently, the music curriculum is designed based on the teacher’s delineated musical experiences, which are generally found within Western art and jazz performance-based paradigms, or through popular music known as “dad rock” (Gordon, 2018; Larsen, 2017). In the music production curriculum, the role of the teacher is similar to those found in Green’s (2008) informal pedagogy, where the teacher helps each individual student by guiding them and suggesting tasks that will help students achieve the objectives they have set for themselves. The informal teacher will have to stand back and remove themselves from the podium. They will have to develop qualities of being flexible and be open to student song selections and perspectives.

In the non-traditional informal approach, knowledge is transmitted in a positive environment where students are encouraged to explore their interests. Traditionally, teachers expected students to describe what they were doing verbally, but in the production curriculum, teachers could engage in tacit knowledge where students demonstrate an understanding in other
ways, which in this case was done aurally. The students in this study learned new concepts by watching instructional videos, applying these concepts to their projects, sharing knowledge with peers, and sharing their work aurally with the class by playing their songs. Tacit knowledge is when students have opportunities to learn from someone with experience, engage in continuous practice to apply new skills, and be placed within a specific social environment (Johannessen, 2022). When the distribution of power is weakened between teacher and student, this provides students ample opportunities to explore their own interests in a formal environment and allows them to be the person with experience. This framing could affect students differently according to their backgrounds, which teachers need to understand and consider when applying a music production curriculum. Depending on past experiences, not all the students will be comfortable working in an independent environment. Therefore, it is the responsibility of the teacher to provide their students with a welcoming environment.

The teacher should acknowledge the formats with which students experience music today, including but not limited to listening to music at home, jamming with friends, or creating and sharing music on computers (Vestby, 2019). It should be noted that most elementary students experience music by listening to recordings as opposed to attending live concerts (Beyt, 2022). Before the internet, primarily in the 1980s onward, the music industry controlled how listeners consumed music, whether it be via the radio, or on cable television channels such as MTV in the United States or Much Music in Canada (Kinskey, 2014), with aural sounds being connected to visual representations of performers playing instruments.

Now, with social media, the consumption of music is not as controlled by the music industry, and anyone, such as independent artists and amateur musicians can upload and share their music online to social media sites such as YouTube and TikTok. Listeners have options that
extend beyond the music produced by major labels when it comes to choosing the music they want to consume. These songs are not only associated with instrumentalists as they once were, but they are also now often associated with dances, lyric videos, or aspects other than instrumental performance. Because of this, when teachers were students themselves, they did not have the same inherent musical experiences that students are having today and must therefore be flexible to these new modes of experiencing music. As Green (1988) highlights, “throughout music history, stylistic revolutions have caused sensation amongst contemporary listeners, whose inventions towards musical processes and whose understanding of delineated meanings were rudely confounded. Hence, their musical experiences will at times be negative or aggravating, or both” (p. 43). The musical experiences of today would seem relevant to independent artists rather than to popular artists. Therefore, rather than examining how popular musicians learn (Green, 2002; 2016), I would suggest for scholars to examine how independent artists learn (Bell, 2014; McArton, 2023). By doing so, teachers can celebrate the effort put into the production side of a song and the effort put into sharing this song, as this can change the negative attitudes about the “simplicity” of pop music (Dixon, 2018), if the debate of simplicity versus complexity is an issue (Percino et al., 2014; Varnum et al., 2021).

Informal Learning

In Green’s seminal (2008) work, *Music, informal learning, and the school: A new classroom pedagogy*, she recognizes a disconnect between musical experiences in the general music classrooms and the musical experiences that students encounter outside of school. She therefore advocates for a new pedagogical approach. However, relevant to the time of publication, her design was based on how popular musicians of yesteryears learned (Green, 2002), and her study focused mainly on white male guitar-based rock (Allsup, 2008). Moreover,
her design intentionally omitted genres outside of the rock guitar paradigm (Bell, 2016). The impact of Green’s research has indeed influenced many other academics to explore avenues beyond the traditional Western art, teacher-centered models. Take “Modern Band” for example (Knapp et al., 2023; Powell, 2023); this approach encourages educators to teach informally and use instruments typically associated with rock music to perform popular music cover songs with whole classes as a band. In other cases, teachers purchase popular music repertoire arranged for wind band, orchestra, or choir to play in a traditional Western art ensemble. Although these approaches are progressive in their manner, most of these pedagogies utilize recordings to encourage students to develop performance skills, yet they omit the process of listening and producing a recording with a technical ear (Corey, 2012). Moreover, Bernard and Rathgeber (2021) warn teachers of the “possible dangers inherent in embracing resources and ideas from organizations without thinking and reflecting on the implications of such actions” (p. 354). They relate consumerism to popular music pedagogy, which is also a concern when engaged with music technology, as many companies tend to push their products.

Most of Green’s (2008) concepts regarding the role of teacher and students serve as a good model for the music production curriculum. However, I would like to highlight the absence of live amplified and recording practice concepts within her proposed five stages of informal teaching and learning strategies. Therefore, for my study, I closely examined her second principle and expanded these ideas to reflect a music production curriculum in elementary schools.

**Green’s (2008) Principle Two**

Lucy Green questioned the traditional approaches of classroom music education and searched for alternative methods to modernize classroom music pedagogy. To do so, she
examined how popular musicians learn (Green, 2002) and created a secondary school curriculum based on the informal learning practices she examined (Green, 2008). She developed five principles for educators to follow when using an informal approach: (a) students learn music that they choose and identify with, (b) students learn by listening and copying recordings, (c) students play and learn alongside friends, (d) holistic learning, and (e) integration of listening, performing, composing, and improvising (Green, 2008). Furthermore, Green (2016) discussed some obstacles when trying to implement informal learning practices, which have to do with the reification of classical music in schools. She explained that it, “takes on the appearance of possessing greatness [and] the high status attached to classical music seem to be justifiable - or legitimate - and necessary, and it would be morally wrong for a society to ignore this music” (p. 7).

A production curriculum welcomes all genres of music, with a focus on the process of recording, as opposed to the process of developing instrumental performance skills. I used Green’s (2008) theoretical framework of informal learning to examine my music production curriculum and determined which readjustments were needed, especially for the purposes of delivering such a curriculum to elementary-aged students. I began by readjusting stage two of her five stages of informal learning. Stage two is titled, Modelling and Learning with Popular Music. This stage asks students “to copy the music from a recording and make up their own version of it as a band” (p. 26). In other words, students are expected to listen to a recording, and then give a representation of the sounds they heard, and play them live on instruments, without any fundamentals of electronic equipment or recording concepts. Furthermore, Green does not mention the fact that some sounds may not be reproducible without production techniques and approaches this pedagogy with a performance lens, which is the dominant paradigm within
music education. Therefore, for my study, students worked on developing a technical ear (Corey, 2012). They were provided with information on how recordings are made, and they had access to videos explaining how sounds are converted from physical instruments and live singing to the digital domain, and how this music can be manipulated once it is recorded.

Moylan (2020) explains, “traditional music analysis is bound to the score and its content (p. 12)...[however, a] recorded song is sonically different from a live, unamplified performance” (p. 15). Therefore, music analysis should consist of understanding music production concepts and how sounds are shaped and manipulated digitally. When students are copying recordings by ear, they should understand that some sounds are irreproducible on physical instruments without the aid of technology. Furthermore, they should understand that they are trying to reproduce a digitally manipulated sound on a physical instrument. Perhaps students should learn the opposite first, which would be to recreate a digital sound as opposed to a physical sound. Bennett (2019) expresses that listeners are not only immersed with “the same song that millions of individuals share, but the same experience of sound, from the same recording take, with the same amendments, deletions, augmentations, and effects” (p. 116). Therefore, the process of recording, which is capturing, editing, and manipulating sound, should be examined early since this process can be daunting as it takes time.

To understand what is being heard on a recording requires concentrated and focused listening. This is what Green (2014) describes as “purposive listening” (p. 229). Purposive listening is when one listens to what is being heard consciously and adapts what they hear into their own practice. The dichotomy of purposive listening is “distracted listening” (p. 229), which is when music enters the mind unconsciously, such as when it is being played in the background. Furthermore, in the classroom, Green directs purposive listeners towards performance concepts
when listening to recordings, whereas I directed listeners to production concepts when listening to recordings because “an engineer should be able to identify sonic features that can positively or negatively impact a final audio mix” (Corey, 2012, p. 7).

When copying a recording by ear, students may not be equipped with an abstract understanding of timbre, which could distract or deter them. For example, the notes of a synthesizer on a highly produced recording are played in the same way on a piano, but will the different sounds distract students from learning the basic musical elements? They will want to recreate a sound just as they hear it on a recording, as asked by Green (2008). It is quite an expectation from a teacher to expect a student to recreate the sounds heard from a manipulated sound source without any reference point to its original state. A music production curriculum can use elements of Green’s design, but recontextualize the ideas to properly attend principle two of this pedagogy, after developing knowledge in production concepts. Arguably, the performance skills that were required prior to the digital age should not be prioritized when compared to the skills required to take part in the modern world of making music, which focuses on the skills found in music production. We are at a pivotal point of discussion, action, change of mindset, tools, and approach. The independent artist acts by creating the music they choose to create, either alone or with the help of a team, and then produce, record, manipulate, distribute, and advertise it as they choose to do so. To continue building off the ideas of informal learning and critical pedagogy, I added punk pedagogy concepts to my study.

**Punk Pedagogy**

Punk pedagogy is an extension of the pedagogical frameworks of constructivism, social constructivism, and critical pedagogy (King, 2021). According to Witkowska-Tomaszewska (2019), constructivism is when “students are involved in developing their own knowledge and
understanding of the world, while teachers learn how to help them with this, [and it is] a platform for developing self-decision, self-steering, and autonomy” (p. 147). Social constructivism is based on the same principles as constructivism, with the addition that social interactions and the use of language are shared rather than individually experienced (Lynch, 2016). Critical pedagogy involves critical thinking and encourages students to critique structures of power and oppression (Giroux, 2011). Furthermore, punk pedagogy promotes a do-it-yourself approach, similar to independent artists who exercise autonomy, interact socially, and “reduce” power structures (Furness, 2012; Smith et al., 2017).

I have included punk pedagogy in my study due to its modern principles, which include developing independence while emphasizing the importance of collaborative learning and social interaction, embracing diverse musical practices, and advocating for equality and equity. This framework encourages that materials be made available through open-access sources, and that students have the flexibility to pursue their musical interests in the classroom, may it be in performance or not, as they would voluntarily at home and in the community.

The social aspects of punk pedagogy are not to be confused with the genre of music. Its term originated from the magazine Punk; punk pedagogy develops social identity, a feeling of security, a sense of acceptance, and inclusion (Letts, 2005). Being punk refers to someone that expresses their individuality by adhering to personal beliefs, which may challenge the status quo, and advocating for change aligned with those beliefs.

In this study, students began working with the music production curriculum using Niknafs’ (2017) description of a “bottom-up design” (p. 37), which is practiced by musicians outside of school. This design has a self-organizing system, which has unpredictable outcomes due to experimentation. This ambiguity comes from listening to music that one enjoys and
becoming inspired and influenced to create new sounds. Currently, school music education is designed according to Niknafs’ (2017) explanation of the “top-down organization” (p. 39). This design encourages students to analyze and perform music of the past, often specific standards. Outside of school, people would call this a cover band.

Music educators are not necessarily the experts when it comes to creating new music. Typically, educators “schoolify” music (Cremata, 2019). This means they select music from those who have created it outside of school, formalize the repertoire after it has been popularized, and teach concepts based on its analysis. There are many genres of music that can have a significant impact on lives, such as non-commercial underground music, yet most often, music education programs continue to focus on popularity.

The term “popular music” is not one I wish to use, as the term is related to consumerism and commercialism. Dougan (2017), explains it as “branding experts [and] business leaders” (p. 93). “Popular” is not a genre of music, nor a type of music that everyone enjoys. This music is primarily produced by big record companies with extensive budgets that hold a monopoly on commercial radio and film. Popular music does not remain popular forever. It is arguably based on the profits it can generate for certain businesses. The topic of “popular music” is not the focus of my study, however, I acknowledge that the term has been established within the field of music education and may include not-so-popular music as well, therefore for the purpose of this research, I welcomed all genres of music regardless of popularity and focused on the music that students enjoy listening to. There are many underground bands that have created masterpieces, and played music for the sake of playing music, and some students want to do the same.
Using Punk Pedagogy in the Classroom

If “punk is wholeheartedly opposed to the idea of experts” as O’Dair and Beaven (2017, p. 81) exclaim, why would one want to use this lens in the classroom? Would it be complete chaos, with students doing as they please, and teachers fighting to restore order? As a punkademic, a teacher provides space, time, and a judgement-free learning environment for students to explore new possibilities (Furness, 2002). What tends to be forgotten in formal, and informal learning spaces is the idea of age groups (Cremata & Powell, 2017). Punk pedagogy mainly promotes the do-it-yourself ethos, with open-mindedness and inclusiveness (Smith, 2017). However, if popular musicians learn by working alongside friends (Green, 2008), then why are schools limiting who your friends may be? Schools divide children into age groups, and if there are too many students for one classroom, a second classroom is created, and teachers decide who goes into which room. When music class begins, your bandmates or friends, are determined by which classroom you are in. Bands outside of school have no age barriers. They work with people that share an interest, a passion, common goals, and diverse skills and interests. Even though informal music pedagogies promote smaller ensemble sizes than those in formal pedagogies, there are limited options for students to work with those who share an interest. As Kafara (2017) illuminates, “traditional classroom setting[s] [are for] students all the same age, [and] one teacher in the role of authority” (p. 117), yet informal learning suggests following a model where students play alongside friends, therefore “why could we not do the same in education, [where] anyone could attend class, regardless of age?” (Kafara, 2017, p. 117).

Schwartz (2017) describes punk learning as a “form of collective pursuit of enjoyment and pleasure” (p. 128). When creating music outside of school, students choose their own topics and create music that matters to them. Teachers can give students control of their education by
facilitating the process, rather than controlling the process. When a concert program is created, it should be created for the students, not the audience. When a band outside of school performs, they decide what they want to play, for the sake of playing. In many schools, teachers choose the concert program. In punk pedagogy, students have autonomous choice over the selection of songs, regardless of popularity, what others may think, or what the audience may or may not enjoy. They can also choose not to perform and focus on non-performance roles that a music production curriculum offers. For numerous reasons, there are many students that do not want to perform on stage. In most music programs, teachers expect that all students are to perform on stage during concerts. In punk pedagogy, there are non-performance roles that students can undertake, such as lighting technician, live sound engineer, stage manager, and many others that reflect the music industry. These roles provide more opportunities for students and may lead to more diversity and inclusiveness. Furthermore, in a music production program that utilizes punk pedagogy, one can share their recordings instead of performing live, or one can perform live with the aid of produced sounds.

Power Structures

Even though recordings are a representation of live performances, signal processing and mixing can have a significant compositional effect and affect how one enjoys listening to certain recordings (Hodgson, 2019; Oltheten, 2018). Due to accessibility and affordability, many people are now able to experiment with these recording features on multiple devices. To demonstrate this, I have found two YouTube videos; one that represents an amateur, and one that represents an expert in the music industry. In both videos, the musicians are creating songs in multiple styles of music, yet they demonstrate how non-performance techniques can alter a genre. In the first video, Scott Jacoby, a famous producer and mix engineer, explains his process of altering
genres with mixing concepts (Waves Audio, 2019). In the second video, a YouTuber sings different songs while his brother uses production techniques to alter the genres (Black Gryph0n, 2018). These two examples display how amateurs and experts acquire non-performance skills, or production techniques, outside of school. These skills are not associated with music curricula, yet they are crucial to the creation of recordings, which are listened to in schools. This matters to punk pedagogy since amateurs and experts could access and use the same information. Also, one must understand that punk pedagogy does not have a designated set of steps to achieve certain goals. Punk pedagogy “extends beyond fixed notions of what constitutes good music, or a good student” (Kallio, 2017, p. 166).

**Summary of a Punk**

Overall, there are many descriptive terms that academics have used to describe punk pedagogy with the most common terms being “do-it-yourself ethos” (Kahn-Egan, 1998), community (Torrez, 2012), inclusivity (Smith, 2017), collaboration (Diéguez, 2017), and that anyone can-do-it (Bestley, 2017). In addition to these terms, other academics describe punk pedagogy as one which disrupts the traditional classroom arrangement by embracing differences (Kallio, 2017); inviting radical imagination (Niknafs, 2017); promoting passion over qualification (Harniess, 2017); and, championing empowerment and increased access (Kafara, 2017). Moreover, the primary aim is to put student experiences at the core of their education (Smith, 2017) by “bridging the divide between music in schools and students’ ‘real world’ musical experiences” (Kallio, 2017, p. 156).

Being punk is often associated with derogative definitions of a youth subculture of the 1970s and 1980s, when in fact, it is a lifestyle for those who do not live within the status quo (Furness, 2012). There are many students who want, and do fit in within the status quo,
therefore, how does a punk collaboratively work with those who adhere to different ideologies than their own? Many students prefer working within the confines of a traditional framework and base their accomplishments on letter grades. As a punk pedagogue, I must be mindful of these students as the punk pedagogical approach focuses on informal learning. The punk pedagogue is flexible and ensures that each student has an equal opportunity to learn. Furthermore, there are many teachers who enjoy being in a position of power, being the expert, and the holder of knowledge (Johnson & Matthews, 2020).

According to the literature, numerous attempts to apply punk pedagogy were made with older students “not recognizing that university students have lived through more than thirteen years of schooling fashioned on the banking model” (Torrez, 2012, p.139). In Gordon’s (2012) study, students that had experienced schooling through the banking model felt as though “DIY production is far more taxing, independent, and implicitly critical in practice” (p. 107). When Torrez (2012) attempted to bring punk pedagogy into her university course she quickly realized that “students were uncomfortable in such a learning environment” (p. 138). Without change at the elementary school level, students in the post-secondary levels may have difficulty adapting to a learning environment with an informal approach.

In academia there is a lot of writing that is “purely performance without action” (Torrez, 2012, p. 132). People write and critique, but who is out there making change occur, and how are they doing it? The biggest critics of punk pedagogy are the punkademics themselves when attempting DIY projects and not necessarily succeeding. Some of them even feel as though they are betraying what being punk stands for by becoming academics and working in institutions (Gordon, 2012). Regardless of the failed attempts to apply punk pedagogy by other punkademics
at the university level, this study showed that the process of applying music production in elementary schools with the punk pedagogy lens was successful.

When teaching instruments, if the technique is “wrong,” it is more difficult to unlearn. The same principle may apply when one engages with informal learning after years of being immersed in a formal learning environment. This is why I chose to conduct my study in elementary schools as opposed to the older levels, since good habits can be learned early, and it is easier to experiment in any setting as everything is new. In my own experience, there is far less fear to try new things at a young age. Described in later chapters, in this study, punk pedagogy complimented and expanded upon some of Green’s (2008) suggestions for informal learning. Students had the freedom to explore any genre of music regardless of physical or digital instrumentation. They could work individually or in groups of any size, regardless of their bandmates being in different classes than their own. The primary aim was to create a DIY environment tailored to student needs, whether it be in performance or non-performance roles. The students were encouraged to experiment freely within these roles and were provided access to a collection of videos to meet their specific needs.

**Recapitulation**

This study was framed by the concepts of critical pedagogy (Giroux, 1978), informal learning (Green, 2008), and punk pedagogy (Smith et al., 2017). Using this framework, I examined the influence of music outside of school on student interests and its connections with school music through the incorporation of music production in the classroom. As the music industry constantly adjusts with the modernization of pop culture (Howard, 2012), public school music education should consider adapting to these changes as well. The use of recordings has been present in the music industry for over a century, yet its use in schools has been limited to
music appreciation and passive listening. In line with the principles of critical pedagogy, which encourages students to question, analyze, and challenge existing structures, when listening to recordings, students should critically analyze what they are hearing to begin recognizing the differences between live music and recorded music. Rather than passively obtaining information from teachers, students can be given opportunities to explore the process of making a recording on their own by experimenting with sounds on a DAW. Students can also explore various videos independently to help them acquire new knowledge as they would outside of school, and teachers can facilitate the process of applying this knowledge.

Although the five stages of Green’s informal learning concepts were used as a guide throughout this study, I expanded the ideas of stage two, which asked students to copy recordings by ear. The expansion of this stage consisted of implementing a music production curriculum in elementary schools where students worked independently, or with friends inside or outside their classroom. Imagine a teacher playing a recorded song in their classroom. The sounds from this recording would be perceived differently within each student’s consciousness. Even though each student in the class is hearing the same recording at the same time, every individual will experience the recording differently based on their previous life experiences, personal backgrounds, and musical training. This type of experience “is an interactive process shaped by his or her own personal history, biography, gender, social class, race, and ethnicity, and by those of the people in the setting” (Denzin, 2005, p. 6). Classroom experiences, as described in Green’s (2008) informal pedagogy, can be meaningful when students choose their own instruments, songs, and group members, yet critical listening and technical ear development when engaging with recordings may enhance these experiences. The technical ear enables students to listen for concepts beyond performance techniques and to hear the audio engineering
concepts that manipulate, and shape sounds to “perfection” (Blackwell, 2013). Students may have never attended a live concert of their favourite bands. When they do, they may be quite surprised to hear them live as they may not sound like their recordings, unless the band uses production techniques while performing live.

Punk pedagogy can enhance a positive classroom experience through diversity, inclusion, equity, and a do-it-yourself attitude. In such an environment, students are provided with opportunities to pursue their interests by being given choices in both performance and non-performance roles while they work with the music they enjoy. Connelly’s (1990) research indicates that “in understanding ourselves and our students educationally, we need an understanding of people with a narrative of life experiences. Life’s narratives are the context for making meaning of school situations” (p. 3). Recognizing that each student may be at a different stage of learning, even within the same class, they can be offered the choice to work individually or with partners of their choosing. In the next chapter, I discuss the methodology chosen to conduct this study.
CHAPTER 3
Methodology

In the previous chapter, I described the theoretical framework for my study and highlighted that the current state of music education, may it be formal or informal, tends to focus on performance concepts rather than music production concepts. I discussed how I expanded Green’s (2008) informal pedagogy by applying music production techniques in elementary schools through the lens of punk pedagogy. I am expecting critiques from teachers who have a fear of being “replaced” by informal teachers. In Allsup’s (2008) response to Green’s informal pedagogy, he states:

The music teachers [involved in this pedagogy] could easily be outsourced in favour of cheaper, less experienced, and under-educated labor. If the tenets of informal musical learning are to be adapted, second-wave research needs to provide broad and self-critical illustrations of what constitutes a qualified, indeed highly qualified, music teacher. (p. 5)

To teach in an Ontario school, one must be certified by the Ontario College of Teachers. I examined a specific school board, in which I work as a music teacher, that implemented 89 new music positions in 2018. Most of the teachers that were given the job of teaching music full time were non-specialists, meaning they did not have formal music education training from a post-secondary school, however, most of these teachers were placed in music positions since they either informally played music, or have a love for music. Although they may not be “highly qualified” in music as described by Allsup (2008), they are informal musicians who have teaching certificates, hence why they are considered highly qualified educators. In elementary schools, the expectation is that teachers can potentially teach any subject. Being a specialized
music educator is not required to teach elementary music in Ontario, however, having a teaching certificate is mandatory.

During the 2018 implementation program for this school board, I was given a leading role as a mentor for these teachers since I focused on music technologies in my classroom. In 2021, my school board asked me to provide them with a video to show them how I was applying technology in my music classes that could be used as a resource for new teachers. The video that I created for them (https://www.youtube.com/watch?v=2CdS-fau_sA) depicts how primary students engaged with DAWs, how junior students were involved in a YouTube project, and how intermediate students were creating tutorials as a DIY project. As I was exploring the concepts of music production as shown in this video, I was not fully satisfied with the sonic results of the recordings, however, the process of song writing, recording, mixing, video recording, editing, and explaining what one has learned, had positive results. Even though the students were able to play their instruments, the sound quality of the recording does not evidence this very well. This is the same issue that many institutionalized musicians face, which leads me to believe the order of learning instruments before production needs to be reversed. I therefore expanded my experiences in music production through practice, independently with YouTube, and from the courses I was taking in my post-secondary training. To gain further insight, I presented these concepts at the Association for Popular Music Education (APME) conference in 2021 and discussed the topic with numerous graduate students and music teachers. The experiences of the other teachers at this conference were also limited in music production, but we were able to understand each other by comparing music production concepts to conducting band rehearsals. For example, we related the sonic picture and a 3D canvas of a recording to a band room set-up and rehearsals including how: (a) the horizontal plane of panning represented seating
arrangements from left to right, (b) the vertical plane of frequencies represented the balancing of instrumental timbres, and (c) the proximity plane of reverb and volume represented the front, middle, and back rows of an ensemble. This led me to believe that most music educators would have less fear to approach music production concepts if they realized that it is very similar to what they already know. However, a resource and pedagogical approach needed to be created, which led me to this study. I have seen first-hand that students are interested in music production concepts. I have seen first-hand that music teachers, administrators, and school boards support the ideas of applying music production concepts. My literature review shows that academics are calling for additional research on this topic (Bell, 2016; Hodgson, 2019; Tobias, 2010). I also recognize that the attempts to apply music production in elementary schools are limited (Evans, 2019; Ruthmann, 2007). Therefore, I approached this research in three phases.

**Phase 1**

In phase one of this research, I recruited industry professionals who were willing to inform the study’s design and remain engaged during the application and reflection stages of the study. These professionals provided information about how independent artists learn, create, produce, and distribute music with exceptional sonic qualities. The professionals were mainly audio-engineers but were also involved in numerous music industry roles throughout their careers.

**Phase 2**

In phase two of this research study, I applied the music production concepts suggested by the industry professionals with my students at school, alongside three other teachers and their students. The students explored how to create and recreate sounds as found in recordings. They engaged in listening activities, composition activities, and distribution activities all within the
music production paradigm. The concepts were applied as a flipped classroom format where students accessed videos explaining and guiding them through music production concepts as they created music. They were instructed to skip to the lessons appropriate to their needs.

At first, I created video lessons of myself explaining concepts. I created the following: (a) video lesson on listening to recordings (https://www.youtube.com/watch?v=f_Utw7QqxU), (b) video lesson on tracking (https://www.youtube.com/watch?v=eN-7XmYUJxs&t=2s), (c) video lesson on navigating Soundtrap (https://www.youtube.com/watch?v=ovI7tVWRiew), and (d) video lesson on creating EDM tracks (https://www.youtube.com/watch?v=yXbWiwVEY&t=2s). I quickly realized that the format of these videos was no different than those already found on the internet. Therefore, through the process of participatory action research, the participants and I planned, applied, observed, and reflected on a music production curriculum, and created a list of video resources that would be beneficial to add in the flipped classroom. The process included troubleshooting and exploring various production concepts, eventually creating a new resource idea for phase three.

**Phase 3**

In phase three of this research study, I created a resource based on the collaborative findings of this study for teachers to use in elementary schools, and for students to access from home. It is an open access animation series called *Dr TooNice* (https://www.youtube.com/@DrTooNice-rz6yy). The objective was to have a unique method of delivering music production concepts to elementary students, as most videos on YouTube reflect those that I was making at first, which was one person filming themselves and screen sharing their computer. The animated character was designed to capture students’ attention. Furthermore, the content delivery was designed to be delivered at a pace that elementary students could
follow. The videos contain content on creating songs using digital and physical instruments, including how to record your voice. Additionally, the videos provide examples of the functionality of production equipment, plus some techniques on mixing and mastering music. In the following sections, I explain how I implemented the music production curriculum with the qualitative methodology of participatory action research.

**Qualitative Research**

According to Creswell and Creswell (2018), qualitative research is “an approach for exploring and understanding the meaning [of] individual groups [that] ascribe to a social or human problem” (p. 4). The groups that I examined for this study consisted of music industry professionals, elementary school music teachers, and their students. According to Merriam and Tisdell (2016), qualitative research is appropriate when one “ha[s] an interest in knowing more about one’s practice, and indeed improving one’s practice” (p. 1). Therefore, I added myself and my students to this study since I am an elementary school music teacher who wishes to improve my practice, while gaining an understanding of what other teachers are doing as well. One of the questions the participants and I explored revolved around the idea of whether music production pedagogy should take precedence over the current elementary school music education model of instrumental performance. Regardless of the modes of learning, formal or informal, music production seems to be secondary to instrumental performance in schools, however it is the primary mode of experiencing music outside of school (Beyt, 2022). As music education progresses towards the inclusion of more genres, like those found in popular music programs, the process of applying music production concepts require a deeper understanding. This is especially the case when teachers expect students to reproduce digitally manipulated sounds on instruments, rather than reproducing them on digital platforms (Giddings, 2019; Green, 2008;
Musco, 2006). Even though teachers are expecting these results, the techniques and sounds heard on recordings are often irreproducible without the aid of computers and studio techniques (Manzo, 2016).

To investigate this pedagogical issue, one must critically understand the problem. To understand the problem, I examined how independent artists learn, create, and distribute music. Doing so with a qualitative design gave me the opportunity to understand the perspectives of the participants through observations, discussions, and practice. When examining music production teaching pedagogies as a teacher-researcher, I did not control nor manipulate what was being studied, as one would do in quantitative research (Cohen et al., 2018; Creswell & Creswell, 2018; Merriam & Tisdell, 2016). Rather, I examined participants in their professional spaces, as Creswell and Creswell (2018) attest that the “goal of the research is to rely on the participants’ views of the situation being studied” (p. 8), in a real-world setting, and in specific social contexts (Merriam & Tisdell, 2016). Therefore, I collected data inductively as teachers were teaching in their classrooms, students were learning in their schools, and engineers were producing in their studios. I attended these sessions via Zoom, to conduct observations, interact in interviews, and obtain documents. The reason I chose to obtain my data through Zoom was because I was working as a full-time teacher during this study, hence my work hours were the same as the other participating teachers and students. As for the industry professionals, the choice to use Zoom for my observations are described in Chapter 4. When observing via Zoom, I suggested that teachers place a camera providing me with the best overall view, while leaving out students who did not have video recording permission. For one-on-one conversations with students, I asked the teachers to carry a camera that supported Zoom, such as a Chromebook, and point it only towards students with permission to be video recorded. The Music industry professionals placed
their cameras accordingly. When I recruited the participants and shared my ideas about implementing a music production curriculum in public elementary schools, I was transparent about my perspectives, biases, and assumptions regarding music production with younger students.

**Ontology and Epistemology**

When choosing this research topic, I reflected on my personal experiences and how they led me to believe music production should be implemented in elementary school music classes. My beliefs and opinions were developed by preconceived notions. According to Cohen et al. (2018) these preconceived notions, or assumptions, could be divided into two sets:

The ontological kind - assumptions which concern the very nature or essence of the social phenomena being investigated, [and] an epistemological kind [which] concern the very bases of knowledge - it’s nature and forms, how it can be acquired and how [it can be] communicated to other human beings. (p. 5)

My actions, beliefs, and worldview are guided by an underlying philosophy rooted in social constructivism (Creswell & Creswell, 2018). Social constructivism describes an approach to learning in which one interacts and co-constructs knowledge with others in their social contexts (Smith et al., 2017). This term interacts well with Merriam and Tisdell’s (2016) framing of interpretive research, when they “assume that reality is socially constructed; that is, there is no single, observable reality” (p. 9). It was therefore necessary to obtain data portraying multiple peoples’ experiences and opinions.

This takes me to the topic of subjectivity and objectivity. To put it simply, subjectivity is based on, or influenced by, personal opinions, whereas objectivity is not influenced by personal beliefs or feelings but is based on facts. Even though opinions matter, it was factual evidence that
drove my data collection during research. To make my research design meaningful, I looked at the broader picture of objectivity derived from diversity and inclusion, which Haraway (1988) describes as the “joining of partial views into a collective subject position” (p. 590), which she terms as partiality. Partiality is the fragmented opinion of what sociologists consider subject position (Bradbury-Huang, 2014). For example, in my research, the participants, or “subjects,” as Bradbury-Huang (2014) suggests, were music teachers, their students, and industry professionals. All these participants experienced music production differently, which would therefore invite different perspectives. These perspectives each created partial expectations and limitations. These expectations and limitations helped design a collaborative music production curriculum created by community members from factual data retrieved from a real-life context, which can be applied to music pedagogy in schools.

The more I become involved in music production, the more I am unable to hear music as I used to. Now, I hear mixes and wonder: What are the engineers doing? What is making the song sound this way? For this, and other reasons, I believe that music production should be an integral part of all music education, but I wanted to know if others felt this way as well. This is not a new concept given the manipulation of recorded sounds has been around for over a hundred years. The difference now is that the population is not exposed to as many instrumentalists as they were in past decades. In the 1990s, the decade that has influenced me the most musically, countless bands played instruments in many genres, and were circulated through video recordings on popular television channels. Even though I was not aware of the manipulated sounds, I still wanted to play the music of all my favourite artists. Today, the bulk of the bands are singing or playing along to MacBooks and drum machines (Bangtantv, 2022; Senner, 2021). I can only imagine that students would be influenced by these artists as I was in the 1990s.
Therefore, music education, in my view, needs to progress with these new methods of experiencing music, rather than focusing on the past. This was why I implemented a music production curriculum while obtaining the perspectives of students and industry professionals. I wanted to be clear on my beliefs following the guidance of Creswell and Creswell (2018) who advise that “the role in the study and personal background, culture and experiences hold potential for shaping interpretations, the background of the researcher may shape the direction of the study” (p. 182). I constantly reflected and was open to new directions and did my best while analyzing data to question my attitudes and values and change my habitual actions to understand my role and beliefs in relation to others (Bolton, 2010). I agree with Randles (2012) when he says, “what lies ahead is more important than preserving the traditions that have gone before” (p. 44). However, I had to be open to all my participants’ perspectives, and not guide anyone towards my beliefs when observing and interviewing them, as I wanted to capture their views.

While music teachers spend a lot of time asking students to perfect acoustic sounds, it’s important to recognize that the majority of both professionally performed live music and recorded music across various genres are manipulated using computers. Additionally, some genres depend entirely on computers to create music. Working on tone means knowing the frequencies of EQs. Working on dynamics is the ability to work with a compressor. Creating rhythms can be done with the use of sidechaining or using cut and paste. Dealing with intonation is knowing how to adjust notes with pitch correction. In the following section, I discuss the methodology used to conduct this study, which was participatory action research (Cohen et al., 2018; Lewin, 1946; Merriam & Tisdell, 2016).
Participatory Action Research (PAR)

I have been teaching music in Ontario public schools for over a decade. During this time, the curriculum has not been updated nor changed to reflect how today’s students engage with music outside of the classroom. As I became more familiar with music production and how it impacts most people’s lives, my interest in researching this topic increased because it addresses the educational needs of students. These students are constantly exposed to produced music but may not be fully aware of its influence on the sounds they hear. To implement change in public schools, supporting data is required. To obtain this supporting data, I conducted research as a full-time teacher, while collecting data from numerous participants. According to Merriam and Tisdell (2016) “the goal of action research is to address a specific problem in a practice-based setting” (p. 4), and that research topics most often come from observing and asking questions about your everyday activities” (p. 76). The specific problem I examined revolved around the integration of music production into elementary music education to address a gap in the curriculum and align it more closely with the musical experiences and interests of my students. However, I did not think one person’s data would be sufficient to support a change in the curriculum, therefore, I recruited music industry professionals, music teachers, and their students as participants to collect supportive data.

The participants and I worked collaboratively to achieve social change in the music classroom, actively engaging in the research process. Participants contributed valuable insights, perspectives, and experiences. Therefore, action research was not an ideal methodology, as it tends to consist of a single researcher developing new knowledge concerning their own practice (Schneider, 2012). The methodology that was most suitable, and closely related to action
research, was participatory action research (PAR) (Cohen et al., 2018; Creswell & Creswell, 2018; Merriam & Tisdell, 2016).

Action research and PAR have similar qualities, yet the main differences in working towards social change are derived from non-academics contributing to the research. Therefore, by choosing PAR, I was able to align my underlying philosophy of community collaboration within social constructivism with my research problem concerning the implementation of music production in elementary school music education, and ground this study within my own teaching, and the collaborating teachers’ practices.

To reflect on student interests, PAR is an ideal methodology since it is a collaborative process (Cohen et al., 2018), where students act as co-researchers to guide and improve aspects of my teaching as needed (Merriam & Tisdell, 2016). Traditionally, there were varying power relations in the classroom, but in PAR, Cohen et al. (2018) explain that this type of research “breaks the separation of the researcher and the participants; power is equalized and, indeed they may all be part of the same community” (p. 441). Furthermore, Lewin (1948) suggests “social research should be one of the top priorities for the practical job of improving intergroup relations” (p. 35). Together, the teachers and their students in my study worked on modernizing and improving their teaching and learning approaches, while music industry production professionals informed content quality and provided new knowledge to aid diversity and inclusion. Chevalier and Buckles (2019) believe including community members in a research project may be “the only way to conduct research ethically and responsibly, with a real concern for people as opposed to extracting and analyzing data for the sole purpose of advancing knowledge and [one’s] own intellectual agenda and career” (p. 1). The main purpose of PAR is to have the voices of community members, especially those that are typically marginalized,
heard in ways that promote social change (Atkins & Wallace, 2012). To work towards social change, one must look at a micro level, and understand that small changes (micro) can lead to large changes (macro). A micro level in this case includes making changes in one school, eventually leading to a macro level change of an entire school board. Atkins and Wallace (2012) claim that “emancipatory social change occurs as a result of the action taken and [then] new knowledge [is] gained” (p. 5). The idea of working towards social change is rooted in the work of the forefather of action research, Kurt Lewin, who was interested in designing a problem-solving methodology (Vana, 2018). This problem-solving methodology consists of a continuous cycle of “planning, action, observation, reflection, revised plan, action, observation, reflection” etc. (Atkins & Wallace, p. 9, 2012). Even though Kurt Lewin is credited with being the forefather of action research, Chevalier and Buckles (2019) highlight that the “commitment to deep societal change characteriz[ing] PAR [was] made by Critical Pedagogy (Freire, 1970), Boal’s Theatre of the Oppressed (Boal, 1985), Reflect (Archer, 2007), feminist anti-racist post-colonial PAR (Lykes & Scheib, 2015), and Critical PAR (CPAR) (Kemmis & McTaggart, 1988; Fals-Borda & Rahman, 1991)” (p. 13).

In my study, I used the industry professionals’ information to create explanatory videos. The other teachers used these videos in their pedagogy and students applied them accordingly. The teachers were asked to take field notes regarding observations and discussions. After each lesson, teachers were expected to keep a written journal or voice notes reflecting on what happened that day. Then, together, the teachers and I shared our reflections to determine what came next as we repeated the process of PAR.

The main objective of PAR as described by Chevalier and Buckles (2019) is to “use science, without the obligation of advancing science” (p. 4). The difference from other
methodologies is that “action research is generally not done on participants; it is done with participants” (Merriam & Tisdell, 2016, p. 51). Ethically, no one was excluded from this study unless they personally chose to withdraw from the study. Furthermore, Merriam and Tisdell (2016) assert “what all qualitative action research studies have in common is that they make use of only qualitative data collection methods, such as interviews, focus groups, observations, and data analysis of documents or artifacts” (p. 53). Overall, Schneider (2012) describes the key goals of PAR as being able “to produce practical knowledge, to take action and make the knowledge available, to be transformative both socially and for the individuals who take part” (p. 153). The information produced went through a process of data analysis, which was “organized and systematic, and built into daily practice to avoid it being overwhelming, or leading to a situation where [my] study [went] on and on, because [I could not] progress until the data analysis [was] complete” (Atkins & Wallace, 2012, p. 14). It was up to me, as the researcher, to determine when I had sufficient evidence.

In summary, my research design met the tenets of PAR as defined by Cohen et al. (2018) in that it:

1. Sought to improve social practice by changing it.
2. Required authentic participation by both the researcher, collaborating teacher, and industry professionals.
3. Was collaborative.
5. Was a systematic process of learning.
6. Involved people in theorizing about their own practices and values.
7. Required people to test their own assumptions, values, ideas, and practices in real life practice.
8. Required records to be kept.
9. Required participants to look at their own experiences objectively.
10. Involved people in making critical analyses of a situation, research, and practice.
11. Started small in small cycles.
12. Started with small groups of people.
13. Required and allowed others to provide a reasoned justification of their work to others (p. 348).

Some contradictions related to PAR consist of quality concerns, since the research is conducted by non-academics, or as Schneider (2012) describes “ordinary people regarded as valid” (p. 160). According to a research project conducted by Cain (2008), when he examined multiple action research projects, he came across “a major review of [a] music education research [project that] reported, ‘action research has had little impact on research in music education and music student teaching even though its potential contributions were expounded 30 years ago’” (Rideout & Feldman, 2002, p. 285). To validate trustworthiness in PAR, Atkins and Wallace (2012) suggest to “gather more detailed and personal feedback [from] critical friends” (p. 12). These friends are encouraged to be critical of the information they are reading without judgement. This adds to a higher degree of validation since additional community members are taking part in the research process. Other issues that may arise may be ethical in nature, where there are conflicting values. Since PAR deals with humans, and in my research young humans in real life situations, it was crucial to have “anonymity, confidentiality, informed consent, and the management of power relations within the research group” (Schneider, 2012, p. 160). Even though there were no areas of concern when approaching this methodology, just as with other
methodologies, supporting data and organization were my best tools as an action researcher.

Data Collection

The most common method of collecting data in action research is from interviews, observations, and documents (Barrett, 2014; Cohen et al., 2018; Creswell & Creswell, 2018; Merriam & Tisdell, 2016; Stake, 2006; Yin & Campbell, 2018). However, the amount of data can be overwhelming if one does not have a plan to collect data or to explore the process, activities, and events participants are involved in (Creswell & Creswell, 2018). Sharp organizational skills were required, and the aid of computer applications helped keep my information carefully organized. The first step in data collection was to obtain the viewpoints of the participants on music production, to make their perspectives, biases, and assumptions transparent. Merriam and Tisdell (2016) explain “qualitative research is fundamentally about examining how people make meaning. Most typically, researchers have analyzed what people say (in interviews or in written documents) and what people do, by observing them and writing down field notes” (p. 65).

I used purposeful sampling to select my interview participants to “intentionally select information-rich, [and] illuminative cases for in-depth study” (Conway et al., 2015, p. 8). I created an email script (Appendix A) that described the study and procedures, and it was sent out by the head of the arts in my school board. The head of the arts had a database that included each music teacher in the school board and she sent an email to all of them at once. Depending on the number of replies, I wanted my participants to be diverse as possible. The purpose was to “collect data from people in their everyday situations” (Conway et al., 2015, p. 98). These everyday situations may be influenced by interests, school locations, and other factors that could provide valuable insights to my study.
Analysis and data are rarely separated during action research. Yin and Campbell (2018) describe this process as analogous to being a good detective: “you must be able to interpret the information as it is being collected and to know immediately if several sources of information contradict one another and lead to the need for additional evidence” (p. 86). Furthermore, data was analyzed simultaneously to predetermine “the variables to examine” (Creswell & Creswell, 2018, p. 19). To organize my data, I created folders on my computer of each participant and used color coding for analysis. In these folders, I inputted observation notes, interview transcripts, student work, photos, and other relevant documents.

Since I used digital technologies to collect and analyze my data, I followed some of the principles of digital ethnography (Hjorth et al., 2017; Underburg & Zorn, 2013). According to Moore (2020), this method of data collection “seeks out and describes the cultures that are made possible or altered by the presence of digital technologies and practices” (4:14). To apply digital ethnography to one’s method of data collection, Pink et al. (2015) describe five principles to follow. These principles direct the researcher to consider: (a) the multiple ways one can engage with the digital, (b) the de-centering of the digital, (c) the openness associated with the digital, (d) reflexive practice, and (e) the unorthodox, or alternative forms of communicating. The multiple ways I engaged with digital technologies consisted of collecting data through Zoom, and audio recordings. Not only was I interested in the content and concepts associated with music production, I was also interested in the role music production played in the everyday life experiences of elementary students (Pink et al., 2015). To investigate this, I de-centered the technology from the content itself, and researched the characteristics and experiences associated with everyday life experiences. For example, I was interested in knowing the role music production played on social media sites such as YouTube and TikTok. I was curious to know if
videos had less views based on audio quality. Additionally, I wanted to know about the conversations occurring on these sites between students, the content of the conversations, and how students formed networks. In the following sections, I describe how I collected data from interviews, observations, and documents.

**Interviews**

Interviews are crucial to action research. Yin and Campbell (2018) reassure that interviews “can especially help by suggesting explanations of key events, as well as the insights reflecting participants’ relativist perspectives” (p. 118). Creswell and Creswell (2018) state that a good interviewer will “focus on learning the meaning that the participants hold about the problem or issue” (p. 182). Therefore, an interview guide for each participating group was created and utilized (Appendix B, C, and D). These guides suggested avoiding why questions and utilized hypothetical beginnings such as “what if or suppose” [and being] devil’s advocate [by using] “some people would say” and “what would you say to them” (Yin & Campbell, 2018, p. 118). Even though each participant group in my research had a different set of questions that best suited their roles (industry professional, teacher, student), I based my interview questions on the implementation of a music production curriculum in public elementary schools. I was interested in obtaining the participants’ opinions before, during, and after the new curriculum was implemented to determine if there would be any logistical requirements to apply this curriculum in future years. Moreover, I was interested in knowing what the role of the teacher would be, and what the role of the students would be. Furthermore, I was interested in discovering what problems one may face when engaged in using this curriculum, and how they would possibly be addressed. Overall, I was most interested in knowing why one would choose, or not choose, to implement music production in an elementary school music program.
**Observations**

According to Stake (2006), “the most meaningful data-gathering methods are often observational” (p. 4). Merriam and Tisdell (2016) suggest that observations should “take place in the natural setting of the phenomena” (p. 137). In the natural setting, Cohen et al. (2018) assert, “contexts are unique and dynamic [as one] investigates and reports the real-life complex relationships, and other factors in a unique instance” (p. 376). I considered observing teachers and students in their classrooms, and industry professionals in their studios; however, because I was working as a full-time music teacher during the time of study, my work hours were the same as the other teachers. Therefore, we arranged for all the observations to take place over Zoom. As for the industry professionals, our observations were conducted over Zoom as well. I created observation guides (Appendix E and F) to focus my attention on the setting, such as the location, the socio-economic status of the school or studio, and access to equipment. Moreover, I focused on the approaches teachers were using to deliver the content and the level of student engagement. Furthermore, I was most interested in observing the opportunities students had regarding diversity and inclusion when engaged with music production in the classroom.

**Documents**

With multiple methods of collecting data, Cohen et al. (2018) assure “that there are many variables operating in a single case, and hence to catch the implications of these variables usually requires more than one tool for data collection and many sources of evidence” (p. 376). There are a wide range of documents that could be selected such as films, photographs, videotapes, emails, memoranda, diaries, calendars, notes, agendas, meeting minutes, progress reports, internal records, studies, evaluations, newspapers, social media, among others (Merriam & Tisdell, 2016; Stake, 2006; Yin & Campbell, 2018). Document selection aligns with Creswell and Creswell’s
(2018) statement that the “idea behind qualitative research, [is to] purposefully select participants [and] sites that will best help the researcher understand the problem and the research question” (p. 185). Some documents that added value to my research included text messages, lesson plans, curriculum preparation artifacts such as YouTube videos and select Spotify tracks, teacher and student reflective comments in Google Classroom, and student work samples such as production assignments and recordings. Some documents from the studio that added value included instructions on how to use the equipment and what it is used for, and examples of the professionals’ studio work on YouTube. All these sources were carefully themed, coded, tracked, and analyzed.

**Data Analysis**

Action research can have an overwhelming amount of data. Therefore, my data collection and analysis occurred simultaneously (Merriam & Tisdell, 2016). Cohen et al. (2018) highlight that “qualitative data analysis concerns how we move from the data to organizing, describing, understanding, accounting for, and explaining data, making sense of data in terms of participants’ definitions of the situation, noting patterns, themes, categories, and regularities” (p. 643). Creswell and Creswell (2018) suggest to “winnow the data” simultaneously as it is collected, otherwise there will be too much information, and suggest developing a maximum of five to seven themes (p. 192). They also recommend to:

- Organize and prepare the data for analysis, read or look at all the data, start coding the data bracketing by chunks, labelling categories in the actual language of the participants, generate a description of themes, make a description of each participant in a table, [and place them into] expected codes, surprising codes, codes of unusual or conceptual
interest, a map that shows the flow of ideas, [and] write a narrative for each theme. (p. 195)

The themes and sub themes made it possible to create a “matrix of contrasting evidence, create visual displays, tabulate the frequency of different events, and put the information in chronological order” (Yin & Campbell, 2018, p. 174). I worked inductively to “develop common themes or patterns or categories that cut across the data” (Merriam & Tisdell, 2016, p. 297). Working inductively meant that I had to work from the ground up to discover any “weaknesses in the research” (Creswell & Creswell, 2018, p. 199). Yin and Campbell (2018) describe this as “plausible rivals” to avoid critiques of reporting favourable results and identify all reasonable threats to validity (p. 173). During the reflective phase of PAR, I was able to compare my results with those of the other teachers and continuously revise the application stage. The process was designed for all of us in the research to remain open to new ideas as we encountered them. After going through the cycle of PAR numerous times, the process of reporting began, and the results were presented to participants for validation.

Validity and Reliability

For a study to be reliable, one must take many procedures to validate their work in a similar fashion as one would create during an audit trail (Merriam & Tisdell, 2016). According to Creswell and Creswell (2018), “qualitative validity means the researcher checks for accuracy of the findings by employing certain procedures” (p. 199). These procedures consisted of triangulation, member checking, and peer review examination. Moreover, the researcher needs rich, thick descriptions with adequate engagement in data collection while considering their position or “reflexivity” (Finlay & Gough, 2003). The data presented in the findings’ chapters should be validated by the participants to ensure its accuracy and reliability (Barrett, 2014;
To do so, I used internal validity, external validity, and construct validity, when analyzing my data.

**Internal Validity**

When thinking of internal validity, one must be transparent with the construct of the research study. Yin and Campbell (2018) suggest that “cross-checking online material with other sources would be an important way of understanding a potential slant, incompleteness, or interpretive bias” (p. 137). I was as clear as possible every step of the way with participants and remained transparent by having a chain of evidence of findings, sources, protocol, and questions (Yin & Campbell, 2018).

**External Validity**

External validity deals with generalizability (Merriam & Tisdell, 2016). The best option for this was to use Yin and Campbell’s (2018) replication logic, as they note, “ways of dealing with reliability document the procedures followed in your study [so] you can repeat your own work” (p. 46). Not only can you the researcher repeat their own work, but others should be able to replicate their work as well to obtain similar findings (Creswell & Creswell, 2018). Upon reviewing your own work as a researcher, others can validate your interpretations by using a concept called member checking, which is asking “the main actor or interviewee to read my work for accuracy and possible misrepresentation” (Stake, 2006, p. 37). In this case, I sent the interviewees my chapters to look over them, and we discussed my work for accuracy and possible misrepresentations. Furthermore, the professionals viewed the Dr TooNice videos for correctness.
Construct Validity

Construct validity deals with multiple sources of evidence, and informants reviewing your study reports (Yin & Campbell, 2018). While repeating the implementation of the production curriculum with multiple participants and being transparent every step of the way, the construct validity increased. To gain assurance in what I saw and heard, and to validate the content for readers, I followed the advice of Stake (2006) who suggests that “each important finding needs to have at least three (often more) confirmations and assurances that key meanings are not being overlooked” (p. 33). Accordingly, I included multiple teachers, students, and industry professionals to provide meaningful data for this study.

Triangulation

Stake (2006) explains triangulation as “a process of using multiple perceptions to clarify meaning” (p. 37). According to Yin and Campbell (2018), “data triangulation helps strengthen the construct validity of your study” (p. 128). In quantitative research, validity and reliability derive from positivism, a form of trustworthiness when reporting data (Comte & Lenzer, 1998). This trustworthiness is built from scientific inquiry during the process of direct observation of events or objects. When engaged in qualitative research, one will be faced with the challenge of reporting data that deals with humans, therefore a “separation between facts and values” will exist (Cohen et al., 2018, p. 10). Techniques such as member checking and showing “evidence of iterative questioning of the data” will build trust in the report (Connelly, 2016, p. 435). Moreover, honesty of one’s results can be proven by providing other researchers with an audit trail to repeat the study and obtain similar results.
**Ethical Considerations**

Conducting research on or with human subjects in Canada is governed by the Tri-Council Policy Statement on the Ethical Conduct of Research Involving Humans - TCPS 2 (2018). This states the importance of ethics by providing a framework, approach, and consent process, while considering fairness and equity, privacy and confidentiality, and conflicts of interest (https://ethics.gc.ca/eng/policy-politique_tcps2-epetc2_2018.html). To remain within the ethics framework, I followed the guidelines and templates provided by both WREM (Western University’s ethics board) and those from my school board, to compile and submit applications for ethical approval to conduct research. With this information, I created a script to approach and recruit participants (Appendix G, H, I, and J). Following the recruitment process, I provided the potential participants with a letter of consent describing the study procedures, the timeline, how data will be collected, the risks and benefits of the study, and how their privacy will be protected and remain confidential (Appendix K, L, and M). Regardless of each student’s choice to participate or not, I constantly reassured them that the study did not reflect their grade in any manner. Even though there were power relations between student and teacher (Allsup & Westerlund, 2012), this study aimed to obtain the perspectives of multiple participants and provide opportunities for students to take part in collaborative research, promoting opportunities for those with marginalized voices to provide meaningful data. The information collected was kept confidential. All the participating students were in elementary school and therefore their parents or guardians had to sign the consent letter to grant permission to participate in the research project, as well as to give permission to be photographed and video recorded. Typically, elementary schools send every parent a consent letter regarding photos and recordings, therefore the school protocols were also followed. All the participants, with the exception of the industry
professionals who consented to use their real names, were provided with pseudonyms to protect their identities. All the participants were made aware that they could withdraw from the study at any point without any penalty.

**Final Thoughts**

I chose participatory action research as my methodological approach for my study. According to Cohen et al. (2018), “action research concern[s] change, development, and interventions” (p. 450-451). The change in consideration for this study was the implementation and adaptation of a music production curriculum in elementary schools. To implement this change, the curriculum was developed by industry professionals informing the study, music teachers adapted to new content and teaching approaches, and students applied the concepts in various production projects. The data to guide this study was collected through interviews, observations, and documents. The data was analyzed and discussed with the participants throughout the study using a cycle of planning, applying, observing, and reflecting.

Merriam and Tisdell (2016) attest that a “research design continues to unfold as [the] researcher and participants collect and analyze data [to] make decisions for the next phase of the study” (p. 50). This held true throughout this study. For one, the participants and I re-designed the production resource making it an animation series rather than having an instructor screen share their DAW. Also, the participating teachers and I had to consider various instructional methods. We attempted large group instruction and independent learning using a flipped classroom. Lastly, we considered pacing by designing videos for the three steps of producing music, which were: (a) tracking, (b) manipulating, and (c) distributing music. Tracking consisted of writing music, remixing music, or arranging a cover song, and to use various methods to record and import music into a DAW. In the manipulating stage, students had to edit tracks, and
create space by applying production techniques that involved the horizontal plane, vertical plane, and proximity plane. In the distribution stage, students had to create an Mp3 or Wav file, and share it in their Google Classroom.

Throughout the study, I reflected on my own perspectives, biases, and assumptions, and remained transparent with the participants. Due to this awareness, I was able to co-construct knowledge with the participants and create a resource that was suitable for our students to access and use. My aim was to implement, apply, and reflect on a music production curriculum to determine if it can, or should be included in public elementary school music programs. In the following chapters, I share the results of my findings.
CHAPTER 4

The Industry Professionals

After a long day at work, I hopped into my vehicle, turned on the radio, and began my commute home. One of my favourite songs began to play on the city’s most popular radio station. I turned up the volume and started to sing along. I began to ponder, is it possible that this artist has written and recorded yet another top hit so quickly? As I arrived home, I ran to my record collection to look at the credits on the back cover of this artist’s albums. This artist sang on the album, but the song was written by someone else, recorded by someone else, mixed by someone else, produced by someone else, and the backing tracks were recorded by someone else. Yet, the performing artist was the only person that had their name on the front cover. Furthermore, when their song was being played on the radio, their name was the only one promoted by the radio host. Why was this the case?

I wanted to investigate what was involved in the creation of a recording, what the various roles were, and what processes and steps were taken from the beginning of a recording to the end. This chapter explores the distinct processes and people involved in the recording field, those that Pillich (2009) describes as the “people whose faces are rarely seen, but whose work directly affects our visceral experience and enjoyment” when listening to a recording (p. 1). I wanted to explore the world of music production to understand what I was hearing and how to re-create the professional sonic qualities as heard on the radio using a 3D sonic canvas. Furthermore, I wanted to bring this knowledge to elementary music classrooms where teachers can provide students with opportunities to create their own recordings and recreate recordings by their favourite artists. To do so, I contacted professionals who directly work in the professional music industry to inform my study. This type of information is long overdue in education, which Peppler (2013)
confirms: “most of these technologies have not come about because educators or researchers have called for them but because users have demanded them in one way or another” for a long period of time (p. 38). Some music educators have recognized this demand and begun creating resources to meet the needs of students intrigued by music production (Giddings, 2022; Kuhn & Hein, 2021). These resources align with studies conducted by academics that claim some students prefer utilizing recording technologies over other means of making music to unleash their creative potential (Herbst, 2016; Tobias, 2010). However, most of the information within the secondary and post-secondary levels is framed within certain curricular interests, mainly related to performance concepts. Therefore, I proposed that elementary school music teachers should investigate how to provide their students with music production resources that are aimed specifically at educating young learners in this field. At the beginning of this process, I believed that elementary teachers needed a user-friendly resource to access for free, hence the purpose of this research project and document. Perhaps such resources are limited at the elementary level because “recording is viewed as a science, one that since its inception has had a problematic relationship with musicians and musical culture” (de Latour, 2014, p. ix). My focus was not aimed at the science behind recording technology, it was aimed at the fabrication of a recording in its entirety since viewing it as a science may be an outmoded assertion. I wanted to understand what was involved in the recording process and apply this process in the elementary classroom for students to record original works or to re-create someone else’s work, otherwise known as a cover or an arrangement. This idea met the call of Bell (2018) who stated, “music education needs to espouse the process of recording as opposed to the products of recording” (p. xv).

Therefore, I aimed to help students and teachers understand: (a) what they are hearing and how to re-create these sounds, (b) what equipment and techniques are used to track and
produce a recording, (c) how to manipulate sounds once they are recorded, and (d) how to finalize a product to meet music industry standards and have it ready for distribution. The most beneficial method of obtaining this information is through the knowledge of those responsible for creating the recordings. I call these people music industry professionals, or experts.

**Recruiting and Initial Meetings**

In order for my study to have information that meets current music industry standards, I recruited Canadian music industry professionals currently working in the field. My hope was that these professionals could give me expert advice and guidance throughout my study to design a music production curriculum for elementary-aged students. Many teachers provide students the opportunity to create music using technology, however Seabrook (2015) reminds us that “it’s easy to say producing music is equal to pushing a button in the studio. But that’s like saying writing a novel is a simple push of a button on your typewriter” (p. 25). For my study, I wanted to find music industry professionals that could not only provide me with music production concepts but also help me transform an interpretation of these concepts to meet the current curricular expectations at the elementary school level. In this way, music teachers might realize that they may already know many concepts related to music production, and that their performance experiences could be applied to the recording field. Fortunately, one of my university supervisors is a professional in the recording field and sent messages to some of his prominent colleagues explaining that I would be in contact with them to conduct a study. These music industry professionals have done and are still doing some incredible work in Canada and the United States! Some of their credits include studio work with Drake, Rush, The Tragically Hip, Three Days Grace, A Boogie wit da Hoodie, Barenaked Ladies, Billy Talent, amongst many more. As I read through the credits of these professionals, I became somewhat star struck, but
also frustrated that only the names of the performing artists are those recognized on the radio.

Kramer (n.d.) asserts that:

> The sounds we hear have been not only performed by musicians but also interpreted by audio engineers, who have reinforced the acoustics of concert halls, spliced together note-perfect recorded performances, created artificially reverberant performance spaces, projected sounds across the world via satellite broadcast, greatly amplified rock concerts, and created temporal continuities that never existed live. (para. 5)

Knowing this, I wanted to ensure that I gave the professionals whom I contacted a good first impression and communicated that their experience and expertise would be extremely valuable for not only me and my students, but also students and teachers in other schools as well. I wrote an email with the subject line, “[my supervisor’s name] referral.” My hope was that name dropping my professor in the subject line would catch their attention and that my emails would not be ignored nor missed. My email to them read:

Hi [expert’s name],

My name is Johnny, and I am one of [supervisor’s name] PhD students at Western University. He mentioned to me that he has recently been in contact with you regarding a study I am preparing regarding music production in elementary schools and thus shared your contact information with me as you have shown interest. Attached is a formal letter giving a brief explanation of the study and to see if you would be interested in hearing more about the study and possibly being involved.

Thank you so much for your time, and I look forward to hearing back from you.

Johnny Touchette

*****
During the process of obtaining ethics approval for this study, I had to write a recruitment letter for these potential participating professionals; the attached formal letter that I mention in the above email read as follows:

My name is Johnny, and I am conducting a research study on music production in elementary music education and seeking design and content input from music industry professionals. [Supervisor’s name] has shared your contact information with me. Participation will be for the entire winter semester and spring semester (February 2023 - June 2023). If you are interested in taking part in this study, you will be asked to engage in four interviews with me, either in person, Zoom, through text, email, or telephone. I would also like to observe some of the work you do for a 60-minute session in order to gain a perspective of your field work and bring some of these concepts into the classroom. I would like you to provide information about how independent artists learn, create, produce, and distribute music with exceptional sonic qualities. Seeing as you are involved in the music industry, your input is very valuable to music education. Your role in the study is to inform the researcher and teachers of the fundamental concepts and strategies found in the music industry specifically when working with music production. Furthermore, you can help troubleshoot issues that may arise while students are working on their recording projects. Through discussions, the music industry professionals can provide the teachers and the researcher additional goals for students that may be interested in music making and sharing beyond live performance. If you are interested, further detailed instructions will be given to you. There are no known risks involved in this research. If you have any questions, please let me know.

******
I heard back from all three referred professionals. It took one day for Alex to respond.

   Hey Johnny,
   
   Great to hear from you!

   This sounds very interesting, and I’m happy to hear more about it and help out how I can. I’m not too sure about the whole process of this kinda stuff, but let me know and happy to chat.

   Cheers Alex

   *****

   Seven days later, Ray responded:

   Hey Johnny,

   Would love to be a part of this. I’m very busy until the beginning of March. If it’s okay with you lets discuss dates then and set up some zoom calls.

   *****

   And, eight days later, expert three responded:

   Hi Johnny,

   sorry for the delayed reply.

   I’d be happy to participate and share any knowledge I can.

   Let me know what the next steps would be.

   Cheers Kevin

   *****

   As I opened these emails, I experienced various emotions running through my body. I felt happy, excited, and even nervous. I had never worked with anyone of this caliber in the music industry before. Now, I had to come up with a follow up email to keep them interested in the
idea. Furthermore, I had to obtain a signed letter of information from these potential participants to officially be part of my study. With my heart racing, I hit the reply button. I wrote a response, re-read it a few times, and then hit the send button, crossed my fingers, and hoped for the best. I wrote:

Hi Alex,

Thank you for your response and interest! I am excited about this study not only because it is the project I will be using to write my dissertation but also because I am creating a free resource for elementary school teachers and students! No worries on the process, I will do my best to make it as clear as possible and be very mindful of your time.

We can continue corresponding through email, or if you prefer, perhaps we can set up a short zoom or phone call next week if your schedule allows and I can give you an overview of what I would like to do?

For starters, I am looking at ways to interpret the elementary school Ontario music curriculum in order to include music production concepts since it is currently primarily focused on performance. I am hoping to obtain some input from industry professionals as I believe this would be the most valuable and real-world method of achieving this. Then teachers and students can provide input and shape a free resource for others to use and make music production accessible, and equally important to music education.

I have read the information on your websites, and I believe this study meets your philosophy of music education which is awesome!

If you do want to participate, I have to take the proper steps of legitimizing your participation by having you read and sign the Letter of Information that is attached to this email. Again, I would be happy to briefly meet on Zoom or speak on a phone call If you
would like me to expand my explanation of the study and what I hope to achieve, and to go through the letter of information with you. By making my study legitimate, I will be able to publish the findings and the resources by next year! I am hoping to make this a video resource as opposed to a long-written dissertation document.

Talk soon! Johnny

*****

I was nervous about having my ethics-approved letter of information (LOI) signed as it was a fairly long letter with lots of legal jargon (Appendix K). The following day, I received the following email notification on my phone:

Hey Johnny,

This sounds interesting and very cool all around, and yes it does align with the educational aspects of what I do myself as well!

I like the concept and idea and interested to see how it plays out.

If you’d like to have a quick chat sometime to discuss a bit more about the overall project and process and what you’re hoping to do, we can totally do that as well. I’m in an out of sessions at the moment, but below I added some times that would probably work best for me.

I read through the document you attached and all makes sense, I’ve attached my signed copy so let me know if that works.

*****

Reading this email made me very excited and gave me hope that the project idea was worth pursuing. Alex sent me his calendar of dates and available times, and I opted for the first available time. This initial meeting’s purpose was to discuss what I had prepared beforehand
with ethics and to read through the LOI together. I did not record this interview as I wanted to make sure that we were both prepared for the work to come without any pressure, and I wanted to ask Alex’s permission to record future meetings. We met three days later over Zoom as this was the most convenient method for both of us. I introduced myself and the project idea, and Alex was very excited to be a part of the project. Since I had never conducted an interview before, I told Alex that for our first official interview I would send him the interview questions in advance that had been approved by the Research Ethics Boards (Appendix B) to use as a guide. We set up our first official interview two weeks later, which I will discuss in the next section.

Before this meeting took place, I received the following email from Ray.

Filled out LOI attached.

As for the intro interview some time between the 28th-5th should work.

Let me know your availability and we can narrow down from there.

*****

Success, I had another interested expert! What Ray meant by the “intro interview” was similar to what I had conducted with Alex in which I provided a brief description of the project over Zoom and reviewed the LOI. After responding to the email that Ray’s LOI was filled out, I sent a thank you response email with available times and dates but unfortunately never heard back from him. Five days later, I decided to send a follow up email:

Hi Ray,

I just wanted to follow up with you since some of the dates and times I have forwarded to you are no longer available, so I wanted to avoid any conflicting dates. For the time frame you have sent me, I have Thursday March 2nd, and Friday March 3rd available any
time after 4:30, and Saturday the 4th and Sunday the 5th available any time. Thank you have a great weekend. Johnny

******

Two weeks since the follow up email I did not hear back from this professional. I decided to send Ray another follow up email, acknowledging that he is likely very busy:

Hi Ray,

I hope you are doing well. I understand times are busy! Therefore, no rush on a response, but I was wondering if you would like to still try and schedule a time for us to chat?

Thank you, Johnny.

******

Unfortunately, I never heard back from Ray even though he was in communication with me and filled out the LOI. I wanted to have a few experts to be a part of this study, therefore I reached out to a colleague that had recently recorded with another prominent Canadian professional. This professional showed interest in the project and agreed to a phone call as he did not want to be seen on video or be recorded. We set up a phone call, but he did not answer or return my message. After striking out with two industry professionals, my luck turned around when I received an email from Kevin.

Hi Johnny,

I’ve got a bit of flexible time this week to setup a meeting. I could do tomorrow between 3pm and 5pm, Wednesday between 3:30pm and 5pm, or on Friday I am free pretty much all afternoon. Let me know if any of those times work.

Cheers, Kevin

******
My level of hope was back, and I was excited to have an introductory Zoom meeting with Kevin. Kevin and I had a great conversation as I followed the same protocol as Alex reading over the LOI, explaining the project, and posing my interview questions as a guide. Three days later, Kevin sent me the signed LOI, and our first official interview was set up!

**Meeting Alex and Kevin**

I met with both experts informally over Zoom before recording their “first” interviews. Kevin was set up with a microphone on his desk with nothing showing in the background. As for Alex, he was set up in his studio which had LED lights illuminating the room, a filled guitar rack next to the wall, and a platinum record hanging above him. Both experts have made tremendous contributions to the Canadian and American music industries. Kevin has done studio work with groups that have been nominated for Juno awards such as the Glorious Sons and Kalle Mattson. He recorded groups that charted on the Canadian Billboards and radio such as Doc Walker, Walk off the Earth, and the Trews. He also did studio work for artists whose albums were certified platinum\(^1\) in the U.S. and Canada including Shawn Mendes and Billy Talent. Furthermore, he worked with the Tragically Hip who were certified gold\(^2\) in Canada. Audio samples and information on Kevin’s work can be found on his website [https://www.kevinolearyaudio.com](https://www.kevinolearyaudio.com).

When I looked at his credentials, I noticed that Kevin wrote that he was the recording engineer for some artists, and assistant engineer for others. I made a note to ask him about the differences during our first interview. I will discuss these roles in the following sections. When I looked at Alex’s credentials\(^3\), I noticed that he was involved in many roles, including recording engineer,

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1 When an album is certified platinum, it means one million units have been sold in Canada. Unit refers to physical and digital copies.

2 When an album is certified gold, it means five hundred thousand units have been sold in Canada.

3 [https://static1.squarespace.com/static/6304110f0e9b75745d3a8886/t/6312419e5db0e1000e7e9c03/1662140831301/CREDITS+-+SEPT+%2B+2022.pdf](https://static1.squarespace.com/static/6304110f0e9b75745d3a8886/t/6312419e5db0e1000e7e9c03/1662140831301/CREDITS+-+SEPT+%2B+2022.pdf)
mischer, digital editor, featured vocalist, editor, composer, writer, sound designer, mastering engineer, producer, assistant engineer, additional engineer, second engineer, and Pro Tools engineer. These roles and their purposes will be discussed in this chapter. Beyond his roles in the studio, Alex provides coaching, tutorials, and discusses music production concepts through his website (https://www.anakcreates.ca), podcast (https://linktr.ee/anakcreatespodcast), and YouTube channel (https://www.youtube.com/@anakcreates).

I provided Alex and Kevin with my interview questions to review before our official recorded interviews began. This was for the following reasons: (a) it was my first-time conducting an interview, (b) to keep on track with my research questions, and (c) to respect the professionals’ time. My aim was to understand music production concepts and learn about ways to apply this information in elementary school music programs, as opposed to focusing on current methods found in these classes such as Kodály, Orff, and Dalcroze. Furthermore, one of my goals was to interpret the Ontario music curriculum through the lens of music production.

At the beginning of the interviews, I started by stating my current project idea: Students were to record a song using virtual instruments, physical instruments, or a combination of both, to match the quality of a professional recording. The recorded song could be an original, a cover, or an arrangement as determined by the students. The goal I set for the students was for them to understand what they hear on recordings (Hodgson, 2019), how to recreate these sounds that they heard (Oltheten, 2018), experiment with new sounds (Randles, 2022), and be able to explain the concepts they used in their projects, and why (Tobias, 2013). Next, students would be given the option to work alone or in groups, as they would in a garage band (Green, 2002). Their partners could include anyone participating in this study, whether they were in the same classroom or not.
(Cremata & Powell, 2017). They could work within any genre of music and use any instrumentation of their choice.

Specific to this project, the plan was to use the digital audio workstation (DAW) Soundtrap, as I was provided a free year’s subscription through a music technology leadership academy which I engaged with called TI:ME (https://ti-me.org/). The school board that I conducted this study with had Soundtrap as approved software. It is important to note that some school boards do have a list of approved and non-approved websites and software programs. I originally wanted to work with the DAW Bandlab. Bandlab is a free online DAW that was familiar to me, however this specific school board had deemed this program non-approved for unknown reasons. I requested to reverse this for the next school year, however most DAWs use similar tools and language, and therefore it did not negatively affect this study in any way. Soundtrap is a user-friendly DAW that reflects the functionality of some professional DAWs such as Pro Tools and Logic Pro. Some of the advanced features that professional DAWs have that are not available in Soundtrap include monitoring (hearing the track being recorded in real-time in your headphones) and visual EQs, among others that will be discussed later in greater detail. Within Soundtrap, students can access virtual instruments that can be played using a computer (QWERTY) keyboard, touch screen, or USB plug-in devices. Soundtrap users also have access to pre-recorded loops that can be manipulated in various ways, including but not limited to changing tempo, key, and effects. The participating schools had access to Chromebooks, headphones, condenser microphones, and physical instruments such as drums, guitars, keyboards, and basses. Students were welcome to bring instruments or equipment from home. In the end, the students had to produce a recording that matched the sonic qualities of recordings heard on the radio. In this case, sonic qualities refer to digitally manipulated sound
waves. After I explained this to Kevin, he laughed and said, “I think that’s the ongoing goal of every person, ever. Sonic results. How do I get there?”

**Pre-Production**

If desired sonic results are difficult to achieve and such a mystery, I must get to the roots of music production and understand how one can get started. I was curious to know the backgrounds of the experts participating in my study and to learn what led them to recording careers. Also, I wanted to make a point of asking them what concepts would have been helpful for them to have learned early on in their careers as this information may be useful for beginning students. To gain some background information on the participating experts, I started the interviews by asking them what type of music they generally engineer, and what their main expertise was. Kevin said:

I do a little bit in pretty much all genres, but I would say the majority of my work probably comes in like rock, alternative rock, indie rock, all sorts of rock subgenres. That seems to be where I get the most work. But I definitely still like to do hip hop, pop mixes, and even jazz. But yeah, overall, I would say it’s more of the rock and sub rock genres that I end up doing the most.

Looking at Alex’s work credits online, he seemed to typically engineer similar styles to Kevin. Alex mixed rock music and its subgenres, plus hip hop. Therefore, I kept in mind that their information may only target these genres and omit some of the other genres that students may be interested in such as country, EDM, or others that these professionals have not mentioned. As a follow up, I asked the experts, “Are there general similarities between mixing these genres or are there big differences between styles?” Kevin explained:

Yes, so, I mean similarity wise, is whenever you’re doing a mix, like the important thing beyond the small details of just how everything is sounding is really just finding what the song is about. Finding what drives that song. What is the actual emotion? What is it that people need to be hearing at certain times? Where does it need to go? And making sure
that you mix in a way that those important things come out. And I think that’s kind of identical across all genres.

Regardless of genre, Kevin suggested understanding some of the basic elements of song structures before moving into production and post-production. Understanding the basic structure of a song can be thought of as a pre-production task and divided into “three distinct compositional layers” (Zak, 2001, p. 24). The first layer is the song itself, which contains a melody, tempo markings, and a specific chord progression (Moylan, 2020). The second layer is the arrangement, which contains the groove, the instrumentation, and the emotional structure (Zak, 2001). Finally, in the third layer, the song and arrangement are captured in a recording.

When introducing engineering to students and moving into production, they should familiarize themselves with the topic of the song, what the artist is trying to achieve emotionally, and if there are any changes as the song progresses. When it comes to recording (production) and mixing (post-production) specific genres, there are subtle differences as Kevin explained:

What those important things are and how they tend to be heard are the things that change. So, it’s like when you mix a hip-hop record, you’re going to need a lot more low end and you’re going to need the drums to really be slammed in your face and like it’s really all about the vocal and that drum group for the most part and everything else is kind of auxiliary a lot of the time. And then, you know, when you’re mixing a full band, it’s like everything, those guitars got to be right up in your face and you still need those back beats, the kicks, the snares. But it’s like the way that the band is interacting now is like more of the storytelling aspect and things like that. So, I mean, you take different approaches in terms of probably like how you’re going to EQ things or where things are going to sit relative to each other in a mix. But at the end of the day, the similarities, they’re really just that you’re looking for what the artist put into that song and trying to get the best out of it and tell their story through that mix by just directing attention.

Once students understand the basic structure of a song, the fundamentals of music production play an important role in a song’s recording process and sonic design. Kevin’s explanation above is in line with Corey (2012) as he points out “how sound sources are mixed and balanced in a recording can have a tremendous effect on the musical feel of a composition.
Musical and spectral balance is critical to the overall impact of a recording” (p. 4). Musical concepts are typically found in the elementary music curriculum as performance-based outcomes. Yet, music production fundamentals are not found in such policy documents. If teachers are to bring recording concepts into the classroom, it is usually because they have had some type of interest or experience in the recording field. Otherwise, approaching music production with a performance lens may not suffice. In the following section, I will discuss how one can begin to obtain such experiences.

The Intern

Kevin suggested that music production is “not learned through textbooks, it is based on experiences.” To shed light on what these experiences may be, I now turn to Alex’s conversation with me. He described how recording studios have traditionally followed a hierarchical structure to gain such experiences:

A traditional path with studios, you would start out as a runner or an intern where you’re unpaid, you work for the studio, you’re involved in sessions but not doing anything creatively or I guess you could say meaningful to the creative process, ha ha. You’re there. You can learn from the sessions, but you don’t turn any of the knobs. You don’t suggest none of that kind of stuff. So that’s intern or runner, where you’re more the, you know, the coffee guy. You’re getting the coffee, you’re getting the food, you’re helping, make sure water’s filled, whatever, whatever they [the producers, engineers etc.] need, really.

This traditional path is a well-known standard in the music industry (Bell, 2014; Hughes, 2017). As an interviewer and researcher, I wanted to understand this process, therefore I began the interviews as though I was an intern. I needed to soak in as much information as possible before delving into the creative process. In my LOI, I had asked both experts if I could observe some of their recording or mixing sessions. Both were reluctant to accept this request. Kevin explained that his session musicians might not appreciate it as they were paying thousands of dollars to be in these sessions. Alex redirected me to his YouTube channel where he shares free
observations with the public. I read between the lines and did not revisit the idea of observing them in real time, as I respected where they directed me to go for this portion of my project. Alex further explained:

That’s how I learned a ton. Just watching other engineers and other producers and other Pro Tools guys and talking, being in the environment, you learn a lot by just watching and going, “Why’d they do that? Oh, I see why they did that. Oh, I don’t know why they did that. Oh, ok, this guy does it this way. This guy does it that way. What do I like?” You see it and yeah, it’s a huge way to learn for sure. A lot of the time when you’re an engineer-producer trying to educate, you don’t think of some of the things that you know and somebody’s like, “Well, why?” And they don’t know enough to ask the questions. So sometimes just watching the overall process, you go, “Oh, I get that now,” or “That’s a mistake that I don’t want to make because…” That’s the other thing. I’ve seen things and I’m like that seems silly. And then, you know, what’s part of your thing that you’re creating for your sound and your style and your workflow and whatever.

Alex also saw observations as a privilege:

You get to sit there, especially coming up in a big studio, that’s your reward, I guess. Go get the coffee. But now you can sit here and watch me do shit. And at the end of the day, you can ask me questions. Also, people pay to sit in the room and just watch the session and take notes.

This further justified why observing these professionals did not seem to be an option for me, as I had no idea people paid to attend. This was news to me. Alex also mentioned that he provided private coaching, at a cost, which I will follow up with as I continue developing my own experiences and continue developing YouTube videos for my classrooms to access for free. Furthermore, Alex stated:

Honestly, if you watch one of my videos, like my last video, the second one I did for the month of February, I did a song video and I did a mixed breakdown video. If you watch those, you see my process for the song. It’s actually quite an overview. Observing some of it like it’s a lot, it’s not like I’m going to make a song in five minutes, you know it’s a two-day process to like I’m going to be trying to figure out a riff for three hours.

As I watched his video (https://www.youtube.com/watch?v=jLVRotv1nyI), I quickly realized that the content would be quite advanced for elementary students. However, for myself
as a learner, it was very helpful. When planning the video resources for the elementary students, I broke down each of Alex’s topics into short segments. I began with the topic of listening.

**Listening: Understanding What We Are Hearing and How to Re-Create These Sounds**

When listening to a recording, may it be on the radio, online streaming, or elsewhere, one must realize that the sounds we hear may not all be reproducible by live instruments. Alex went as far as to say, “Yeah, it’s literally impossible.” Therefore, developing listening skills is key to students’ ear training (Williams, 2012). Moreover, Corey (2012) suggests developing the “technical ear” which is to “focus on the features, characteristics, and sonic artifacts that are produced by various types of signal processing commonly used in audio engineering, such as equalization, filtering, reverberation, delay, dynamic processing, and characteristics of the stereo image” (p. 6). These music production fundamentals are better developed by experiencing them firsthand. However, students do not get this opportunity often, or at all as Moylan (2020) affirms: “traditional music analysis has long looked to explain music through study of its pitch and rhythmic materials, and their generation of melodic, harmonic, and formal relationships” (p. 12).

To move beyond traditional ear training and expand the technical ear, Hein (2017) suggests recognizing that the “central difference between traditional musicianship and digital production is the role of recorded sound” (p. 387). When considering the role of the recorded sound, one must think about live performances and how these performances are indeed influenced by technology. Rarely do acoustic performances without any aid of production equipment exist in the world today. For example, these are popular artists from different genres that rely on music production to perform live:

- A Boogie Wit Da Hoodie: [https://www.youtube.com/watch?v=ybkfIFAp5Q](https://www.youtube.com/watch?v=ybkfIFAp5Q).
- Ed Sheeran: [https://www.youtube.com/watch?v=doiFgsojHZg](https://www.youtube.com/watch?v=doiFgsojHZg), and
Moreover, some genres such as techno are based on the foundation of only using produced sounds (Bredow, 2006). Seabrook (2015) bluntly states, “take away the technology to reproduce sound, and you’re back in the parlor with my grandmother” (p. 72). In music education, the use of technology made its way into the classroom, however, the process of music production is lacking. Perhaps music production has not made its way into many public school music programs due to the historical use of Western art music and its characteristics as a basis for learning music. Alex accentuated this fact about the lack of music production instruction in schools by stating “unless you’re in an orchestra, they don’t need technology to make music live, I guess.” Furthermore, Alex questioned the use of Western art music in elementary schools when stating, “not many grade three kids are thinking about joining the Toronto Symphony Orchestra.” As popular music programs continue to grow (Powell, 2023), a shift from focusing on performance skills towards developing skills in non-performance roles, such as those found in music production, should become a priority, hence the advocacy for developing the technical ear.

I asked Alex how to approach the topic of listening to recordings with the technical ear and where to begin in the classroom. He said:

So, I think that having that knowledge in the back of your head that you can just store away from the beginning is, yes, people don’t understand it yet, but the puzzle pieces will fit together a lot better than just going, “All right, we’re gonna learn recording. So, first thing is plug in the guitar.” What end? What’s my goal? Where’s the goal? Right?

Alex returned to his beliefs that observing how recordings are made can really help students see and understand the process. He thinks that there are too many production concepts to create a master list therefore suggested various ways to observe:

There’s YouTube videos, I mean, that’s why I’m doing some of my videos, I’m trying to showcase another way of working, and there’s tons of videos from tons of different people of the way they work that you can pick up stuff. And part of it too is even bringing
in a band and kind of going through a session with the kids watching. Like there’s master classes all the time with, you know, CLA [Chris Lord-Alge] and big guys where that’s what it is. And if you can see the process, go through from start to end, it’s not one piece of the process. It’s kind of, “Let’s do it,” maybe in a, you know, expedited fashion. But you see the process, you can see from the beginning to the end, why you would do something. How layering happens, if that’s what you’re doing, how the choice of kick drum matters when you get to the mixing stage. So maybe having like a day or a something where you bring in a singer-songwriter and go, “Ok, we’re going to listen to the song. We’re going to make sure that it’s the right tempo. We’re going to make sure it’s the right key. Ok, now we’re going to mic them up. Ok, now they’re going to sing, and we need to play it to a click because we want to add some synths to it, or we don’t want to play to a click because it doesn’t matter.” They see that and go, “Oh, I see why you would mic up a guitar,” or “I see how they’re micing up a guitar,” not just throwing a mic near their face to mic the guitar or, all that kind of stuff, and it doesn’t even have to be the perfect session. They just see it happening from beginning to end. So that’s not a bad way of doing it, especially if you have some artist that can literally be anybody that would just be okay with pausing and going, “Ok, well, you answer questions about what you’re doing.” That might be a good way. We used to do that at Antsy when I was at school. They would bring in the Antsy jazz bands and their final project was to like, rehearse and play this thing and our final project or project at the time was to record this band. So, they’ve kind of melded it together, but it’s the same thing. They had a thing they wanted to record, and we went through at that point, we knew the different roles. So, then we’d kind of, one person’s engineering, one person’s Pro Tools opping, one person’s on the floor with the band, another person’s doing whatever role, and then we do that for an hour and then change, and then change. So, it’s not perfect recording in the end maybe, but it’s you get to experience that and go through it and the band knows this is the point.

Alex’s idea of recording others and taking on different roles in the process is an excellent suggestion to develop skills in areas one would not have otherwise developed. Therefore, during the project with my participating schools, I encouraged students to not only record themselves, but to record others as well. I asked Alex to expand further on recording yourself versus recording others. I asked him if it was a completely different experience. Alex responded:

Seeing a process that might not be your style shows you a piece or two that you would want, like recording some jazz band. I mean, I’m not a jazz person. I record rock. But seeing it and going, “Huh, interesting, I never would have thought of that.” Or you just know more, “Oh, a jazz kick drum sounds like this, interesting, I didn’t know that versus a metal kick,” like all the different things. You understand, and then you go, “Oh well, that microphone sounded that way on a jazz kick, well maybe I can use that on a bass guitar or on a vocal.” This is now, “I know these things.” It’s just observation, right? And it showcases different things that you would not otherwise ask or try yourself, because
that’s not what you do. But you can learn a heck of a lot watching some other genre and other workflow for sure.

According to Alex, learning through observation is key to developing the technical ear. Furthermore, observations provide opportunities for one to explore options that they would not otherwise be engaged in. For example, working in non-familiar genres and using different gear would build some additional strategies for students to experiment with and apply in their own work. At this point, I realized that playing a song over speakers, and pointing out concepts may not be the best approach to developing the technical ear. Alex suggested to look at YouTube videos, however the vast amount of information is overwhelming, and most videos are geared towards those who have some production background. Furthermore, most of the videos consist of one person speaking, followed by a share screen of their computer. These types of videos are extremely valuable, but not geared towards elementary-aged students. Most students in elementary school are drawn to cartoon characters. They listen to them and soak in the information provided. Therefore, to share the information obtained in this study, I decided to create a series of animated instructional videos to engage my students. This led to the creation of “Dr TooNice” (https://www.youtube.com/@DrTooNice-rz6yy). Dr TooNice is a YouTube cartoon instructor that focuses on everything related to music production. He looks like a whacky scientist that is down to earth and meant to engage students at first glance. Even though I animated and voiced the character, the content in the videos was based on the collaboration of the participants in this study. Therefore, I did not want my voice, nor myself to be in any of the videos. Dr TooNice’s appearance was constructed with my students and his cartoony voice was developed with the participating teachers. His voice was made in my DAW by moving up the pitch of my voice by two steps.
The Fundamentals of Music Production

The professionals stressed that students need to understand the basic structure of a song (Zak, 2001), take part in multiple music production observations, and begin developing a technical ear (Corey, 2012). However, choosing studio equipment was not mentioned. To take part in observations, it would be helpful for students to know some of the gear they are seeing. Furthermore, when developing the technical ear, it would be helpful for students to know how to use some of this gear and what sounds they produce. This led me to believe that equipment selection should be on the priority list of music production fundamentals. Kevin confirmed this point:

Something that I think is kind of done wrong and embarrassingly so in a large number of YouTube videos and other things, I see like podcasters and people who don’t really know, is they’ll take mics, so mics can be called either end address (Figure 1) or side address (Figure 2). So, like this is an end address mic because I’m talking into like the end of it as opposed to like side address.

Figure 1

*Example of End-Address Microphones*

Note. This figure demonstrates where to speak in the microphone.

Kevin continued: So, this is like a condenser mic which is side address because the signal comes in the side.
Figure 2

Example of Side-Address Microphones

Note. This figure demonstrates where to speak in the microphone.

Kevin continued:

I’ve seen a lot of like YouTube videos and people are talking into it like this (showing that he is talking to the side of an end address microphone) on their like podcast and it’s like, you look a little dumb, but beyond that, it’s like, it’s not going to sound very good. If you go to record a vocal at your school, they’ll just have the couple mics and they’ll see people using it whatever way and they’ll probably know. But I think that’s a good concept because if they are out and about in the world, not in the school and they come across a different mic, there are mics that look like end address and mics that are side. So, like understanding that is a thing to be aware of, like you can look up the details of it where like if you hold it up to the light you can actually see the diaphragm is a circle (Figure 3), as opposed to like rotated 90 degrees. So, if you have the ability to actually see the diaphragm you can tell. Some mics are a lot more obvious than others to start with. Like no one’s going to think of 57 or 58 as side address, you know? It’s like some things are pretty obvious, but something like that, just a concept where it’s like if you know there are mics side versus end address and so if you’re looking to mics on your own outside of here, maybe something to be aware.
Even though Kevin stated that end and side address microphones are obvious, I approached this topic as though it is not obvious. I have seen many of my students utilize a Shure SM58 (Figure 1) as a side address microphone wondering why they cannot hear themselves. Therefore, in the Dr TooNice videos, the diaphragm of a microphone is mentioned early on.

**Figure 3**

*The Diaphragm of a Microphone*

![Diaphragm Diagram](image)

*Note.* This figure demonstrates where to locate the circular part in the microphone known as the diaphragm.

**The Assistant Engineer**

In the traditional path related to studio roles, an intern would have gained most of their experience through observation. The role that succeeds the intern is the assistant engineer. As an assistant engineer, one should be comfortable with the layout of various studios and understand their physical designs (Newell, 2003), understand how to set up equipment and adjust it for
various artists (Goold, 2022), and be aware of current studio technology (Huber et al., 2023).

Alex described the stage of assistant engineer as the following:

[It] is kind of what it sounds like, you’re assisting the engineer. So, for me, I was working for Grand Street. So, a lot of assistant engineers kind of work for studios, I guess, is the more traditional way, or [work] for an engineer actually. But when you’re an assistant, you’ve kind of moved up from runner [also known as intern]. So, you’re not necessarily going to get coffee, you’re not necessarily going on runs. Depending on the place, you might have to do some of that, but you’re the guy that’s helping set up the mics, run the cables, make sure technically everything’s good, making sure everybody’s comfortable. That could involve, you know, before the band comes in or before the engineer comes in, the Pro Tools sessions set up, or the mics are set up kind of ready to be placed on the drum kit or on the guitars for the engineers.

According to Alex, the next stage in developing music production experience in the classroom would reflect the role of an assistant engineer. This role requires students knowing how to prepare a recording session. This includes loading up a DAW on the computer and understanding how to bring sounds into this software. The sounds are brought into the DAW by connecting wires from instruments and microphones into the computer. Setting up stands and turning on amplifiers would be part of this knowledge base. Overall, the knowledge and ability to set up studio equipment is the role of the assistant engineer. Alex expanded on the importance of this role:

The engineer can kind of come and do the engineering work, not the busy work, I guess. [The assistant] could be helping you know make sure when the artist goes into the vocal booth, they are comfortable. They know [that] you know you’ve set up the mic height for them. You make sure they know how to use the headphone box. If there’s a headphone box, here’s the volume for your headphones. If they need different headphones plugged in, you’re doing that stuff like that to make the engineer’s job easier that can progress into Pro Tools opping or whatever DAW, frankly.

Students could acquire all this information through observation. However, in class, they had the opportunity to plug microphones, guitars, and other instruments into a DAW, as research supports that knowledge is better retained through hands-on experience (Dale, 1946; Dewey, 1938). Even though there are many steps involved in setting up a recording session, the basic set-
up becomes familiar quickly as it is somewhat repetitive. Kevin had similar thoughts as Alex and expanded on these ideas:

It might be nice to know like a little bit of basics about microphones and like some of this might be kind of more involved as you go up in the years. But one thing that I learned when I was in audio school that they were like really focused on was the concept of signal flow and just understanding basically how everything kind of works. Down the chain, at least having a basic knowledge of that ended up being very helpful for me with everything. So, I mean, even if you start right at the beginning and explain that the microphone has something called a diaphragm and when sound hits the diaphragm, the diaphragm moves back and forth. It’s actually that moving back and forth that translates into an electrical signal which goes down into our preamplifier, which is what you’ll need for gain, just so, like to understand the concept, “Ok, so physical sound waves are hitting a mic, which moves the diaphragm, which sends an electrical signal to this point. Now it’s going to be really quiet low level signal. So, we need to boost it up. And so that’s why we have this thing called a preamp and what that’s doing is boosting that level up to a level that we’re actually going to be able to hear it,” or however we want to raise. So, like as opposed to just teaching by saying, “To get sound you take a microphone and you turn this knob,” I think that’s kind of setting up the wrong framework from the start. Just taking the little bit of extra time to go into just that small bit of detail and understanding. Not, “You do this to get sound.” It’s, “This is how it happens, and this is why you do this to get sound.”

Kevin’s approach to teaching strategies reminds me of those found in Punk Pedagogies (Smith et al., 2017). The basis of this pedagogy is to develop a do-it-yourself ethos, encouraging student autonomy through a framework that promotes independence and critical thinking. This framework could be built through trial and error, one that encourages students to explore and experiment with concepts in various ways. One of the aims in this study was for students to run a recording session on their own. In this recording session, students were encouraged to explore various options in capturing sounds, experiment with manipulating these sounds, and explain what they did and how it was achieved. Although teachers were encouraged to provide students with concrete information such as how something was designed to work and how to connect the wires to make this gear work, they need to be open to the fact that there are different ways to obtain results. Therefore, to promote teacher flexibility, students were encouraged to apply
information in new creative ways and in return share their findings with others. In professional studios, utilizing gear in creative and non-conventional methods has been proven to work repeatedly in developing new sounds (Izhaki, 2023; Zak, 2001). This approach opposes a teacher-centered framework, which is often found in traditional settings such as the “banking system” (Freire, 1970). This framework suggests that teachers are the holders of knowledge and students are empty receptacles waiting to be filled with knowledge. Moreover, students are asked to apply this knowledge in a stepwise fashion to obtain specific results set by the teacher, leaving little to no room for experimentation. To build a learner-centered framework that includes concrete facts and room for experimentation, Kevin was deliberately thinking about how to relay this information to elementary students in a user-friendly language as he continued the conversation:

I think it would be very useful and I think you can start with a very simple thing. “The air, like when you make sound, it’s literally vibrations in air and air vibrating vibrates the diaphragm, which sends that electrical signal down the cable. Now that signal’s too low level, so we need this thing called a preamp, and that’s actually going to boost it up in level.” And then I guess from there, if you’re using like a basic audio interface, you’re like “And then now it gets converted to digital” and you don’t have to go into the process about that, but like “And then through this cable and into the computer. So, from our mic, you know it’s picking up those things, the electrical signal goes down our XLR cable” or whatever you’re using, “That’s what carries the electrical signal. The interface where we use the pre-emptive gain and then that gets converted to digital and goes through our USB or FireWire or Thunderbolt cable and it connects to the computer” and just having that basic understanding from the get go, I think will be so valuable. I always found this very beneficial to learning as opposed to, “Just do this.” Because I think that would have set me up for failure in what I was doing. I think there are definitely places that kind of teach in that realm because I’ve encountered a lot of people who came to like intern in the studio and stuff, and they just couldn’t grasp what I thought were sort of simple concepts. But it was because they had never, like, really understood how things got from point A to point B to start with. I don’t think it’s something you’d have to go crazy in depth, but I think as opposed to just turn this knob magically gets sound.

Kevin’s description of how sound travels from point A to point B was an example of a concrete fact. Understanding many of these facts will build a strong foundation of gear
knowledge. To provide students with an overview of Kevin’s and Alex’s suggestions as described above, I created a Dr TooNice video relating to the roles of the assistant engineer. This video provides an overview of setting up a basic recording session. It explains how the sound of a microphone travels through the XLR cable into the interface and is digitally reproduced into the DAW. The video is titled, *How to Set Up a Recording Studio* (https://www.youtube.com/watch?v=D_i4ahw9VuM). Students were encouraged to watch this video and work with the equipment simultaneously. When introducing music production concepts, the role of the elementary school educator is to introduce information as clearly as possible without assuming something is common knowledge amongst any age group. Once students have been exposed to fundamental knowledge, they can explore new ways of working with the equipment. Even though teachers must assume some students have no experience in music production, they must also assume that some do have experience. For students that were experienced, multiple videos were made available to them in a flipped classroom format.

**Flipped Classroom**

As more instructional videos were being developed, I created a central hub of music production videos for teachers and students to access (https://www.youtube.com/@DrTooNice-rz6yy). As more professional input and knowledge was shared, the resources continued to grow. During the design of the Dr TooNice videos, the instructional videos were not placed in any chronological order, as chronology is not required for a classroom of students with various levels of experience. Therefore, the videos were made accessible in a flipped classroom format where students could pick and choose videos that best reflected their specific needs, at time of need (Keengwe et al., 2014). Just as students explore online resources at home (Cayari, 2021), a flipped classroom does not differ in use, however, it provides students with a central location to
access videos relating to the topics discussed in class. In this case, the teacher did not instruct students in a full class setting often, yet the teacher mostly provided students with one-on-one instruction. Just as students watch videos at home, these videos could be paused, rewatched, and used at their own pace. The flipped classroom is meant for students to have access to resources at any time. Although I have chosen the platform YouTube as the central hub, the videos were posted in the students’ Google Classrooms and time stamped. The Google Classroom was where our daily schedule was posted. This way, if students were absent on any given day, they still had access to the latest video. As students became comfortable with the flipped classroom format and learned how to set up physical instruments in the classroom, they were introduced to virtual instruments using a digital audio workstation (DAW).

DAW

Once students have had experience with studio equipment and understood its concepts, Alex suggested that the DAW should be introduced next:

I think it’s important for students early on to have that 10,000 foot bird’s eye view of what’s possible and what’s in there. Like opening up a session and looking at it with them and going, “Look, drums are 15 tracks, guitars have a whole whack of stuff on them, vocals, there’s a lead vocal and a double and a triple, and there’s 25 vocal tracks and a whole bunch of different effects. This is what we’re aiming towards. Now let’s start at the beginning so you know what you’re aiming towards and why it doesn’t sound like that. When you record one vocal and go, why don’t I sound like Ariana Grande?”

Seeing how many tracks could represent one sound, plus seeing the number of total tracks that is involved in making one song, could provide students a perspective of the long process of recording. During this process, some artists re-record one take until they are fully satisfied with its sound, meaning one track can take hours or even days to create. Therefore, it is important for students to see how an artist and engineer work together to make one track sound the way they want it to be heard. To approach this, Kevin suggested:
Just encouraging, like, experimentation with these kids instead of just like putting a mic up and being like, “Oh yeah, I hear it. It sounds like a guitar.” You know, like, I think it would be a great process for them to get in there and be like, “Ok, this is what the mic sounds like if I put it right on the speaker. That’s what my guitar sounds like. Now what if I pull it back a little bit? Now what if I, like, put it 10 feet away and like just get a room and you know, is that getting me closer or further to how I want this guitar to actually feel when people listen to it?” Because that’s kind of the important thing is like you’re really just trying to translate an emotion. And like the emotion is fuck yeah. I think an important thing that is often overlooked is kind of having a vision before you even start the process as opposed to like just recording something and being like, “Oh, if I tweak it like this, oh, now that’s kind of cool,” like, and don’t get me wrong, that happens all the time too, and you’ll stumble upon cool stuff. But knowing from the start, it’s like, “Oh, if I’m going to record a guitar, I’m hoping for this guitar to sound like...” It’s having a vision. It’s like whether you want it to be big or you want it to be roomy or you want it to be like muddy or you want it just be like sizzling bright or like having ideas of that ahead of time really helps you kind of just capture as opposed to like just doing something and then when you find it along the way.

For elementary students, lots of listening and observing is needed for them to know what kind of sounds they want ahead of time. Otherwise, lots of experimenting will need to occur until they can reach that point. Experience with creating in a DAW can occur while students are engaged with observing, listening, and experimenting with equipment. Before moving on to the creation stage of tracking, basically another word for recording, I did not want to miss any details of this stage, therefore I asked each professional the same fundamental question, I asked:

You have mentioned some fundamentals of music production, but if there was something you could have learned at a young age, what would it be? Meaning, is there something you wish you would have learned that would have helped you now, and saved you years of issues as you went down the road?

Alex responded:

Yeah, I think the biggest thing that I wish I would have understood earlier on, cause I distinctly remember this when I first started recording, I’d kind of figured out, I can get my guitar into the DAW and I can record it and it’s distorted and whatever. I didn’t understand clipping and whatever, but like, it sounded like a guitar so great. But I recorded it and then I was like, “Man, why doesn’t it sound like Nickelback?” And I didn’t understand. I actually went to the guy at the music store and was like, “Can you listen to my thing and like, tell me why it doesn’t sound like Nickelback?” And I didn’t understand the relationship between different elements that kick drums and drums make
the guitar sound thicker because the impact and guitars have layers and all that stuff works together. I was recording one mono guitar and going “Why isn’t it Nickelback?”

Even Chad Kroeger, Nickelback’s frontman, was curious to know how songs sounded larger than life on the radio (Bliss, 2003). He analyzed all the biggest radio hits musically and sonically, eventually experimenting with this newfound knowledge in the studio. According to Bliss (2003), Chad “kind of got a lot of things figured out, [from] how to make drums sound really big and how to make guitars sound really big.” (p. 5). Just like Alex, curiosity led to experimentation, and led to asking others with experience for help. Alex continued:

I didn’t understand that there were layers and things. Like the thing that I think is you don’t need to understand every piece of how it layers and how it works together and how to do, you know, a stack for rhythm guitars and doubling and I didn’t understand that there was even a thing, doubling a guitar existed for rock music. I didn’t get that. I didn’t understand it. I didn’t know it was even an option and that’s what they did. Plus, I was like once I get a half decent recorded guitar sound, it was like, “Ok, why is it not the radio sound? Like I don’t get it.” So, understanding that there was more. I think I would have liked early on to understand that those things were there and kind of get an overview that I didn’t understand, but I knew it was there. I knew that’s what I was aiming towards learning. I think, and I mean when I was learning, there were no YouTube video so I couldn’t get a rundown of how a whole session worked in 20 minutes. That would have honestly saved all of it. Being in the process from beginning to end and not understanding it, but seeing what was there would have helped me understand it along the way, because then the puzzle pieces would have fit together like, “Oh, now I get why you did that, oh, I understand it now.” Versus going, “I don’t even know what the hell’s out there,” you know what I mean?

I did not want students to experience the same frustrations as Alex, therefore during the observation stage of the project, I included YouTube videos in our central hub that students could refer to when working on tracking. For example, some students in this study were thinking of recording a Nirvana song, therefore I found a video of their engineer explaining how he recorded the guitar tracks (MixMyMusicRob, 2009). There were also students interested in knowing how Billie Eilish made her voice sound as it does, therefore I found her engineer showing us how he mixed her voice (Mix with the Masters, 2021). All these videos relate to
exactly what Alex expressed he wished he knew early on. Therefore, if teachers do not have any contacts in the music industry, YouTube, as Alex mentioned, can serve as a great resource once you know what to search for. There are also numerous written resources on music production that provide clear examples of concepts such as equipment use, recording, and mixing techniques, all of which provide links to audio and video examples (e.g., Dittmar, 2017; Hodgson, 2019; Izhaki, 2023). Also, there are many podcasts, TikTok videos, and websites that one can access as additional resources. Now that I knew what Alex wished he had known early on, I was curious to know what Kevin wished he had known early on in his career, and he shared:

Having a good song and having a good arrangement of that song. And I guess, I mean, you obviously, you know you want to have a good song. So that’s not something I wish I knew earlier, maybe, what makes a good song? But that’s all subjective anyway. But I guess when it comes to like arrangements of songs, like understanding that the problems that you might be having in your mix are maybe just because there’s two instruments that are just playing in the same register and they really shouldn’t be. And it’s like, if you would just had like one player play a different voicing that was slightly higher or something like that, all of a sudden those things will blend, everything will feel better, you’ll stop having problems in your mix and like, so I guess like just arrangement, perspective, understanding that the things that are in the same frequency space are going to have to fight for that frequency space and if you choose to record things that live in that same world. You’re going to have to understand that you’re going to have to push forward frequencies other places to make them work. Sometimes it’s just more ideal to like from the get go, have your arrangement where people aren’t just playing all on the same register and then all of a sudden everything will just fit together and make your job that much easier.

Kevin’s discussion revolved around the arrangement of a song. His discussion aligned with Zak’s (2001) description of the “five broad categories that represent all of the sound phenomena found on records: 1) musical performance, 2) timbre, 3) echo, 4) ambience (reverberation), and 5) texture” (p. 51). When Kevin mentioned having a good song, this related to the musical performance itself. However, when Kevin discussed instrument register, blend, and frequencies, these elements played an important role in understanding the sonics of a
recording, which related to having a good recording of your song. To begin, students should have a basic understanding of high-and-low frequency sounds. With this understanding, when it comes time to use an equalizer (EQ), students will be able to move specific instrument sounds up sonically with high-pass filters, and down with low-pass filters. Furthermore, an understanding of timbre will provide students with a clearer recording. Kevin related this to instruments playing in the same register. He proposed to boost or cut the frequencies of instruments with similar timbres to create more texture in the final mix. Before I delve into mixing techniques, such as echo and reverberation, Kevin mentioned one more thing he wished he knew early on in his career:

Yeah, I guess another thing I don’t know if I want to say, I wish I had known. It’s a weird way to phrase it, but just an important thing to know, which is kind of what I just said, but like, there is no right and wrong, like I mean to a degree there is like on extremes. But really when it comes to this, like this is a creative process and there’s no reason it shouldn’t be treated as such. And I mean, this probably won’t be as much a problem for the students, but for me it’s like, sometimes I get so into the technical world of things and I’m like, or at least for a while I felt like I would get into that technical side and I was scared to try things that were creative and interesting because I was worried that like other people don’t necessarily do it that way. And like, I don’t know, promoting creativity and freedom I think is really good as well.

Kevin provided an excellent point on experimentation and freedom of expression. There is no right or wrong in recording, there is knowing what you want and what you don’t want in your song. As students continue to gain a basic understanding of how equipment is traditionally used, teachers should encourage students to turn knobs with intent. The professionals provided an in-depth conversation around observation, equipment selection and use, and developing a technical ear. In the following section, they discuss the processes of audio engineering.
Production: Recording/Tracking

Capturing Sound

When teachers are involved in a vocal or instrumental program, they may think that they do not have the experience, time, or the budget to add music production to their curriculum. They may not even see any value in music production over instrumental performance. However, in the eyes of the students, Peppler (2013) expresses that “spending years practicing a musical instrument may be important to gaining the instrumental facility valued by schools of music, but it is not always something young people have the time, money or inclination to do” (p. 38). The musical values in schools differ from the interests of many students, therefore a shift in thinking should be considered by policy makers (Kempfer, 2020). Technology continues to spread these interests to the point that cell phones and computers are now considered instruments (Williams, 2014). According to Rowsell et al. (2017), this technology is more accessible to students as they state, “the number of children who have used mobile devices has nearly doubled since 2011” (p. 157). On these mobile devices, students have access to DAWs such as GarageBand, and virtual instruments. Furthermore, technology can bring instant gratification as Kuhn and Hein (2021) discovered, “a student can learn to create good-sounding music with a computer in a matter of hours, rather than months or years” (p. 7). However, there is a gap in the lack of specialized knowledge in creating a good sounding recording. Alex elaborated on this topic:

I think in today’s day and age, we’re in a unique position where more and more people can make music with very little and it’s another outlet for kids. Frankly, like not every kid can access a guitar and live in a home where they can practice the thing because it makes noise. But music production, now you could make hip hop on a laptop with headphones silently in your bedroom that can be two feet by four feet. Like, on your bed, you can make something. And for some kids, that may be exactly what they need to get them. I don’t know, off the streets, out of making trouble because they now have something where they’re like, “Well, I don’t play music I listen to. I listen to Eminem, and I listen to NF, I want to make that.” That’s not even music you can play. But now, you can because you have a laptop, therefore you can play music like that, and I think it’s
never been more easily accessible which means it’s like, ok now is the time to get kids aware of it because they too can do that, you know. So literally they don’t even need a laptop they can do it on cell phones, which is nuts, but yes, they can. Yeah, it’s because it’s a very valid thing, it really is. I mean, it’s not going to be fame and fortune for everybody, and they also need to be aware of that. But it’s a creative outlet just like any, like that’s another way kids can express themselves.

Alex struck a few important points in his comment above that are valuable to music education and can be shared in the classroom. He discussed how students could create music leisurely and do not need to focus on becoming famous (Mantie et al., 2021). Especially in popular music education, teachers should make it clear to students that fame and fortune is not always the goal of working towards a professional sounding recording or engaging with music. However, if fame and fortune is their goal, there is always a chance that it can happen by simply using your laptop or cell phone (Butler, 2014). Steve Lacy from the band The Internet is a great example of an artist that has gained attention worldwide by producing musical ideas using his cell phone. He used GarageBand by singing in the cellphone microphone to record his voice, tapping beats on the touch screen for the drums, and using an iRig as an interface to record bass and guitar (Pierce, 2017). Through the broader production process, he was nominated for a Grammy, and even produced music for Kendrick Lamar, who also used a beat made on a phone.

Another important point that Alex raised was the matter of space. The classroom does not need to be remodelled to accommodate music production. Students can produce music at their desks using headphones. Therefore, space and equipment are not an issue when producing music in the classroom. Kevin adds to the conversation by stating that music production will add value to any music program. However, he believed that teachers need to blend performance and production concepts together. He said:

Like, I think kids learning basic performance is also very important. I mean if you don’t, that’s where you learn the basic concepts of music that if you want to like record yourself and everything, you kind of need to have some basic understanding of a performance as
well to whether you’re an only performer understanding the things that go into it. I think they would need to work in complement, and I think there is a huge, huge benefit having production there, especially with the way music is made these days. Most, you know, a lot of hit songs are just made on a laptop, like these kids, you know, you could literally have like grade eights by the end of this putting out hit songs, like it’s not impossible!

**Engineering**

By relating the traditional path followed in the studio to the progress students could acquire in the classroom, students would have now experienced being interns and assistant engineers. According to Alex, the next role in the traditional hierarchy of the studio is engineering:

Next, you move up to engineering, you’re doing more of the turning of the dials, pushing the buttons, engaging with the artist on the sonics of it. You’re not necessarily doing anything creative in the song, so to speak, like arrangements, lyrics, that’s not your job. Your job is creative in the sonics of it. So how does the guitar sound? How? What? Why? What’s the guitar pedals? Where are you putting the mics and how are you compressing them to make a massive drum sound or a nice tight vintage drum sound? Do you engage with the drummer? Do you put towels on the drums to make it really dead or do you, you know, put no baffles in the room so that it’s a huge boom sound, whatever, you know, that kind of stuff you’re involved in, that part of the creativity. So, in the end the producer can kind of talk to the artist and the producer in terms of what sounds are you looking for? Is it a clean guitar? Is it a distorted guitar? Is it a Rickenbacker kind of a bass sound or is it a really bright bass sound? What do we have? What gear do we have and how do we make what we want the sound to be? So, you’re involved as an engineer, that’s what you’re involved in.

To begin the engineering process, I decided to create a Dr TooNice instructional video titled, *The Fundamentals of a DAW* ([https://www.youtube.com/watch?v=uC2w6Vz4zL0](https://www.youtube.com/watch?v=uC2w6Vz4zL0)). This video explained the basic functions of how to navigate the DAW Soundtrap. Following the instructions, the video had a task for students to complete. Moreover, the description box includes curriculum expectations that teachers could access for assessment purposes. The specific task in this video was for students to create, at minimum, an eight-bar song using five different loops. Even though engineering, as Alex described, does not include composing, in this study, the students had to put some loops or sounds together to create their own music to
engineer it. Therefore, I asked Alex how to introduce the recording project to students with this in mind. Alex responded:

Yeah, I think when they start out, the thing that comes to mind is like learning how to craft a song. Like just understanding that a song has different parts, that there’s different layers. There’s a verse, there’s a chorus. We want the chorus to be bigger. Listen to Ed Sheeran, listen to the top 40 hits, listen to whatever in any genre, and you’ll see what those patterns are that we like as humans, frankly. But you know, you don’t have to get that deep, but it’s yes, look at it that way, then you can go, “Oh ok, I have to know that the verse is this and the chorus is this.” Even with loops, I’m going to put in a drum loop on the verse and then that needs to build. So, in the chorus maybe I have that drum loop, but then I also add a high-hat pattern loop. I don’t have to record it. I don’t have to do anything else. I just have to know that this is how it grows. This is how a song develops. I think if you look at other songs and break down why the song does what it does. What songs do you like? Any song, even a Sesame Street song, does that to some degree, you know what I mean? So, it goes down to the lowest level. As to why do you like listening to the songs you like listening to? And then how does that apply to you making your own music? Even before we get to technicals of how to record, how to put a mic in front of something, you need to understand what the heck you’re recording and why and what’s the point, right? So, I think that’s probably a pretty base level of understanding. What’s the point of it all?

Alex’s discussion on verse and chorus prompted me to create a Dr TooNice video that explained both forms. I adapted this concept within the music production paradigm to visually demonstrate the differences between verse and chorus by separating the tracks clearly. Now, students can hear and see the differences between the two. In the description box of this video, students are offered other links to gain additional knowledge on verse and chorus (https://www.youtube.com/watch?v=liKHmryemG0). I showed these Dr TooNice videos to Alex and Kevin, and they approved of them. As a result, students were now able to import loops and separate them into verse and chorus. As a next step, Alex recommended the following:

I think with hip hop and that kind of stuff, you can do so much with loops and one microphone to record vocals and get so much out of that. Make a whole bunch of beats. If you understand, again, it comes back to the layering, and then it comes back to understanding what the different parts of the song are. Why does your one kick drum sample not make it sound like an F? Well, because there’s more involved. There’s layers, there’s, you know, the melody, there’s the chords, there’s the beat. Understanding that and then going okay, now I can pull stuff together. That’s the same way in rock music,
there’s drums, there’s rhythm guitar, there’s lead guitar and there’s vocals. Same fundamental. So, I guess that kind of goes back to the fundamentals of what you should learn no matter what genre you’re in. There is a pretty basic stack of the things involved that you can do on a laptop with loops, there are percussion loops, there are bass loops, there are guitar loops. You can put those together and make a fricking song and instantly sound good with some of those loops. Then you can manipulate them and make them even better and make them unique. Because if you just take all the loops and put them together, you’ll make a song and you’ll feel good. Nobody’s going to care because it’s the basic loops. It’s kind of like you can almost tell when a GarageBand loop has been used. It’s like, yeah, everybody uses that one, but you can take that and chop it up and layer it differently and whatever. And then before you know it, it’s like geez, this is cool, right? So yeah, I think kids have to start with putting one of each thing looped together, make a song and go, “Ok, now how do I expand this?”

Adding loops together in a DAW could be a rewarding task for young students since they become instantly successful at creating a song that sounds good. However, Alex discussed earlier that students may be attending class with more experiences in production than teachers may realize due to access to devices students have at home. To cater to these students, Kevin suggested a fundamental concept that experienced students can explore:

Something that I think people should learn very early on and I don’t know how relevant this will be with their course (project) because I’m not sure if you’re basically exclusively recording with one mic or not, but if you get into like multi-mic recordings, just understanding the phase relationship between mics is a thing. If you’re sticking with one mic, it’s not really something people need to worry about, but it’s just such an important thing as soon as you’re using more than one mic on anything.

In this project, students had access to more than one microphone, therefore Kevin’s conversation is of interest, especially for experienced students. Kevin continued:

So basically, the concept is basically just if you look at frequency as like a waveform, it’s going to have peaks and valleys.

To demonstrate these waveforms, I have re-illustrated an example as seen in Izhaki’s (2023) book titled Mixing audio: Concepts, practices, and tools in Figure 4.
Kevin continued to explain how these waveforms are created:

If I record like a guitar and I put something like right up against the speaker here, and then let’s say I put another mic about 3 inches back. There’s now a time delay in when the microphones are triggered. So, one waveform will be starting to go up and down here, the other one will get the same waveform pretty much, but it’ll start slightly later.

Figure 4 demonstrates such a delay in the waveforms. One wave starts before the other.

This is termed as “out of phase” (Hodgson, 2019; Izhaki 2023; Oltheten, 2018). Kevin continued:

And depending on those distances, you might actually get it to a point where basically every time the one mic is capturing like a positive excursion, the other one’s capturing a negative excursion. And when you put them together, they’ll actually just cancel out and the majority of the frequency spectrum will go away. And that’s what you would call like out of phase.

Kevin provided options to troubleshoot if a student’s tracks may be out of phase:

Most recording consoles and all software will have like a phase flip button where you can flip, if you have multiple mics, the channel on one and see like if everything gets fuller and thicker or if everything kind of disappears. So, if it’s 100% out of phase, it will completely mute. So, it’s like if you were to take a track in your recording software and just duplicate that track, and on that track, you put up a phase flip plugin and you flip it, you put them at the same level. In the real world, things don’t 100% cancel out. And there’s also degrees in between. So, as you know, if my mics are perfectly aligned, the

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**Figure 4**

*Example of Wave Forms*

![Wave Form Diagram](image)

*Note.* “Two identical sine waves 90° out of phase with each other” (Izhaki, 2023, p. 182).
phase relationship is going to be very good. If they’re just off a little bit, it’ll get a little bit worse, but then there’ll be a point where it gets awful, and there’ll be a point as you go further where it’ll actually start to get better again, because you’re far enough now. Like the cycles are lining up again and as you go in and out, it’ll completely change the relationship between the two. So ideally, like you know, they have something called like a three to one rule is what they call it where it’s if you’re using multiple mics and you’re not going to like, align them, ideally, they say you want your second mic to be at least three times further from the source than the first mic. So, if your first mic’s a foot away, the other one should be at least three feet away to like to negate some of these phase problems and you’ll still potentially have them. And anytime you’re using multiple mics, it’s just beneficial to get a phase flip whether it’s at the recording stage, or whether it’s just in the software, depending on what you have available and just flip that and see what it does because it will change the tone entirely. Like, it’s very interesting, like when you record a bass guitar, it’s very common to record a mic on an amp as well as a DI, and the DI signal always arrives first because it’s basically instantaneous. The amp signal has to take time to travel physical before it gets from the speaker to the mic. So, the amp signal always shows up a little bit later and you know in post [-production], like once you record, you can actually just nudge the tracks and align them if you want.

As an exercise, when using two microphones, Kevin suggested to place these microphones within different distances from one another, record some tracks, and then listen to each recording to hear the phase issues. This created concrete phase examples for students.

Kevin also suggested to use the phase flip option found in the software. When recording with two microphones, the DAW will show two separate tracks. Phase flip can be applied to one of these tracks for students to hear what happens. Kevin also suggested to physically move one of the tracks in the DAW to the right, this way students had a visual of the phase. Kevin expanded on the use of phase:

A lot of times people use that, and they’ll like sometimes there isn’t really a right in phase or out of phase, but it just drastically changes your bass tone and people will almost use it as an EQ process because it just completely changes the feel. But yeah, if you do get into any sort of multi-mic recording, I think the concept of phase would be good to know. Because yeah, especially like I mean once in the real world once you get into drum recording and you have fifteen mics on a kit, it’s like you could fight all day long and at the end of the day it’s like, “Oh if I had just phase flipped this one mic all of a sudden I have no more,” like everything’s big like I was just out of phase and everything’s cancelled and I’ve seen a lot of people like struggle with that, like just can’t get their mixes sound right. And it’s like, “Oh, that mic is out of phase, just flip it.”
Kevin wondered if the curriculum would be chronological in years because he believes multi-micing is an advanced concept. Even though I agree with him, I previously stated that I do not believe chronology is in the best interest of this design since students will have different backgrounds and experiences. However, if students with experience did not need to watch the Fundamentals of a DAW video since they know how to import loops, they could work on concepts such as those found in the Phasing video. This is an example of how students with experience can work alongside students with less experience in a flipped classroom. Kevin agrees with the idea behind the flipped classroom, but still thinks there should be some separation in basic and advanced knowledge. He explained:

I feel like you wouldn’t start your first year with probably multi-mic stuff. You would probably just start with like single mic, get basics, or something, and then, you know, as it progresses, then you don’t have to worry about teaching this phase concept to grade threes which might be a bit much.

Even though I agree with Kevin that some concepts should be taught as students gain more experience, I want to stress that teachers should accommodate students based on their experience levels as opposed to their age. Some students may enter the classroom with the experience resembling an intern, whereas some students may enter the classroom with experience resembling a producer.

Producer

Since students will be creating as they record, they will take on the role of engineer and producer. Alex explained this possible next step in the hierarchy:

So, some people go to engineering and don’t really care to produce. Some people do like producing. So, in this line that I’m talking about right now, the producer is dealing with the artist more on the creativity of the song. What tempo is it? What key is it? Does it flow well? What sounds do we want the engineer to make to get the final product? Making the artist comfortable. Gauging the artist. Do they feel like singing today? Or maybe they aren’t in a singing position? A lot of it’s almost, we have a joke that the producer is almost like a therapist for the band. You know, trying to figure out how they
feel about that. So that is the kind of traditional thing when you think of like the Rick Rubins of the world or that kind of producer. They have producers, engineers, assistants, working in a studio, working with a rock band.

For students interested in exploring the role of a producer, they were exposed to the idea of creating a remix as they can become the performing artist, studio engineer, and producer all at once (Manual & Marshall, 2006; Navas, 2012). Remixes are helpful for students to experiment with concepts that Alex had mentioned such as tempo, key, flow, and piecing various sounds together as well as understanding numerous roles in the studio. In a remix, students could choose a familiar song and edit it in a DAW using music production skills. However, the term producer could have more than one meaning, Alex expanded on his definition:

A caveat to that and a kind of a different thing nowadays is a producer or beat maker. In hip hop, for instance, a lot of people are creating themselves. The word producer has been kind of intertwined with the term beat maker or the person producing the music, making the actual music. So, in a lot of modern music, the producer is kind of engineering and also beat making and actually making the music for a lot of these. Necessarily, that’s a different step in the process. But the producer for a lot of these rap and hip-hop things almost do some of that as well, because the sound of it and the balance of different elements that they’ve created does play a big role in how it sounds. So, you can’t just kind of leave it up to the mixer because it’s how the high-hat pattern works is dependent on the level of the offhanded high hat beat or something, you know what I mean? So, they’re doing a little bit more of that as well. So that’s where the term producer has gotten a little bit gray area that I guess you could say.

Students that choose to work alone can experience producing and beat making through remixes or flips for example, whereas students working in groups can experience traditional producing by sharing ideas with one another and applying these musical choices directly to their projects. Once these choices are made, students record their ideas and create songs. Following, they are ready to manipulate their sounds in the post-production stage which is all done on the computer. The first part of this process is known as mixing.
Post-Production: Manipulating Recorded Sounds

Mixing

After recording, and before the tracks go into mixing, the tracks sometimes enter an editing process. Alex described this process:

An editor or digital editor, those are people, especially in rock music, but also pretty much anything with vocals, it’s somebody that takes the tracks and it’s not really a creative thing necessarily, but they make it in time, in tune, lined up so the kick and the guitars hit together, chopping things up, editing them to make it sound as good as possible. Kind of going through things with a fine-tooth comb to make sure that it’s whatever the desired outcome is. So, for instance, a lot of stuff that I do is chop every single note, put it on the grid. Make it perfect. Some people don’t like that in the end results. So then there’s other jobs that I do as well but that other people want to edit where they listen and when something’s off, they nudge stuff around to just make sure that like impacts hit when everything jumps in on the chorus. They all hit properly instead of got to, you know, you don’t want that. So that’s what a digital editor does, is they kind of, before after everything’s recorded and the band’s happy with it and it’s all there, then it goes to mixing. The editor will just make sure it’s all nice and put into place a little bit more.

When all the tracks have been edited, the song enters the mixing stage. The mixing stage consists of manipulating sounds in various ways. I was interested in knowing what the process was, and how I would begin introducing this process to students. I asked the engineers what some of the fundamental knowledge would include, and if there were specific steps students should take once they begin the mixing process. Kevin responded:

There is a, I guess there’s a fundamental, a thing that would be a very important concept to know is that basically when the brain hears things at a higher volume, it tends to think that those things are better, better sounding. So, an easy trap to fall into, is you get an EQ and you boost the frequency and you go, “Oh that’s so much better,” but really you just actually made it louder. And so, in that moment, your brain said loud or better but now all of a sudden, maybe your vocal is just like really harsh or something because you actually boosted a bunch of like 3K.

When Kevin discussed EQ, he was referring to an equalizer. There are various types of EQs such as graphic (Figure 5) or parametric (Figure 6) for example, and each can “change the tonal quality of a sound by manipulating the levels of certain frequencies within it” (Metalworks
Institute, 1:35, 2015). There are three parameters that can be altered, the first is gain, the second is frequency, and the third is bandwidth, or “Q” (Metalworks Institute, 2015). These frequencies are divided into lows, mids (middle), and highs known as “EQ bands” (Oltheten, 2018). Band is determined by the EQ itself. When Kevin referred to 3K, he was referring to the frequency of 3 kiloHertz, an EQ band within a specific range which allowed him to specifically adjust tonal qualities within a broader collection of frequencies. Each of these EQ bands can be altered to provide more clarity to a specific frequency range. The following link includes audio examples of the description above when using a parametric EQ (https://www.youtube.com/watch?v=D5UC1gX8gPc).

**Figure 5**

*Example of a Graphic EQ*

![Equalizer](image)

*Note.* The frequencies are numbered from 32(μHz) to 16k(μHz) and the gain is set at 0 decibels (dB).
Note. The frequency is set at 660 Hz, the gain is raised to +3 dB, and the bandwidth is expanded to 1.50.

Kevin continued:

In that moment your brain goes, “Oh, loud or better.” But if you were to actually now balance that level in the mix, because you actually didn’t make the track louder and you have to turn the fader down a bit to technically even it out, all of a sudden your vocal would sound thin and you’d realize, “Oh, that wasn’t the right EQ move,” even though it felt good right away. So, I think that’s a concept that’s very important to learn early because it won’t prevent people from making that mistake because I still do it all the time, but it’ll make you aware of it enough that you can act on it later on and avoid it most of the time. It especially comes into play once you do start introducing compressors, because compressors are literally affecting the volume of a track, like that’s how they work.

According to Oltheten (2018), “compression has a reputation of being a miracle cure that can instantly give music more impact, loudness, consistency, tension, and who knows what else” (p. 59). However, it can negatively affect your mix if you do not use it properly by simply continuing to turn knobs. Paying close attention to what you hear as you turn the knobs will benefit your mix in the long run. Kevin described the compressor as:
Literally playing with dynamics. Sound goes in, and then once it exceeds the threshold, the compressor will turn it down a little bit, and then once it crosses the threshold the other way, the sound will release and come back up to full volume.

In other words, the compressor balances the dynamic range. Furthermore, compression reduces crest factor which allows engineers to increase loudness (discussed below) at the expense of dynamic range. Crest factor is “the difference in decibels between the peak and average levels of a signal” (Stewart, 2020, para 2). Manipulating the crest factor can optimize the dynamics of your music. When Kevin discussed threshold, he meant the mixing engineer can strategically position loud sound bursts to a specific decibel (dB) level, and position quiet sounds to a specific dB level to maximize the dynamic range. Kevin continued:

A good way to think of it early, is like, if you had a drum hit, like the drum hits are just uneven like ba, ba, BA and they should be even, you can use a compressor to kind of even those things out. So just knowing once you get into dynamic processing, you want to make sure that you’re actually level matching, [and] actually know whether or not you’re doing something good or not.

As students enter the stage of dynamic processing, I wanted to clarify with Kevin the differences between volume and loudness, as I wondered if those terms were interchangeable.

Kevin said:

Loudness, it’s kind of used in two different ways, I think, and that’s maybe where it gets confused because when I raise the volume on a fader, I do make that track louder. Like it is physically getting louder like that is what’s happening. But when you’re talking about loudness in other ways where it’s getting confused, I think it’s more kind of at like a mastering level of loudness where, when you’re operating in a digital world, there’s literally a max loudness or not. Like there’s a max output volume that things can have because it’s a digital system. So, in binary, once you hit the point where everything is a one, that’s the highest level it can be, it can’t go beyond that. That’s physically impossible. So, you can’t actually get more volume by pushing faders up anymore because you’re already at that max.

To further clarify, digital loudness is metered in decibels “full scale and/or loudness units full scale (LUFs)” (Hodgson, 2019, p. 157). When recordists discuss “volume,” they are usually referencing the peak amplitude of a signal, while “loudness” would be its average amplitude.
Platforms such as Apple music, Spotify, and YouTube all utilize LUFs for their outputs, albeit normalized to a different value. Engineers are required to meet the standards of each platform. Therefore, understanding loudness in the mixing stage is important and recommended. To obtain this specification of loudness requires a specific process, which is not simply turning up the volume on a fader. Kevin expanded on this concept:

So, the only way to get more loudness now is to basically compress the loud parts. So, like remove dynamic range. So, what you’re doing is making the quieter parts of the mix come up and that will make things louder in that concept. And in that concept, loudness is more of an average over time as opposed to instantaneous volume reading. I could push up a fader and I’d be like, “Oh yeah, I’m making that thing louder in the mix.” But I’m not actually making the mix louder relative to other mixes by doing that. Loudness, when you get into like, “Why isn’t my mix as loud when I play it back next to another one,” that type of loudness is actually a dynamic range issue. It’s the level of the quiet versus the loud signals.

As a concrete example of Kevin’s explanation above, students were asked to imagine a stereo system having numbers to measure its volume, and the volume is set at 25. The students listened to two songs. One of the songs had the LUFS at the designated output signals as per Spotify’s guidelines, and one that did not. The difference between both songs should’ve been audible to students. Following the understanding of loudness, students could explore the options provided by Kevin to work with dynamic range within their mixes. The concept of loudness and music production was questioned by Pillich (2009) when asking “how has it come to pass that musicians are being replaced by digital binary zeros and ones? What changes will future musicians face with future technologies? Is the displacement of musicians a new phenomenon or is it cyclical?” (p. 2). Although these questions have merit, music production is not about replacing live musicians, instead, recordings usually highlight an artist’s best work (Tomes, 2009). Some academics assure that production is no threat to performance programs, there is simply a call to move beyond traditional programing by including concepts that meet the
interests of students beyond performance (Kempfer, 2020; Williams, 2007). Performance programs can be enhanced by integrating music production. Elliot (2012) states “by integrating music and music education with all aspects of social life and community, we do not forfeit music’s greatness and profundity; we fortify and increase it” (p. 25). An openness to experiencing music beyond traditional performance will aid music education and “fit the times that are emerging, instead of the times that have passed” (Montano, 2009, p. 60). To fit the times of today, one should understand the process of post-production. Just as performers strategically fill the stage with sounds, Alex described how a mixing engineer strategically places the sound between the speakers in a mix. When a sound is recorded, each of these sounds enter the DAW one in front of another. It is up to the mixer to move the sounds around in the mix. The mixing engineer creates a sonic picture using a 3D canvas. The sonic picture is created by mixing three planes: the horizontal plane, the vertical plane, and the proximity plane (Hodgson, 2019). Alex described how to start thinking about the mixing process:

A mixer is where they take the tracks. So, the guitar track, the kick in mic, the kick out the mic, the snare top mic, the snare bottom mic, all the drum mics or the drum stem, the bass, everything like that and making it a thing that you can listen to, a final product. Adding reverbs, adding EQs, adding compressors that shape the sound and create a cohesive song balance and kind of give the listener something, what they’re listening to. A lot of people don’t think about it, but just because you’ve played the guitar part and added some other stuff doesn’t mean that it sounds good when it’s just played. You have to like, here’s the part where the lead guitar speaks because there’s no vocal. And then the vocal comes in and the guitar, the lead guitar has to go in the background and this part has a really funky bass part. So, we want to bring that up because that’s something we want the listener to hear now. That’s all the job of the mixer. That’s what they’re kind of doing to make an interesting song where you are interested to keep listening. You want to keep listening and listen through it. So, the mixer is creating a journey or a story through the track by using the things they’ve been given based on the engineering and the producing.

To create a story through mixing, Alex described the process of adding digital sounds, such as reverb, to shape the final product. These sounds can be separated into the three different
planes as mentioned above. Each plane plays an important role in the sonic picture. Before diving into these definitions and creating an instructional Dr TooNice video on these terms, I asked for further clarification on the planes. I wondered if one plane should be introduced before the other. Alex began by discussing the vertical plane:

I would say EQ’s definitely something that they should understand because it can shape the sound a lot. When you start to understand EQ, what you’re trying to do with EQ, and like the fact that there are frequencies, and [understand] each instrument has its own frequency range, then you start to see how they stack onto each other. So that affects tracking too. You can’t have a whole whack of bass instruments and expect it to be a nice crystal clean mix, doesn’t work. So, in mixing, one of the first things would be EQ. EQ is very obvious when you roll off the bottom end of something, you can hear it really fast, and go, “Oh, this is really thin now, I can’t hear anything” or, “Oh, I don’t have any clarity, it’s very clear.”

Beyond EQ, Alex expanded on the discussion of compression, which is on the topic of the vertical plane:

Compression is a helpful thing, as you and I both know, but I don’t, I wouldn’t say it’s like an instant fundamental, the very first thing you learn, because it’s a tough one to understand for most people, let alone if you’re just getting started. Because it’s very subtle in that way. So, levels, panning, EQ is kind of how, how loud is it, where is it in the stereo spectrum and then where is it in the frequency spectrum are the first three steps.

After mixing the vertical plane, Alex suggested mixing the proximity plane:

And then I would almost go next honestly would be before even compression I would, I would talk about delays and reverbs and like effecty type things. Especially reverbs and delays because that gives it space, that I would say that before compression, because compression’s helpful but subtle, and so, when you have four tracks in a song, compression is not really the biggest problem. When you have two hundred tracks in a song, ok, maybe we need to compress some and move them around.

Kevin’s mixing suggestions were very similar to Alex, as he elaborated on the planes:

I would say, if I was starting people on mixing, eventually they need to know the basics of what an EQ is, what a compressor is and what effects you have like delays, reverbs, choruses, things like that. I guess especially if you want to be able to emulate certain sounds from what they’re hearing, they’ll be hearing reverbs and delays and flangers and choruses and so like understanding what those sounds are so that they can apply them.
But I think from the get-go if I was to like, especially with a young kid start teaching mixing, I think I would just start with like fader level.

Kevin suggested to begin post-production with the proximity plane. The fader controls the volume of a certain track. He continued:

I would be like, “Ok, here’s a few tracks and as an exercise, balance this out.” So, the vocals [are] at a good volume compared to the guitar, compared to the piano or like whatever you have in your mix. And just like have them spend like five or ten minutes like just playing around up and down like, “Where does this feel right to you?” And like understanding that this is what you can do with a fader.

Next, Kevin suggested to introduce the vertical plane to students:

Maybe from there you can start introducing like EQs where it’s like, “Oh, well, you’re hearing this now, but maybe your vocal sound is kind of sounds a little bit like woolly and dark and you want to brighten it up. So now we can take this EQ and we can actually just put a little boost in the upper frequencies and then we’ll get a brighter sound.” And then maybe like another little session where it’s like, “Ok, now that you’ve got your level set, see if you play with an EQ, if you can find different sounds or things that like make it sound better to you or sound worse or just see what you can get and like understanding.” Having them just take some time to play with just the EQs and I mean there’s probably not really much point into getting into compression until they get older. But it is something where like you’re probably going to need to, well, you’re definitely going to need to learn eventually to go down this road, but like I would imagine like a grade three, I think between EQ and fader levels that’ll probably be enough for them. I mean, if you start giving them other stuff, they’re just gonna start turning knobs and thinking things sound better and not really. Yeah, that would be like the groundwork. And then yeah, definitely like reverb and delay and stuff.

Alex and Kevin agreed that teachers should introduce students to EQ, faders, and effects before any other mixing concept. Moreover, they both agreed that compression is important to know, but not as a beginner. Therefore, this provided me with steps for beginners and steps for experienced mixers. However, they have yet to mention the horizontal plane. Before asking about the horizontal plane, I wanted to clarify some of the terms they have mentioned to compare production language and performance language. I felt this could be helpful for teachers that have a traditional music education background. I asked Kevin if frequency can be compared to pitch. He said:
Absolutely yeah. So, it’s like if your lead vocals there, and then the guitar is playing a notty part that’s kind of in the same register as the vocal, like, that might get a bit weird in the mix. It might be cool. But it’s like just these things to be aware of where you’re just like, “Oh, what if I actually just move that up an octave on the guitar and now all of a sudden, it’s like dancing around the vocal instead of fighting with it for that main space, you know?” And again, it’s not always going to be the right call to move it out of the same fruit. Sometimes it’s better for them to live in those worlds. But being aware that that’s an option from the get-go. Just like, “What if I just, do this,” or it’s like if you’re playing the piano and it’s like, “Ok, well instead of just playing my triad major chord, what if I move it up an inversion and I put the third in the bass and now it’s like all of a sudden that low note maybe was the thing that was conflicting.” And by moving up the voicing on the piano, all of a sudden everything opens up and its things just kind of fit together.

As the conversations continued, I became confident with the production terms and definitions, and related them to performance terminology. The idea was to relate performance terms to production terms and realize that they generally mean the same thing. Therefore, to make clear examples for my participating teachers and students, I created a Dr TooNice video for each of the planes. As recommended by the professionals, I started with the vertical plane which mainly focuses on EQ. Performance-based teachers can relate EQ to terms such as tone, timbre, and pitch (https://www.youtube.com/watch?v=I1e4wOTJn68). Next, Dr TooNice explains the proximity plane, which focuses mainly on faders, reverb, and delay. Performance-based teachers can relate these terms to balance, blend, and room size (https://www.youtube.com/watch?v=xKHIqQcsq&Q&t=18s). Even though the professionals did not discuss the horizontal plane, I included this plane in my instructional videos to fulfill the entirety of a sonic picture as described by Hodgson (2019):

Most mixes are based on a simple “anchor point” formula, in fact, kick drum, bass, “lead” instruments like vocals and soloing synths or guitars, and snare (and/or clap in electronic genres) tend to run directly up the centre of a mix. Accompaniment tracks almost always wind up situated along the periphery, and somewhere between the front
and the back; lead tracks, especially lead vocals, are almost always mixed to sound front-and-center. (p. 77)

The horizontal plane, which is moving sounds side to side is explained in the panning video (https://www.youtube.com/watch?v=iC7-S0mZMs0&t=1s). Performance-based teachers can relate panning to seating arrangements. To experience these concepts with hands-on practice, I asked the experts how they would introduce them to students. For example, I asked Kevin, “How can students experiment with frequencies and hear sonic differences?” He replied:

I guess you would probably need a few instruments to have like a little bit of density to your mix to make it make sense. But then, you could record a guitar that’s doing like a lead line with the vocal and you could record it and knock it up. I don’t even think it’s a matter of ever really saying like this is better or this is worse. I don’t think that’s the right way to teach anything in production. It’s like, “These are options.” And it’s like, “If I move this up the octave, you may like what you hear, the vocal becomes clear and more of a focus. And the guitar is kind of here, as opposed to, “If it’s down the octave, now they’re in that same space and it’s like your ear might be divided between the two and is that what you want? Is that not what you want?” Or “You have the piano and just move it up a couple voicings and like record two options and then maybe you can just kind of flip back and forth and like, this is kind of what you can achieve just through arrangement.” Like maybe that’s the way that you could go about that. Like knowing all the work ahead of time, I guess to prepare these examples and stuff.

Kevin was actively thinking about how students should be introduced to these concepts through experimenting with sounds firsthand. Since the mixing process occurs after the tracks have been recorded, often the performing artists are not involved in mixing decisions. However, one of the goals of this project was for students to understand what is entailed in the mixing process. This can be valuable if they become engineers or performing artists as they should have a say in their final sound. To have a voice in the final sound, students need to know different options, hence taking the time in class to record the same thing over and over, but in different voicings as Kevin suggested is important. Once students are ready for the mixing stage, their knowledge of options becomes valuable in decision making. Even at the professional level, the
engineer has a second engineer to look over their mix once they have done some work on it.

Alex expanded on this:

A second engineer is also when as an assistant, you’re not the main engineer, but you did a lot of engineering because often times, for example for me, the main engineer was there during the day, but we would record for another six hours at night or days off that the engineer wasn’t there. I did a lot of that engineering, but I’m not the engineer, but I did 30 to 50% of the engineering. So, it’s not really an assistant at that point because it’s like, “Well, hold on a minute, I did a lot of this, I did a lot of creative work here.” So, second engineer is where that kind of bridges that little gap, I guess you could say.

Once the mixing stage has been completed, the song enters the final stage of post-production which is the mastering stage.

Mastering

Aside from some Western art ensembles and certain cultural musics, it is rare to hear live music played without the use of music production. Shively (2015) states “even with live music, it’s almost always compressed, processed and heard through speakers” (para 5). When music comes out of speakers, there is some type of music production involved. According to Corey (2012), “an engineer’s goal is to shape sound so that it is most appropriate for reproduction over loudspeakers and headphones and best communicates the intentions of a musical artist” (p. 4). To have a song sound pleasing through different types of speakers, there is a process after mixing called mastering. However, in my conversations with both experts, mastering did not seem to be too much of a concern at the elementary level. Alex started by saying:

I think mastering when you’re really getting started is something you need to be aware it exists. It’s something that should happen when you release a song because it needs to be at the volume level standards for Spotify or for whatever you’re doing. Honestly, that’s kind of the base level knowledge that anybody in grade three, four, five really needs to know. They can research it themselves, but that’s at the very core. Once you get a bit more and you’re really starting to learn what mixing is, what compression does, what EQ does, then you’re ready to go, “Oh, there’s another step that can also shape the song sonically a bit more.”
Alex continued the conversation by describing what the role of the mastering engineer would entail:

Mastering engineers also use compression and EQ and do the same thing, but they’re doing it on a two track at the very beginning. That’s the base level. Beyond that it’s like we’re getting into some fine wines a bit more to understand. Honestly, mastering go to LANDR or something and get it e-mastered so that it’s at the right level, done. That’s good enough for now so that they can feel like they could release their stuff and that mastering is a stage that we do need to do. But how to do it? I honestly, I don’t think anybody should at the very beginning. It’s confusing at that level. As a mixer you need to make the best mix possible, not relying on mastering. So don’t start that first where it’s very intertwined, it’s, it is separate. At least that’s how I feel myself. So that’s what I would say.

Alex seemed adamant that mastering was not necessary at the elementary level since he felt that these students should focus on building a strong mix instead. I was curious to know if Kevin had similar feelings to Alex on the topic of mastering. Kevin said:

I mean, you could even just have them run it through an AI master online or something, you know, like LANDR or whatever. I think that you can get those for free if you get MP3s or something. I don’t know. I haven’t looked into it in a while, but because I guess like the mastering is a stage, like without mastering, I mean maybe when they’re mixing, they throw a limiter on the end of the bus or whatever, but other than that... Well, their mixes are gonna be very quiet compared to what they are used to hearing come out of speakers. Like, because mastering is kind of where they’re able to bring up that loudness. And so, it might be like, yeah, might be nice for them just to hear that nice loud version at the end.

Kevin’s thinking on mastering was almost identical to Alex’s. Therefore, when students completed their mixes in class, the conversation on loudness, as described earlier, was discussed to provide students with an awareness of the mastering stage. Furthermore, the students could use an AI program such as LANDR to hear their mix prior to it being processed by the AI in comparison with the sound of their mix being mastered by the AI.

**Distribution**

Next, I discussed the option of distribution with the professionals. Kevin’s viewpoint on distribution leaned towards sharing the audio:
There’s an online distributor called Amuse, I think, and you can actually sign up through them and it’s free distribution. Like you don’t actually have to pay a monthly fee or per song fee or anything and they’ll get [their music] up on Spotify and Apple Music and Amazon and all that stuff. So yeah, there are free options available for that. I don’t know what the catch is, there’s gotta be some sort of catch, but probably a percentage of your royalties or something if I had to guess.

Kevin’s idea of finding an online distributor could benefit the students that want to share their music with others globally. This idea aligns with the study conducted by Peppler (2013):

Musicians can now sell their work directly through online marketplaces such as iTunes, they do not need to wait for major record label deals and difficult-to-obtain album contracts. Some young artists have started their own DIY record labels and/or marketing themselves primarily using free services, such as YouTube and other social media platforms. Instead of following the lead of professional artists, young artists are redefining how musicians share and distribute their work in the 21st century digital marketplace. (p. 37)

Even though there are multiple options to share audio online, Alex leaned towards video production as a distribution tool. He said:

Sound design is more of a post term, something to do often with video. Where you have a video, you have to add other soundscapey things to make it sound more realistic. Often, if there’s a transition in a video, you’ll hear sounds. That’s not natural, but it sounds really boring without them. There’s a whole bunch of different terms in the post-world for a lot of that stuff. I kind of blanket it together as sound design. It’s actually going, “How can we make this more interesting or what can we design? What can we make out of this, realistic or not?”

For this study, I did not include any video production techniques as part of the student projects since there were too many steps involved to fit my schedule. However, since sharing music on platforms such as YouTube and TikTok are possible next steps in music distribution, students were made aware of this option.
Role of the teacher

Before meeting with my participants in the schools, I was interested to know if the professionals had any opinions on what the role of the teacher should look like in an elementary music production classroom. I told them that one of the participating teachers had some experience in production and the other teachers had no experience. Often, teachers turn to YouTube when searching for resources. However, as easy as it is to navigate YouTube, it is not that easy to find specific videos that meet student needs in music production. Many videos have complex explanations, especially for elementary students. Therefore, besides the Dr TooNice instructional videos, I asked Alex if there were any teacher-directed channels he knew about. He said:

YouTube videos, there’s lots. I just released one. I’m doing every song now that I make like a video that I kind of showcase something or a few things that I’ve tried making a song and I have the song. And then I do a mixed breakdown where I go through pieces of the session from a more technical standpoint. So, my last ones like, “Ok, here’s the drums, I used X program, and this is a compressor I used for something.” Not every single thing, not every little bit, but I have a few of them that break down different pieces of the track. Of course, I’m battling within the, you know, YouTube got to be retentive, retention and stuff, but, that kind of thing, you could use some of those to showcase different things. I know there’s more of them out there for sure. There’s different programs that have that, especially for metal. I know there is, but so I’m sure there’s some more for other genres as well, somewhere. I don’t know off the top of my head.

Alex’s videos are very-well explained rock and metal-based instructional videos (https://www.youtube.com/@ANAKCreates). However, they are aimed towards production creators with some experience. Even though his videos are free and available publicly, teachers with no experience would require some background knowledge to understand most of them. I proceeded by asking Alex if he thinks the teacher should have experience in music production before teaching it. He responded:

I think the teacher would probably need to have some kind of a base level knowledge of the process. They almost need to have their own crash course. Obviously, they’re older so
they can understand a bit better than, you know, a grade three child maybe, who knows? But they would, if they have like the overall technical knowledge of the process and the technical what to look up or even to know. Some resources to point the kids towards that you can rely on. Then if the kid is asking, “Well I want to make rock music, how do I do? How do I make my guitar sound bigger? Oh, go to [so and so’s] YouTube channel there that’ll show you some rock stuff.” Or you just have some buckets of knowledge of where to point them at least and also the technical aspect of how to record. Just like, what dials to turn, hit the record button, [and] what are the technical files? Things like you need wave files, not MP3s. You want 441 or 48K. The things that they just need to understand what that means and what to point the kid towards. Because when you dive into the technicals of it at that point, they should have the answers to just, what do you choose? And a little bit of why? So that’s what I would say. And then the teacher can help guide them towards the other resources. Because there’s no way a teacher, even a teacher who knows not a little bit, will know how to make every genre of music under the sun. Like, you know, I’ve been doing this for 10, 15 years and there’s still lots that I don’t know, but I’m good at pointing people towards it or I have a really good understanding that I can put pieces together when I coach people. But, I don’t expect most teachers at all to know that, let alone ones who are coming in with zero training. So, they need the base level to just point the kids in the right direction I think for some of that.

Even though I partially agree with Alex, the reality is that most music teachers have little to no experience with music production. This is because most music education programs at the post-secondary level in North America primarily focus on performance-based knowledge.

Therefore, one of the aims of this study was to provide teachers with little to no experience with a music production resource that can help them and their students gain a base knowledge of this craft. As I explained to Alex that most of my participants will have little to no experience, he expanded on his thoughts:

Teachers have all the information, and their role, is to like, they’re the gatekeeper of the information, so that the kids don’t get overwhelmed with. Here’s a list of everything possible, they kind of, with the structure of the lesson plan and the curriculum, “We’re going to start with how to make a song. Here are the videos you’re going to watch. Here’s the thing you’re going to do to learn that.” You know, “Ok, listen to five Ed Sheeran songs and make a list of verse, chorus, like what’s the structure of the song? Here’s what I’m going to just give you.” The little, “Here’s what it is, now you try it.” That’s this lesson. Next lesson, you know and give them the information slowly and also have the backlog of resources for them. So, when they ask questions, they at least know where to point the question to. “Here’s resources, here’s the links for you.” Not, “There’s an open-ended plethora of information that you’re not going to even know where to look.” The teacher is kinda pointing them. The teachers for this would be more of the
point them in the right direction than the help them if they have not as much knowledge themselves, which is totally fine, but they understand, “Oh, you’re talking about this, but you are actually in the very first stages of recording.” You don’t need to know about mastering yet.” So, they’re like, “How do I master my track?” [The teacher replies] “You don’t need to yet. How about we do this? I know you heard it on YouTube, but you’re not there yet,” you know?

In a music production classroom, Alex suggests the role of the teacher should consist of guiding students and directing them towards helpful resources when needed. This aligns with the beliefs of famous producer Rick Rubin (2023) as he states “innocence brings forth innovation. A lack of knowledge can create more openings to break new ground” (p. 121). However, Kevin shared similar concerns as Alex regarding the teachers’ knowledge base when he said:

Up to a point where teachers can answer questions and feel [confident], because I’m not really sure who, like you’re trying to put in the curriculum. I guess it would just fall on like the regular music teachers and this would become part of their role. Yeah, so, I guess like there would be a bit of an education process for them getting to the point where they understand it well enough to teach it and hopefully are able to answer questions about it a little bit. Yeah, I guess basically knowledge is they just need to have basic understanding of this stuff, right? So like, just that basic understanding of the basic signal flow I guess of like what I was describing with the mic and how it gets actually recorded and basic understanding of the different types of microphones and polar patterns. And obviously they’re gonna need to know the software that you’re using, which would be the other learning curve cause they’re gonna have to be able to explain and answer questions about that software.

Taking Alex and Kevin’s concerns regarding teacher experience, some Dr TooNice videos were adapted to provide teachers the fundamentals needed to introduce music production in the elementary music classroom. In the next chapter, I describe the experiences of three participating teachers introducing music production to their students and describe their involvement in this participatory action research project. These teachers work in a school board where music programs have been reinstated in each elementary school. However, those teaching music may not necessarily have music education as a background, nor have a music classroom. Therefore, with the information provided by the professionals and the individual situations of
each participating teacher, I examined the logistics of working with music production in the elementary music classroom within various scenarios.

**Summary**

Traditionally, music performance has been the primary focus of music education in elementary schools, whereas non-performance roles are often overlooked, regardless of the genres being taught. Jokingly, yet somewhat truthfully, I asked Alex if a performance artist was the smallest part of the creative process by saying, “Well, I’m now starting to think like, does the artist do anything?” Alex responded, “Not really, honestly, we do it all haha!” Alex’s response made me question the values of music education, especially in elementary school. According to the expectations found in the Ontario music curriculum, students are to obtain a knowledge base in music performance. According to the music industry professionals in this study, music production dominates the field of music. To bridge this gap, this study aimed at interpreting the music curriculum through the lens of music production.

There are many non-performance roles involved in producing a music recording, yet in elementary schools, the teacher typically takes on these roles as students prepare for performances. However, some students may have more interest in these non-performance roles. Music production requires some performance concepts, and therefore the information in this study pertains to providing students with a well-rounded education in both performance and non-performance.

The roles involved in music production consist of pre-production, production, and post-production. In the next chapter, I detail how the participating teachers applied these concepts in their own practice. Through the cycle of planning, applying, and reflecting, I share the experiences and suggestions made by these teachers.
As the clock struck 8:55 am, the morning school bell rang, C, E, G, C (insert the arpeggio sound here). The students lined up at their designated doors in the school yard and waited for their teachers to come pick them up. As the doors opened, the students entered the school, and the sounds of excitement filled the halls. The students changed into their indoor shoes, sat at their desks, and the school day was ready to begin. The day began with three music teachers, in three different schools, ready to try a new plan they had never done before. This plan consisted of embarking on a music production journey. This journey included recording, manipulating sounds with a DAW, and sharing music with others.

In this chapter, I describe how three music teachers, plus myself as a teacher, researcher, and participant, applied a music production curriculum with primary (ages 6 to 8), junior (ages 9 to 11), and intermediate (ages 12 to 13) students. The stories in this chapter are presented through the lens of the teachers. I will provide an overview of their perspectives regarding their role during the design process (planning, applying, observing, and reflecting), their role when actively engaged in the classroom, some issues they encountered, and how they resolved these issues. I have been teaching music production with my elementary students for approximately five years. The participating teachers had never included music production in their classes before, however some of their students had experiences with recording outside of school. I will discuss how these teachers adapted music production concepts to the current provincial standards in Ontario. Succeeding this chapter (Chapter 6), I will describe the experiences of music
production through the voice and lens of the participating students. To begin this chapter, I would like to introduce myself and the three music teacher participants.

**Recruiting**

Before I present my findings, I acknowledge that my positionality may have influenced this project to some extent. My participants were aware of my experiences in music production. However, they have contributed insightful and meaningful information to the development of my music production curriculum for elementary schools. I mention this since my study took place in the school board where I have worked for over a decade. During this time, my students have been exposed to numerous music production concepts using software such as GarageBand, Bandlab, and Soundtrap. The participants were recruited from my school board, however I had never met or engaged with these teachers prior to the study. The participants expressed interest in the study by responding to an email sent from the head of the arts to all the music teachers in the school board. Although many teachers showed interest in the study, there were only three teachers willing to volunteer and commit to participating in the study in the time frame provided.

My aim was to work with the teacher participants to implement music production in elementary schools while investigating some practical teaching approaches. I examined these approaches through participatory action research (PAR) (Cohen et al., 2018; Creswell & Creswell, 2016; Merriam & Tisdell, 2016). Research by Onsrud et al. (2023) shows that “internationally, action research in music education is used primarily to improve the practice of music teachers” (p. 330), whereas Herbst (2016) states “a defining feature [in] participatory action [is] that educators work to improve their own practices” (p. 258). Furthermore, Onsrud et al. (2023) claim that in PAR “the students were considered important contributors in developing and changing music teacher education for the future” (p. 333). Similarly, as both a researcher and
teacher, not only did I explore music production concepts with the teacher participants to improve their teaching practices as a researcher, but learning from their experiences has shaped the future directions of my own teaching practice. The participating teachers were Rachel, a second-year music teacher without any post-secondary musical training; Bradley, a first-year music teacher without any post-secondary musical training; Aimee, an experienced music teacher with a music degree from an accredited university; and myself, Johnny, an experienced music teacher with multiple music degrees from three post-secondary institutions. In March of 2023, I received ethics approval from my research institution (Appendix N) and my school board (Appendix O) to conduct this study. At that time, the email to recruit teacher participants was sent out. By the end of March 2023, I had all three of my teacher participants’ consent and commitment to the study.

**Getting To Know Rachel**

I first spoke with Rachel over the telephone in March of 2023. The initial phone call was not recorded as I was waiting for her letter of information to be signed. This phone call generally consisted of discussing the idea of implementing a music production project with her students. I described what this looked like in my classroom. Then, we considered the possibility of having interviews and observations on a bi-weekly basis at minimum. Rachel agreed and was excited to get things started. Our first step was to recruit some of her students by having them sign letters of consent. In the interim, we set up our first interview where I collected some of her background information as a teacher and musician.

Rachel is a self-taught musician who has long been interested in learning a variety of instruments. She plays the clarinet and was learning how to play the ukulele during the time of study. Over the past few years, every school in our board had received a class set of ukuleles as
part of a music implementation program, which helps to explain why Rachel took up learning this instrument. Rachel elaborated on her experiences of learning to play musical instruments: “I know how to play piano, but I’m not awesome at it yet. I’m not musically trained, like in the sense that I went to school for it. I have taught myself everything.”

In 2018, my school board implemented a music program in each of its elementary schools. Most teachers that accepted a role to teach music were not necessarily music specialists. The only requirements for these roles were to have provincial teaching qualifications and to have an interest in teaching music. This is not unique to this school board as Draisey-Collishaw (2004) observed that “music teachers in elementary schools are often classroom teachers” (p. 20).

Rachel was a trained classroom teacher and felt some pressure entering the role of music teacher since she did not have any formal training in the subject. Her experiences were mainly self-discovered outside of school, and she listened to a variety of musical styles:

I like all kinds of music. If I’m listening to music, it’s usually alternative rock, but I’ll listen to and appreciate pretty much anything, because I really enjoy music.

I was curious to know if she had incorporated any of these experiences in her classes, and she responded:

No, cause one of my favorite bands is like Dirty Heads, and they’re wildly inappropriate for a classroom. So, I don’t generally implement music study because I’m more hands on, let’s do instruments, let’s figure out this rhythm, let’s produce. Like, I don’t love researching genres of music, which I know we’re supposed to.

By stating she doesn’t implement music study, she meant that many of the groups she listens to fall within the popular music bracket, and these groups may have content inappropriate for children in schools. Therefore, rather than analyzing lyrics and exploring musical content that students may listen to, Rachel prefers following published musical content made specifically for the elementary classroom, based on methods such as Orff and Kodály, to develop performance-
based skills as traditionally found in schools. Every year, the school board provides each of its music teachers opportunities to obtain additional qualifications in Orff and Kodály through professional development courses offered at the board office. Furthermore, in the initial stages of the implementation program, the school board provided each of its schools with Orff and Kodály resources. The board also provides each of its music teachers access to the www.musicplayonline.com website, which contains ready-made music lessons and units for kindergarten through to the eighth grade, and a membership to the provincial music teacher association OMEA. These resources typically contain content that excludes popular music.

Countryman (2012) believes “the universities’ systemic bias towards teachers who highly value Western classic music, Jazz, and ‘serious’ repertoire is a reason for the exclusion of popular music from the classroom” (p. 137). However, Rachel was intrigued by the idea of implementing music production to meet the students’ interest in various genres of music, including “serious” repertoire (Jackson, 2006). I was curious to know if she considered the recording studio as an instrument (Bell, 2018), and she said, “I do, but I don’t know how to do that [laughter].” Next, I would like to introduce Bradley, another teacher participant.

Getting To Know Bradley

I first spoke with Bradley over the telephone in March of 2023 and had a similar conversation with him as I did with Rachel regarding intentions of the study and recruiting students. Without any participating students, my teachers would not qualify as candidates for this study. During the time we were waiting for his students to sign their letters of consent, I had my initial interview with Bradley and obtained some background information on him as a teacher and musician.
Bradley grew up in a musical home and was introduced to numerous instruments. As a child, he gravitated to the piano, however, referring to EDM (electronic dance music), he said “I was still drawn to that recorded like kind of dance style music.” I was curious to know what kind of music he currently listened to at home, and he responded:

I don’t really have a particular type of music that I do like. I listen to pretty much anything. The only music that I don’t listen to per se would be certain brands of pop country music. That’s kind of like a weak point. I mean, it’s probably one of the most popular in North America, funny enough. That and I would say really, really, really heavy metal, like, I like some metal, but like you know certain brands I guess I don’t. But like you know, I listen to pretty much anything else really.

Both of my participants mentioned that they were interested in multiple styles of music. I wondered if this may have been a reason why they were interested in pursuing music production. Keeping in mind that Bradley is open to most genres of music, I questioned how this impacted the musical choices in his classroom, and he said:

I think that when you bring something you’re passionate about to students, it really imprints on them, and they really understand that. I think students really buy into it and engage more with a teacher sometimes who brings something they’re genuinely interested in. And so perfect example is hip hop music, you know, it’s tricky because of the language, but even with my grade eights, like when they pick a hip hop song to do a review of that kind of thing, we remove the expletives, but the message isn’t lost and the general spirit of the song can still be discussed and kind of examined and so that’s just one example.

Bradley enjoys listening to multiple genres of music, and he sees value in incorporating popular music in his classes. When introducing composition to his students, he encourages them to write within any genre of their choosing. He explained this process:

So, I’m kind of at the phase with them where we’ve just kind of cross-examined some songs, looking at lyrics. So, we’ve done more of a lyrical study. And then I was going to explore the idea of production, but I think I will potentially run out of time to do it on the mass scale with my older students because I only see them 40 minutes a week.

Time limitations are one of the biggest challenges in our school board since music teachers only see the junior and intermediate classes once a week for 40 minutes. However, I
have personally seen students so interested in production that they invest much of their free time in playing with a DAW outside the classroom. I asked Bradley if he would be willing to try recording students’ compositions regardless of the allotted class time, and he discussed some of his future aspirations for teaching music production:

I would like to do more of a production angle or more of a like the, you know, behind the mic, what else is going on and how does that work and how do we put that together. Now that’s something that I’d like to kind of push forward, you know what I mean, moving forward. Plus, it’s my first year at this school, so I can only introduce so many brand-new things that I’m not accustomed to teaching in a certain way.

Although Bradley was interested in music production, the current curricular expectations steered him away from implementing any production concepts in his classroom. He felt the pressures of staying within the music performance paradigm for the time being, however, he expressed excitement regarding how he could interpret the curriculum through the lens of music production. Next, I would like to introduce Aimee, another teacher participant.

*Getting To Know Aimee*

I spoke with Aimee over the phone in March of 2023, and held the same conversation as I did with Rachel and Bradley regarding the aims of this study. While we were waiting for her students to sign their letters of consent, we set up our first interview through Zoom. Aimee had been teaching music for multiple years at the elementary level. During this study, she was teaching during the afternoons only, and entered a new role as part-time librarian and part-time music teacher. Her students came for music class in the library. Aimee has a music degree from an accredited university; however, she feels that her training had obstructed her views of including popular music in the classroom:

The biggest challenge, I think, when I first started as a music teacher, I was changing from a very traditional Western music, all dead white guys, and trying to expand. That has been a very interesting journey.
Her journey of shifting from traditional Western art music to popular music aligns with calls from academics in favour of exploring popular music teaching in elementary schools (Dahm, 2023; Love, 2015). However, with music production, she may not need to contemplate the genres introduced in her classroom as students can record the music genres of their choice. Randles (2022) reassures teachers that “this is the most exciting time in the history of music to be a music teacher. Your classroom can be a place where student music can be captured” (p. 185). To put recording any genre into perspective, I asked Aimee what type of music she enjoyed listening to and she answered:

I like a lot of music, but my go to is usually heavy metal, classic rock, some pop, AC/DC, Led Zeppelin, you know the classic classics.

Knowing that she enjoys these styles of music, I asked her if she ever listened to any of these songs in her classroom, or if she only listened to traditional Western art music. She responded:

I try to incorporate them both. Like a couple years ago I did a Guns N’ Roses lesson, and I dressed up as Slash. We talked about covers of songs, all you do, you’re only changing the tempo and the instrumentation but it’s the same bones. But it sounds dramatically different when you know, all you have to do is change the instruments that you use. It was a very memorable experience for them, but you know I tried to sneak them in, in different ways.

It was interesting that Aimee felt as though she needed to “sneak in” popular music, since no one was policing the content of the music played in this particular board’s music classes. Additionally, Bradley felt the same as Aimee, yet his fear had come from the wording of the provincial curriculum, and for Rachel, feeling the same as the other two, her fear had been based on inappropriate content and selecting resources suitable for specific age groups. To get to know Aimee some more, I asked her if she played any instruments, and she said:
So technically I can play pretty much all of them. I’m rusty, I will admit to that. But part of my degree was that you had to learn basically everything. And so, so yeah, technically, but my instrument of choice is oboe. I’m an oboist.

I wondered if learning “all of them” included popular music instruments such as electric guitars and drums, as well as the recording studio:

No, [in university] we did, it was much more like here’s your instrument here’s your notes, go learn them, you know, with guidance but like go and that was it. But I mean that also was 20 years ago.

The instruments Aimee learned in university were mainly orchestral. Typically, most post-secondary music programs focus on developing skills within the orchestral, band, jazz, and choir paradigms. However, in recent years, popular music electives have been available to post-secondary students. As a teacher, Aimee had struggled to teach outside of her comfort zone. Yet, as she gained more experience and confidence, she explored different options and decided to incorporate popular music into her program. She shared with me an example of when she created an arrangement of a rock song and had her students play it on Orff xylophones (Vasil, 2015). This idea aligned with those who practice modern band (Powell & Burstein, 2017). She described the experience as the following:

My grade three kids did the slow part of “Bohemian Rhapsody” on xylophones, and they were like “this is pretty,” and the parents were all like “WHAT!!!”

Aimee expressed that the students enjoyed playing the song on the xylophone, even though they may not have all previously known the song, however the parents were very impressed with the selection. Even though “Bohemian Rhapsody” is not Western art music and may be considered progressive in the elementary music classroom, it is worth noting that this song fits within the “dad rock” paradigm (Franklin, 2023). Songs that fit within this paradigm typically reflect the music of older generations and may have little to no connection with the students.
Progressive Classrooms

Opposing the view that older music has little association with students, Bradley viewed dad rock as a connection with the students. He explained:

I think it’s just exposure. Like I think everybody goes through a musical evolution from like grade nine on, or seven on, if we’re being fair. In grade eight is when I think kids really start to build an identity and music is a big part of that. And I find like when you’re in grade four, five, six, you listen to like what’s on your mom and dad’s radio a little bit. I remember for me like legit, I’m not ashamed to admit it, I liked Dance Mix 92 when I was in grade five.

Although students may be influenced by the musical genres of their parents, students are faced with other factors such as gender, race, the community which they live in, their peers, social media, and the internet (Connell & Gibson, 2003; Miller, 2017; Thompson & Campbell, 2010). Students are faced with these factors at a young age. It is not uncommon for primary students to carry cell phones and be constantly exposed to various forms of information online. Even though it is important for teachers to expose students to the music of previous generations, it is also important for teachers to provide students with opportunities to analyze, create, and play the music they identify with. On the topic of identity, Bradley commented:

In grade seven, eight, the exposure they have to music is still really based on their surroundings. And I think once they get to that bigger pond in high school, there’s more people, there’s just more opportunities, there’s more, you know, more of a bigger sense of finding your identity.

Bradley’s school is in a rural area, therefore there may be less peer influence in the physical sense of “surroundings,” however current students live in a generation in which they have instant access to worldwide information online. Moreover, in relation to music production, this increased level of access has provided students more opportunities to create within this field compared to the past. This is why Bradley believed students used to develop a passion for music production later in their teens when he stated:
DJs are like chemists who have little tricks up their sleeve. But it’s a skill that goes unnoticed until they’re like, probably closer to the end of high school or going to Ryerson or going to Humber or wherever they would go for like music production, that’s where it becomes more of a focal point. And so, you’re saying if they were doing this from grade three or four on and they were interested in this, what kind of producers would you have by the time they get there?

Bradley seemed hesitant about the idea of students producing music at younger ages, especially students in the primary grades. This may be the case since music production used to be a specialized trade in the music industry while music in public schools typically focused on instrumental or vocal performance skills. However, with access to online information, software, and equipment, plus a constant exposure to produced sounds, I mentioned to Bradley that students are in a unique position because they can produce music at a younger age compared to previous generations. Bradley expanded on this thought:

Not to mention the greatest producers already have it by the time they’re like 18, right? Like Pharrell and those guys when they started their company in Virginia. Just in general, I find like the best of the best in the industry, they’ve been doing it at home since they were teens.

If these producers have been doing it since they were teens, can one not imagine the possibilities of students beginning to produce before they were ten years old? Aimee weighed in on this conversation:

I’m very intrigued. I like where you’re thinking of this. I like it. I think just from where I’m sort of sitting right now, I’m sure that my opinion will change and develop. But I feel like the primary kids, I do think that there’s still a lot of value to teaching those very, very basic things like rhythm and singing and pitch and those sorts of things.

Aimee continued to struggle with the idea of shifting away from a performance paradigm. She was also hesitant to think that primary students would benefit from this program since she was concerned that a music production curriculum would not provide any opportunities to teach basic performance skills such as rhythm, singing, and pitch. This is when I took the opportunity to explain to her that I was interested in interpreting the music curriculum with a music
production lens. All the performance terms and skills would still be developed in class; however, they would be explored by adding a DAW to student learning. Upon mentioning this, she indicated that this curriculum may also benefit her older students as she reflected:

But I think once you get to you know [grade] six, seven, and eight, that intermediate year, most of them aren’t willing to sing for you. Most of them are barely interested in music as a whole, other than listening to what they’re listening to. And so, I think that would be really valuable for that age group. I think that being able to make the connection between what they are listening to because you know at that age music becomes such an incredibly important element of their personal development and their identity at that stage, and that would be really valuable for them.

When Aimee mentioned that her students lost interest in music class by the time that they reached grade six and that her students were only interested in listening to the music they liked, she wondered if music production may be more valuable to gain the attention of this age group. Even though I believe music production is valuable for all age groups, I mentioned to her that this project may be an opportunity for her to make the connection between what the students are hearing, in comparison to what they think they are hearing in their headphones (Hodgson, 2019). In the music production curriculum that I created, students had to critically listen to recordings and determine the technical elements that they heard. They were no longer “listening to the recording under the same circumstances as the original performance” (Oltheten, 2018, p. 54). Ideally, students should begin to hear how music production can shape a recorded performance. As I was explaining to the teachers how these production concepts related to performance concepts, I reminded them that I had been teaching production with my students for multiple years, and that my approach within this paradigm had shifted multiple times. At first, I would have students compose music without providing any tips on mixing. I also had them record themselves without any additional equipment such as microphones. As I obtained more music production experience, I provided my students more choices in recording their sounds. I also
included mixing techniques in my instructions. Furthermore, I gave more autonomy to students over the years. This was why I believe that student perspectives could help shape my teaching practice.

**Getting to Know Johnny**

I would like to explain my positionality as a teacher, researcher, and participant in this study. I am a cis-gender heterosexual white male and embody the privileges of those who occupy these identities. I was raised by two parents in a middle-class suburban home. I attended university and obtained employment as an elementary school teacher upon completion. I teach in the same school board as my participating teachers and have been teaching there for twelve years. I have multiple degrees in music performance and music education from three post-secondary institutions. I also write, record, and perform music in a touring reggae, punk, ska group ([www.youtube.com/tooniceofficial](http://www.youtube.com/tooniceofficial)). In this group, I used to focus solely on live performances, however, I recently started regretting that I did not focus more on recording my music, recognizing that “hit records are made in the studio” (Seabrook, 2015, p. 66). I relate this regret to my training background since all my degrees were based on perfecting a live performance, and I was never exposed to the recording field. After a decade of touring, the only recordings I had were those that audience members filmed from live shows, uploaded to their social media sites, and tagged me in the videos. These low-quality audio recordings became the representation of my years of hard work. When trying to book shows, the first place that a talent buyer looks for references of your music is on your website, or social media sites. Upon this realization, I enrolled in additional post-secondary courses in music production, since they were not required courses for my music education degree, and it changed the focus of my personal career as a musician and teacher. Although I enjoy performing music live, without any good
recordings, my performance opportunities are limited. As a teacher, I do not want my students to miss out on such opportunities and feel similar regrets to myself, especially in today’s world that mainly focuses on online music. Therefore, I wondered how I could help students develop skills that related to the music they were listening to, hence the introduction of music production in my classes. Over the years, we recorded music on iPads using GarageBand, recorded music on Chromebooks using Bandlab, and for this study, we recorded music on iPhones and Chromebooks using Soundtrap. To add value to these experiences, I believe that the input of my participants engaged in this study would benefit other music teachers, and the field of music education, more broadly a field that has not seen a provincial curricular update since its revision in 2009 (Ministry of Education and Training, 2009). Therefore, I proposed to the participating teachers that we could teach the concepts found in the curriculum but modernize them through the lens of music production.

The Ontario Public Elementary School Curriculum

In a chapter written by Wright (2021), the researcher referred to a rapper named Plan B, who described himself as having been a troubled and socially marginalized student who felt alongside many of his peers “that society ha[d] no use for them, offer[ed] no future, [and] its codes and values d[id] not apply to them” (p. 318). However, the student’s teacher recognized their pain and provided them the opportunity to pursue their passion for hip hop in the classroom. This openness and acceptance of the genre “launched him on the path to becoming a successful recording artist” (Wright, 2021, p. 315). If more teachers could be flexible with their classroom approach, such as the aforementioned example, more opportunities would be available for students. However, some teachers are unaware of these options as they do not reflect their personal experiences. As my participants struggled with the idea of adding music production to
their curriculum due to their inexperience and the fear of teaching outside of their comfort zones, we discussed how the provincial curriculum could be interpreted through the lens of music production. For example, I mentioned to Rachel that rhythms could be taught on a DAW using the functions of cutting and pasting. Often, when physical instruments are recorded, the tracks do not rhythmically align with one another. A note could be extracted from a soundwave and then placed anywhere in the project to fit the rhythmic structure of the piece. I asked Rachel if she saw value in this process and she responded:

Cut and paste where you’re actually creating your own songs and then putting it all together? Absolutely. That’s music.

In a conversation with Aimee, I mentioned that the DAW function of looping is representational of having students play ostinatos. Both terms relate to a sound being repeated continuously for a designated amount of time. Regarding the idea of teaching a loop rather than an ostinato, she expressed:

I think that that would be a really neat experience for them, because that’s not happening right now. I mean like ostinatos and sure, yes, like you, you do teach that to a degree, but the idea that like, “Ok, now you’re going to stop that, now you’re going to pick it up and put it over here and match that with this,” I think that’s not in my, what I’ve been experiencing. It hasn’t been a thing yet and I think it would be very cool.

As I discussed a shift from performance outcomes to recorded outcomes with Bradley, he pondered:

I mean, the methodology is the same in terms of like a lesson plan, right? That wouldn’t change either, but the opportunity, like instead of practicing your guitar, you’re tinkering with the program and creating beats, right? So, it’s the same kind of general idea, you’re just practicing using the program and getting familiar.

In Canada, each province has its own music curriculum, therefore for the purpose of this research, I focused on the Ontario elementary public-school arts curriculum (where one would
The curriculum has a set of overall expectations for each grade, one through eight, as follows:

C1. Creating and Performing: apply the creative process to create and perform music for a variety of purposes, using the elements and techniques of music;

C2. Reflecting, Responding, and Analyzing: apply the critical analysis process to communicate their feelings, ideas, and understandings in response to a variety of music and musical experiences;

C3. Exploring Forms and Cultural Contexts: demonstrate an understanding of a variety of musical genres and styles from the past and present, and their social and/or community contexts (sociocultural and historical contexts).

Beyond these three overall goals, each elementary student must meet specific expectations set within each grade level. These specific expectations focus on building certain skills sequentially, based on age. Looking through the specific expectations, one would not specifically identify a formal or informal program (Green, 2008), leaving the expectations open to interpretation, which means a music production curriculum can be applied. However, as Aimee explained, most pre-service teacher training in Canadian post-secondary schools directs their students to the use of traditional Western art or jazz performance methods. In my own practice, I was inspired to use the informal pedagogies as outlined by Green (2008), until I realized many students showed interest in recording concepts. In the school board in which I work, and conducted my research, we are in a unique situation where new types of music learning can occur. Music programs were nonexistent in our schools until an implementation program in 2018. Before this implementation, classroom teachers were responsible to teach their own music classes and were at liberty to decide how much time they wanted to spend on the
subject. When the implementation program was approved, it provided the school board’s 89 elementary schools with guaranteed music programs. The expectation was that primary students would receive music instruction for 50 minutes twice a week, whereas junior and intermediate students were required to receive music instruction for 40 minutes once a week. Each program was provided with a designated music teacher, regardless if they had formal music certification, and each school was provided djembe drums, Orff instruments, and ukuleles. It took three years for each school to receive its supplies and teachers. The teachers volunteered to enter the position based on interest and had to be certified teachers in Ontario. Most of the teachers’ backgrounds consisted of informal music making at home, and either minimal or no music training in post-secondary institutions. The training workshops for these teachers promoted traditional methods such as Orff and Kodály, and most of them are now working within this performance paradigm.

As I am interested in providing teachers with additional pedagogical options, I related the concepts of instrumental performance to music production. This was to give teachers a concrete example of how performance concepts can be transposed to production concepts. In addition to the previous conversations, I related how a volume fader can teach students dynamics, how an equalizer can relate to pitch, and how panning (described as similar to seating arrangements) can relate to positioning specific sounds. All the curricular expectations remain the same, it is simply a matter of interpreting the terms differently.

**Getting Started**

Before the teacher participants and I could interpret the curriculum with a different lens together, I asked them if they had any experience with music production in the past. Rachel revealed:
No, not at all. It intimidates me, so I haven’t brought it into the classroom yet. The most I’ve ever used is like Chrome Music Lab, which is nothing compared to what is actually out there for recording.

In addition, Aimee explained:

Right now, Chrome Music Lab is the one I have the most experience with. I’ve tried GarageBand like years ago, but to be honest, I have no experience. I haven’t dabbled with that stuff recently at all, so this would be pretty new for me.

It was interesting that both Rachel and Aimee related Chrome Music Lab to music production. Chrome Music Lab is a music technology website with multiple games and does not reflect most of the concepts related to music production. Music production mainly focuses on the creation, manipulation, and distribution of recorded sounds whereas music technology typically involves a wider range of options to make music using computer games and software. Returning to the topic of experience with music production, Bradley explained that he had some experience, he said:

I make a podcast series for, I’m in a very intense baseball dynasty league which is kind of like for fantasy and more of a baseball club. It’s like 14 guys that just are obsessed with baseball and love baseball. And so, I’ll do a podcast reviewing what happened the year before and what’s to come. And I’ll have like sound drops from movies coming in and like, I’ll actually try to put all that stuff in and when you piece it all together it could take like hours. But it also ties in really nicely with what students can be doing with recordings.

Bradley’s experiences in podcasting included the use of recording software, using a microphone, editing content, and sharing his podcast with others. He mentioned that his experiences in podcasting can be transferable to the classroom when engaged in music production. Agreeing with this concept, I wondered if he had done any podcasting with his students, however he had not. Therefore, I wanted to gain a better understanding of what the participating teachers’ programs consisted of. I asked them to describe a typical day in music class. Rachel responded:
If I’m being brutally honest, like actually playing the instruments, not producing your own sound but like rhythms and all that kind of stuff. And then figuring out different instruments.

Rachel explained that her program focused on instrumental techniques and performance-based related skills. As for Aimee, she replied:

I do have a mix, but I do, if I’m being honest, I think it is still more instrument focused. But we work a lot with the Chrome Lab and Songmaker. So, they do have experience like composing electronically and being able to hear results immediately. But that’s, yeah, I would say that that’s kind of like a side note that happens to get used sometimes. So yeah, that’s kind of where we’re at.

In reference to composing electronically, Aimee turned to music technology games where students can obtain instant gratification. Although some music software can benefit students in that sense, it would be beneficial to know that in music production, audio does not necessarily instantly “sound good.” Since good sound is subjective, what I am alluding to is the measurement of technical standards in practice, such as decibels (dB), bit depth, and kilohertz (kHz) as they play an important factor in the outcome (Jackson, 2015). Conventionally, different sound qualities could be obtained by factors such as equipment use (Hodgson, 2019), mixing abilities (Oltheten, 2018), and editing skills (Jackson, 2015). In fact, as Bradley suggested earlier with his podcast, there is a tedious process in editing to produce a good sounding product. Although Montgomery (2012) humorously suggested “editing techniques pay off with a lot of caffeine” (p. 50), the process can be daunting as it can take hours, days, or longer to reach your goals (Langford, 2014). In Bradley’s class, his focus resembled those of Rachel and Aimee, when he explained:

I am mostly focusing on instruments right now because it’s my first year of teaching music. So, I kind of wanted to get like a really, a good base and then work off of that. Before you get super technical or you start taking things outside of your comfort zone, you got to get to know the basics, right?
The common theme surrounding these participants was having an interest in pursuing music production, however they were not comfortable teaching this topic without any experience. In conversation with them, I was convinced that they had more experience than they had realized. Therefore, I became interested in uncovering more of their everyday experiences with music. Since each participant mentioned that they enjoyed listening to popular music, I asked them if they mostly listened to this music through recordings or by attending concerts.

Rachel replied:

It’s mostly recordings now. Before, it was concerts, before Covid happened, but now it’s mostly recordings through Spotify or other streaming apps, or the radio.

Aimee explained:

I love concerts. I love concerts. With the pandemic and stuff, it was nearly impossible. All my concert tickets got refunded and then it’s just been the slow, slow build to get back into things. But I think like 90% of the music I listen to is recorded because it just is what it is. But if there’s opportunity to go see live performances, I jump at those opportunities for sure.

Often, live performance opportunities are not available for many reasons such as band breakups or touring schedules; however, a recording can be played consistently at one’s convenience. Therefore, putting time into a good recording may be worth more effort than putting time into a performance. Furthermore, many artists depend on production techniques and recordings to perform live (Hermes, 2021). For example, pop artists and rappers often use backing tracks (Sigman, 2013), while EDM performers rely on produced sounds (Conner & Dickens, 2023), and DJs rely solely on recorded music (Walker, 2022). When I asked Bradley if he listened to recordings more than attending live concerts, he responded:

Wow! I actually, weirdly enough, listen to recorded music more. I’m very picky and selective about what I listen to live. And what’s funny is, I actually think that, like, I don’t know, here’s a perfect example again, not to like drown in hip hop, but like, I don’t know if I’d actually have that much fun at a hip hop show. Versus like, I know when I go see a live folk musician or when I go see Mariposa Music Fest is a really good example
where you see musicians who have never met, just end up on a stage together, and they just are playing. And just that fusion of like two separate instruments. But the language of this is the same but the style might be different and so it’s pretty cool that way and I think for me just personally that’s where I find live music lends itself a little bit better per se. But then again, I’ve only been to one ever hip hop show in my life and so I’m very limited in that regard. But I just have a hard time, I’ve been to shows before where like perfect example, Bad Religion where like their live recordings are incredible and you think for a punk band, they’re not going to be that great live. And you go see them and they’re even better live, which is like, it was just a total shock because of how fast they play and their harmonies and this and that. And so, I guess, kids in elementary school, I would say, you know, they’re obviously leaning more towards recordings because you know, there’s only so many live shows they can go check out with their parents.

Bradley’s inference on students’ listening habits aligned with a study conducted by Brittin et al. (2019) whose “results suggest[ed] that today’s students are avid consumers of music through mostly digital means” (p. 45). Furthermore, Bradley expressed that he also consumed music digitally more than he would live. Moreover, when deciding on which concerts to attend, he was very selective. As the conversation progressed, Bradley was deliberately thinking about how many times an elementary student may have been to a live show. With the exposure to recorded sounds, students may have less inclination to produce music on physical instruments as they would in a DAW. Especially if the music they listen to does not require physical instruments at all (Shelvock, 2020). When referring to live concerts, even Bradley himself had only been to one hip hop show, yet he based an entire unit at school on hip hop performance.

Thinking about elementary students’ exposure to concerts in comparison to recordings, Aimee reflected:

When you go to a live concert and they’ve changed something, or they’ve done the chorus suddenly longer or something, or there’s a new thing thrown in, you’re going, “What?” Last summer, like this past summer, we went to Joan Jett, Def Leppard, Mötley Crüe, and Poison and it was awesome! But it was just like, you could really, well for me anyways, I could say okay this is a recorded version I have in my head, and this sounds dramatically different being performed live. As for elementary students, they probably don’t have any concept at all to the fact that, you know, this is a recording. But no, when you go and hear them actually perform, it is going to be different because it’s in the
moment, it’s spontaneous, it’s going to be completely, not what you’re necessarily used to hearing manufactured.

Aimee was describing a scenario where the performers chose to play live without any pre-recorded music; however, this is not often the case. Some genres, such as hip hop and EDM, use more production techniques and pre-recorded tracks when performing live than others (Waksman, 2022). As we continued discussing live concert experiences in comparison to listening to recorded music, all three participants realized that their students may have never been to a concert. Rachel gasped, “I bet students listen to music more recorded than live.” All three participants reported personally listening to recordings more than attending live concerts and assumed students listened to recordings more than live music. Yet in class, the teachers focused on developing skills related to instrumental performance without mentioning any music production concepts. I asked Rachel, “So then, why are you just focusing on live instruments in your classroom?” She responded, “Ouuuuuuuuu and like not recording, I like that!” Next, the participants and I discussed some options in making their music production programs a reality in their schools.

**Procurement of Resources for a Music Production Program**

Music production requires students to access different equipment than that they would use in a music performance class. Bradley was curious about purchasing such equipment for his school and asked:

Quick question, did you have your equipment, or did you buy it over the years with funding and such? Cause now, I’m thinking I might just go and buy it, and hope I can get a refund. [The local music store] can hook me up in the neighborhood of $1000 for all the gear I had in mind. I have parent council budget who would front me at least 500 bucks. They’ve really enjoyed what I’ve done here, and I think they understand that I don’t waste money. We will get started this week!
Since Bradley had experience with his podcasting, he knew some of the equipment he wanted to purchase to start his program. He had a school budget and a parent council budget. His administration allowed him to spend these budgets where he found it necessary. Bradley texted me a few days later saying:

So, I went rooting around in the darkest places of the school yesterday and found this (pictures of XLR cables and other production gear). It looks like it’s been here for maybe four, five years. Sadly, this mixer will not serve as an interface as I assume it’s analog. I need a new type of mixer. I’m guessing one that has digital capabilities. Does that sound right? I’m saying this particular soundboard will not serve the purposes of digital recordings, I’m guessing. Currently doing the research now. I have four of these condenser mics as well (pictures of four pencil mics).

Pencil mics are small diaphragm condenser microphones generally used in the studio to capture acoustic guitars, or they can also be placed overhead of the drum kit to capture a stereo sound (Hodgson, 2019). I suggested to Bradley that he should look into purchasing a large condenser microphone which would be useful when recording student vocals. He proceeded to ask me for a start-up list. Even though the participants were equipped with the most basic set-up for this study (access to a Chromebook, Soundtrap, and headphones), Bradley had a budget, and I suggested he look into purchasing the following items: (a) vocal condenser microphones, (b) microphone stand, (c) pop filter, (d) patch cords, (e) interface, and (f) noise canceling headphones. After a few days of exploring, Bradley texted me:

Here’s what I bought (picture of an interface). The model down was 150 bucks less. I figured why not get one that had at least eight channels with two direct guitar inputs. Came with Studio One software as well.

I asked him if this software could be used by all the students or if it would only be installed on one computer. He responded:

Considering we may not have access to Soundtrap next year, this might be handy. I feel like it’s only on my laptop, but it came with extra, with the hardware, so I’m gonna give it a shot and try it out next year.
Bradley was putting a lot of extra time and effort into designing his music production program. He was excited to begin the process with his students. As the teachers discovered what equipment was required, they also needed some ideas on how to use this gear. To do so, I began by asking them if they used recordings in the classroom. If they did, they could analyze these recordings with students and imagine how to capture some of the sounds they were hearing. However, listening to recordings with a technical ear (Corey, 2012) will differ from listening to recordings for performance purposes. In previous classes, Rachel mentioned:

Yeah, with recordings, I’ve showed them things like, when we’re playing ukulele, how to strum it, and then I expect them to be able to strum it the same way. Or how to play, “The Lion Sleeps Tonight,” and now here’s a video on what that looks like and what that sounds like.

Rachel utilized recordings to model performance-based skills, however she had never focused on how these sounds were captured. As for Aimee, she commented:

I guided like, so they had the screen showing where to hit the notes. And so, they kind of had that background track and it had no lyrics, it was just the instrumental version. I try to incorporate a huge variety of things. So, we listen to that, then we listen to the Muppets version of that to say it’s still the same song, but it’s now different because this has changed or that’s changed. I feel like especially with the younger kids it is really important to have that as the scaffolding because they’re coming to you with such limited experience. You know, most of the kids that I teach have never been to a concert ever. You know, and so it’s like kind of your role to gradually give them that exposure.

Even though Aimee and Rachel previously used recordings for modeling, play along backing tracks, and demonstrating different arrangements of the same song, they did not have any experience in recording sounds and manipulating them. However, they were ready to explore Soundtrap with the basic equipment that I had provided them for this study. Bradley expanded on the idea of experience:

I mean, it’s similar to math you know. I may hate doing integers or I hate doing measurement. Measurement’s a good example, I may hate measurement, but I really like geometry. So similarly in music, like I may not like playing the recorder, which nobody likes playing the recorder, I don’t teach the recorder for that reason. But you know, If I’m
not really good with my fingers or my hands, looks like playing guitar is like too hard. But you know, if I had access to programs where I could create my own songs, you know, there’s that element to it. Or even in visual art, that’s another really good comparison. That’s an even better comparison, visual art, right, where there’s like different mediums of art. I don’t like sculpting, but I like drawing.

Bradley was drawing analogies between music as a school subject and how other school subjects create strands. In math, there are multiple strands, such as measurement and geometry. In music, he related these different strands to different musical instruments. However, the concept of music production overviews all the different strands of music as most musics are recorded, regardless of genres or instrumentation. The participating teachers needed some hands-on experience with the gear to gain a better understanding of how music could be captured in a recording. Then, they could explore the process of manipulating these recorded sounds to match the quality of the sounds they are accustomed to hearing on the radio. Bradley said, “I see you’re carving out a niche for this, I think it’s important.” I suggested that, during the project, the teachers should learn alongside their students, therefore we proceeded in planning our first classes.

**Integrating Music Production into the Music Classroom**

The original aim for this study was to interview each participant four times and observe their classes five times. Although this aim was achieved, most of the interviews and observations occurred simultaneously. The participants and I first started discussing the project in March of 2023 and agreed to work together until the end of June 2023. All three participants and I consistently texted each other to do continuous planning. I met with Bradley ten times over Zoom and the telephone, Rachel five times, and Aimee five times. Bradley was able to begin the project sooner than the other two participants as he obtained his student letters of consent a lot sooner than the other two participants, hence the additional meetings. He also showed more
initiative and interest at first. However, both Rachel and Aimee had some major changes in their
teaching assignments during the time of study. This had affected their additional time to
participate. Rachel moved schools entirely, whereas Aimee was given the additional role of half-
time librarian on top of her role as a music teacher. Furthermore, Aimee only worked half-days.
As for me, I was able to recruit my students immediately and was working with the other teacher
participants on the same type of production projects simultaneously.

Planning

To determine how to begin implementing the music production program, the teachers and
I discussed multiple options. Rachel suggested asking her students if it would interest them:

I mean, we all have the opportunity. It’s right at our fingertips. It’s easily accessible in
the sense like you can download an app and be producing music the next minute, But I’ve
never taken the initiative to figure that out. However, when I was talking to the kids about
it, they were all really excited to start producing their own stuff.

Although Rachel did not go into detail about how the students showed this excitement, by
the expression in her voice, it was apparent that she was happy her students wanted to explore
the DAW and produce their own music. Rachel had discussed the music production project with
her students after we first spoke in March, but in April she was transferred to a new school and
eventually recruited students from this school during the first week of May. As for Bradley, he
suggested:

I’m hoping to be able to kind of experiment with everything that we’re talking about and
what we’re working on here from now to the end of the year and then in September really
hit the ground running.

Bradley was open to exploring and experimenting with his students to begin building a
base knowledge in music production. He was looking for a clear starting point when he asked:

So, I was wondering, walk me through what your early, early stages look like. So, like
you know, like big picture first couple of weeks with the littles. So, if I’m thinking grades
one to four as kind of my target and just really take everything else and cast it aside and really get this going with those four particular grades.

Bradley was interested in implementing music production with his younger students based on the conversation we had earlier regarding his beliefs of music production. He believed music production was typically practiced at an older age. He was not fully convinced that students could produce at a younger age. Together, we wanted to determine if primary students could in fact, produce. To walk Bradley and the other participants through the early stages of music production, I provided them with an example of how I teach my classes. First, I mentioned that I use the online organizing tool, Google Classroom. Within this “classroom,” I create sections that list the names of each of the homeroom teachers. Within each section, I post the lesson of the day. Students access this lesson and work through it at their own pace. To begin the new music production program in Soundtrap, I created a Dr TooNice video titled, *The Fundamentals of a DAW* ([https://www.youtube.com/watch?v=uC2w6Vz4zL0](https://www.youtube.com/watch?v=uC2w6Vz4zL0)). The expectation would be for students to access their Google Classroom, click on the appropriate date, and watch the attached video. This particular video provides listeners with a step-by-step guide on how to use the DAW Soundtrap for the first time. Furthermore, students can learn about the basic functions of a DAW, have hands-on experience navigating these functions, and at by the end of the video, the students will have experiences with tracking (Figure 7), by importing five different loops into their projects. Before introducing this video to their classes, I asked the teachers to preview the video, test it out themselves, and provide some feedback.
Figure 7

Example of Tracking in the DAW Soundtrap

Note. Each colour represents a different track (a different recorded sound).

Applying

Rachel tested out The Fundamentals of a DAW video and said:

That’s a wild looking character with some sick dance moves. I enjoy him and his name is a fun tip of the hat to you. His voice grates on me, I can’t lie. I found it a little bit slow but having no knowledge at all and being able to go, “Ok class now click this button.” I think that’s really important. It needs to be a little bit slow. Also, you’re still getting through your curriculum which is what the board wants us to do.

As a first-time user, Rachel enjoyed the pacing of the video, and sees potential in using it in her class. I took her advice and readjusted the pitch of the character’s voice. I mentioned to her that these videos were to be used in a flipped classroom format, where students access the videos online, work independently, and at their own pace. I asked her how comfortable she would be to proceed this way and how she would see her role as the teacher. She responded:

You would become more of a facilitator. Rather than someone that is conducting and standing up expecting performance quality. So, I think you would become more of a person that’s allowing the creative freedom for the students to express themselves and go through the musical experience and that creative process, which is so important. You would facilitate learning more than dictate it if that makes sense. I see it more as a, “What do you think, where could we go with this sound? What happens if we do this?” So, we bring in more inquiry, which is where the board is trying to steer us to anyways. It’s
going with the model that I’m hoping to attain where the kids are more in control of their learning with music and I’m more there just to help them figure it out. It’s in line with my pedagogy.

In this music production paradigm, Rachel sees the role of the teacher as a guide and facilitator. According to Allen (2016), “facilitation is a complex and creative activity. It demands resources of differing kinds” (p. 82). To shift from teacher to facilitator in the music classroom, Reinhert and Gulish (2021) suggest that teachers should “allow students to work in their way, checking in regularly, provide ideas and feedback, work alongside students, [and] provide space for student choice” (p. 17). In a facilitator role, Rachel believed this position can promote inquiry-based learning (IBL), which is what the school board is steering educators towards. IBL promotes critical thinking skills through discussion, action, and reflection (Johnson, 2011).

Rather than focusing on technical instruction, procedural knowledge, or closed questioning, teachers could provide students with meaningful comments and feedback to help them “articulate the processes [of their work] and be able to learn and grow their musicality independently” (Costes-Onishi & Kwek, 2023, p. 375). As for Bradley’s first time through the Dr TooNice video, he explained:

The voice audio obviously needs a little work, but I mean like, that’s normal. Like ten-minute averages are decent for video length. And we know that, it’s the Mr. Beast rule [laughter].

When Bradley mentioned the “Mr. Beast rule,” he was referring to the American YouTuber’s theory on short-form video algorithms (VidCon, 2022). In his theory, Mr. Beast claims that audience retention is higher when videos are shorter in length. Bradley seemed to enjoy the content of the video. However, he did not provide much feedback at this point.

Searching for more information, I asked him how he would see his role as a teacher in the flipped classroom scenario. He mentioned:
I think it would be different in that you are using more technology, so there definitely has to be a little bit more teaching of that explicitly. I mean, the methodology is the same in terms of like a lesson plan. That wouldn’t change either, but the opportunity, like instead of practicing your guitar, you’re tinkering with the program and creating beats, right? So, it’s the same kind of general idea, you’re just practicing using the program and getting familiar.

Bradley compared the recording studio to an instrument. He believed his role would consist of teaching computer literacy skills before providing students independent time to explore the DAW, especially for younger students. Finally, I asked Aimee her thoughts on the first Dr TooNice video. She commented:

I do like that. It’s sort of an instant gratification for them like that. It’s gonna be, you know, I’ve made this, and I can hear it right away. I think that’s going to be a huge, huge draw for them, I think.

I continued by asking Aimee how she felt about providing students the opportunity to work independently and at their own pace, rather than the typical large ensemble setting. She said:

Yeah, I think, especially for the grade eights that I have this year, they are a phenomenal group, I would have zero issue being like, “Here’s your computer, plug in, and this is what you’re doing.” They would be like, “Ok, cool, nice.” So that’s probably the group I’m going to target this for.

I wondered how she would see her role as the teacher in the music production classroom. She replied:

I suspect that when I introduce this, there will be a lot of teacher facilitated questions and answers of, “I don’t know how to do this, or I don’t know how to do that.” And then, I think with the grade eights anyways, I think that they’ll probably be able to figure a lot of it out themselves, I probably won’t have to do a whole lot. But I think that the younger kids are probably going to have questions. Because they always have questions.

Even though the younger students may always have questions, the older students may be more reserved in asking questions. Now that the teachers had a better idea of how the students could get started with music production, what their role may look like, and viewed the suggested start-up video, it was time to pilot the idea in class. Bradley tested the video with a primary and
junior class, Aimee tested the video with junior students in an extra-curricular setting at recess, and Rachel tested the video with a primary and intermediate class. I used the video for each of my classes in the primary, junior, and intermediate grades.

Observing

The students in each of the participating classes logged into Soundtrap for the first time and viewed the Dr TooNice video. Bradley observed how well it went. He reported, “They were super crazy excited. We were playing with it as a class. Yeah, they were soooooo pumped.”

This first video had an introductory task for students to complete, which was to create an eight-bar composition in Soundtrap. Students had to explore the loops and samples in the DAW, import five tracks of their choice into their projects, decide where each track should be placed rhythmically, and how long each track should be. Bradley related this task to form, or as he mentioned, “structure.” His intention was to begin the song writing process with his students as he’s done in the past. He reflected:

So, like talking about the structure of a song. I did a lesson literally like three weeks ago with my grade threes and fours. And so, when we were looking at “The Lion Sleeps Tonight,” it was tricky because it’s not a stereotypical song like we looked at. We compared it to like “Riptide”, which they all know, where it’s like very cookie cutter, like verse, chorus, verse, chorus, bridge, verse, chorus. We looked at like AC/DC. They have a bridge too, but there’s no music, there’s no words, it’s literally just a guitar solo, that’s the bridge. So, I got them really familiar with what a verse is, what a chorus is, and what a bridge is.

It appeared as if the Dr TooNice video, Verse and Chorus (https://www.youtube.com/watch?v=liKHmryemG0&t=1s) would be a good fit for Bradley’s next step. In this video, the students are asked to compose a song that includes two verses and a repeated chorus. The aim is to become familiar with the production technique of cutting and pasting. By the end of this video, the students should be able to copy and paste an entire chorus. Also, they should be able to copy and paste the music of a verse and create different lyrics for
each verse. Although there are numerous ways to construct a song, this video provides students with a visual example of form and an example of computer editing by copying and pasting repeated sections. Bradley continued:

In the case of hip hop, like one thing I never understood that much until more recently is just how in the hip hop community like the sampling, just the beats and that kind of thing. But really what goes into producing like all the layering of sounds and you’ve got that like, you know, bass sound, and then you’ve got all these little effects, and then you’ve got your drops and you’ve got your sound effects, like not necessarily one thing. I think that’s when you can show kids that it doesn’t have to fit in a box. It gives them that idea that, “Oh, I can literally just mix anything together and see what happens.”

Bradley expressed that he was comfortable teaching form, however he was not familiar with manipulating sounds. Therefore, I asked him to begin the music production process by having students be comfortable navigating Soundtrap, and then proceed to tracking. Once the students had enough tracks and a sense of form, he could introduce them to the mixing videos. These videos include some of Bradley’s wonderments such as creating low bass sounds and additional effects.

Rachel explored Soundtrap with her grade three class and as soon as the class was over, she texted:

They LOVED it. It went really well. We watched the video and worked along with it. They were so excited to have time to just mess around and create their mixes. Some of the comments were things like, “This is so fun!” , “Music is the best cause I can make my own song”, “This is easy.” That’s grade three. Grade seven is Thursday.

Since Bradley asked me to observe his grade two class, I was excited to observe Rachel’s grade seven class to obtain perspectives from the intermediate students.

Reflecting

Now that the participants had the opportunity to explore Soundtrap for the first time, either on their own or with their students, I wanted the teachers to reflect on their classes, and think about the content of the video, how it applied to the curriculum, and the next steps they
would like to take in music production. Bradley was concerned that he had “to learn a lot of knowledge very quickly in a short span of time,” whereas Rachel expressed that she could redo the same lesson with her intermediate class as she did with her primary class, since all the concepts were new to students. To create a scope for teacher planning, I wondered if it would be helpful to add curricular expectations in the description box of each Dr TooNice video. Bradley loved that idea and commented, “Yeah, that’s great, then you could just parsec it, or make like parsecs into pieces as much as you want.” Parsecs are a scientific measure of distance. Bradley meant that since the content was new, and seemed like there was a lot to learn, the curricular expectations in the description box could be helpful to narrow the goal of each video, and then set expectations for students accordingly. Therefore, after this conversation, I filled out the description boxes of the videos with curricular expectations. Bradley and Rachel both agreed that it was helpful with their planning process. As a next step, Bradley expressed, “I think, to get started and I’ll try and craft some lessons out of this and kind of figure out how just kind of the structure like how we want to implement this timeline wise.” As for Rachel, she was more concerned about having a researcher observe her class when she mentioned, “I’m really nervous about it… no one watches me teach ever lol.” I assured her that I am not judging her teaching style, rather I was interested in seeing the process, the role of the teacher, and how students reacted to music production. As she realized the focus was not on her but on her students, she was more than happy to host me via Zoom.

Rachel’s Perspective

As I prepared to observe the participating teachers’ classrooms for the first time, I wondered what they were planning on doing with their students. Rachel was planning on using the same process as she did with the grade threes, but this time with her grade seven class.
Rachel is a traveling music teacher. This means that she does not have a classroom and carries all her supplies with her from room to room. All the observations took place in her new school where she saw her intermediate class 40 minutes a week. Due to requirements set out by the research ethics board, during the first Zoom observation, my computer had to face Rachel only, since all the students in her class were being introduced to the music production project together. Therefore, the angle of the computer was strategically placed. Rachel suggested that she would teach her lesson, then, obtain participating students’ feedback by walking around class, and then report this information to me as I awaited on Zoom. Following this observation, she proposed to have students go one by one in the hallway and individually discuss their projects with me.

During the first observation, rather than testing out the flipped classroom design immediately, Rachel was planning on instructing the students as a large group and projecting the Fundamentals of a DAW video on the board. Her reasoning was to ensure that all the students could navigate Soundtrap before providing them independent time. She wanted to walk the students through the process of accessing a flipped classroom and how to use it.

She began with a boisterous voice, “This is what you’re going to do.” She verbally directed the students to the website they needed to access to obtain the free version of Soundtrap that I had provided for the study, and then said, “Ok, get there.” During this time, the students were noisy and not paying attention as she shouted, “My goodness gracious, can you two keep your hands together?” She “shushed” the students and proceeded to play the video. She said, “Ok, so I’ll show you a video and I’ll pause it on the way so that we can catch up and do what we need to do.” After a couple minutes of playing the video, she paused it and recapped what Dr TooNice had said by yelling over the students chatting. Although a few minutes of the video had passed, some students were still not logged in. When Rachel noticed this, she asked a student,
“Why are you there? You’re not even in the right spot.” She proceeded to play the video, and mentioned, “So, I’m gonna see if he goes through that part but I don’t remember.” After she said this, I sensed that Rachel was uncomfortable testing out music production with her intermediate class while being observed by me. As the video kept playing, she told me, “We’re just having a little technical difficulties with a couple of the names, so I’m just checking on them.” I told Rachel that I would help her troubleshoot these login issues from my end since I was the only person with access to changing usernames and passwords.

As a solution to the login problem, Rachel proceeded:

So, what we’re going to do class, what we’re going to do if your login isn’t working, you’re just going to sit and pair up with someone whose login is working. Ok, and then I will troubleshoot and figure out the login.

As the students found partners, she shouted:

“SHHHH!! the video is not loud enough for us to chat. Let’s try and listen some more.”

Although the class was still noisy, Rachel continued to play the video to the large group of students assuming that they were following along, “Ok, everybody is now at least in the spot where it says software in the top left corner?” One student replied, “Yes.” After 20 minutes of class had passed, Rachel told the students:

Ok, I want to pause there for a second and give you an opportunity to play around with some of the sound. Your job is to find five different sounds to mesh together. Either make it sound really, really, bad or really, really good. Makes sense?

To control the noise level, she also mentioned, “If you have headphones, you’re welcome to use them and make life easier for yourself.” As the students worked independently or in small groups, Rachel came up to me and voiced some concerns. She mentioned that the login process was long and difficult for students. Through personal experience with my students, I told her the process would become easier with time. I explained that I provide my students with a link to the
software rather than instruct them verbally on how to find it. Regarding the task in the video, she mentioned:

They’re just playing around with it right now. They’ve watched most of the video, but they’re really anxious. A lot of them have used it before. So, they’re anxious to get started and actually throw some sounds together.

Rachel had asked the students to start navigating the software on their own and sat down with me to discuss the lesson thus far. I reminded Rachel that the videos were meant to be music production guides for students and teachers, and none of the videos were necessarily posted in sequence. I had also mentioned that the process may work better if the videos were introduced as an option in the flipped classroom design. She agreed and said, “Ok, they’re playing around and I’m gonna walk and see what’s up, see what kind of feedback we can provide so far.” As the students were listening to the loops they wanted to import into their projects, Rachel shouted, “Ok if you were to have this video in a Google Classroom,” and then she paused. The students did not pay attention to her since they were still focused on their projects as they had only been working independently for a few minutes. Rachel continued, “Can you stop for a minute please?”

Upon gaining some of their attention, she asked:

If you were to have this, just like I give you the video and I give you the free time to do it, what kind of feedback can we provide? What’s working? What’s not working? Are we enjoying it? Is it something that you want to keep trying? Is the video informative? Is it too fast? Is it too slow? What kind of things are happening?

One student mentioned that the project was difficult because the program was new. Another student mentioned that the video was too quiet. Without giving the students more time to answer all the questions, she continued:

You have a few more minutes still to mess around and try and come up with answers, but I want you to see how to save. So, if you are already familiar with this then you can continue working at your pace. But I want you to see how to do the next steps, so if you need to hear, come a little closer.
Rather than explaining to the students how to save a project, Rachel played the Dr TooNice video from where she had previously paused it. The video was not at the section explaining how to save, however, the section where Rachel continued the video answered a question that a student had previously asked. As Rachel realized this, she pointed this information out to that student. Rachel wrapped up the class by instructing, “Ok, so make sure you’re saving it, five loops. Save it because this is what we’re going to do. We’re going to be manipulating these sounds and these tracks for next week as well.”

Throughout the observation, some students worked independently with headphones, some students did not do any work as they only socialized, and some students waited the entire period to login. I met with Rachel later, and we discussed some of the things I had observed such as pacing, full group instruction, computer literacy skills, volume control, and everyone working on the same task regardless of experience. I had asked Rachel how she felt about the process, and she responded:

I am a very type A teacher, so I struggle with not having structure. And like, this is what you do next. But it’s also something that I’m interested in learning or unlearning, you know, and not be so type A.

Rachel had tried to condense a 40-minute observation with many of the music production concepts we had previously discussed such as tracking and mixing, however, I did not clarify a timeline with her on when to introduce the material. I did not do so, since I was expecting students to work independently rather than as a large group. This way, we could have analyzed how experienced students were. I asked Rachel if she could provide her class with a work period the following week for students to navigate Soundtrap so that we could determine their levels of experience.
The following week, Rachel agreed to provide her students with more time to explore Soundtrap and instructed them to create a song in any shape or form that they desired. I was unable to observe this class, however, Rachel reported, “I really like it. So, I’m finding it interesting because they’re instead of like five or six people disengaged in music, I have like one or two. They are buying into it, which is nice.” I was interested in speaking to her students about this process, therefore Rachel and I set up a new observation date. Since the classroom format had shifted from a teacher-centered (large group) to a learner-centered approach (small group or independent), the plan was to speak with students directly during their class time. One by one, they would leave the classroom, go into the hallway, and discuss their work with me over Zoom. This analysis will be shared in the following chapter.

Bradley’s Perspective

Just like Rachel, Bradley was a traveling teacher. He pushed carts filled with instruments and computers from room to room. I scheduled an interview with Bradley after he had introduced music production with his grade two students. He provided me an overview of this lesson. Bradley loved the use of analogies (Figure 8). He began the song writing process in a DAW with his students by describing the first steps as the following:

“A rock band needed to get to the show to play their song. Imagine that each rock band member had to get in there in a different vehicle and the vehicle has to take a road to get there. And so essentially these are all different roads. The different instruments are playing together to basically get to the end goal, which is a song.” It was an analogy I came up with on the spot, but it was, I was trying to make it visual. Because it is kind of an abstract concept in some regards.
Bradley’s analogy related to tracking. Each track would represent a band member, its soundwave was the vehicle, and the placement in the DAW was the road. He continued:

So, if you ask my kids, “What could be a track or what type of things could we put on a track or how could we layer different tracks together?” They should be able to be like, “Oh, drums and you need a guitar, and you need this.” Like, list all the items that you would want in a song.

Eventually, when I had a discussion with Bradley’s students, it was clear that they purposely added specific tracks to their songs. This detailed account is provided in the students’ perspectives chapter (Chapter 6). Bradley’s first lesson revolved around adding tracks to a DAW. His goal was for students to know how to enter various tracks into Soundtrap before moving on to the mixing stage. He focused on showing his students how to import digital instruments first, and then he wanted to show them how to record their own voices. This was the process that he used:

I showed them the rap song that I wrote with the grade fives. And I recorded my voice just so they knew they could record their own voice. I would say if you did a voice recording video of how to record your voice and then all the things you can do or some of the funny things you can do, or you can change, or you can alter.
Bradley was asking me to create a Dr TooNice video on voice recording. As he reflected on his grade two class during our interview, he felt this video information would have been helpful for his students to access on their own in the flipped classroom design. He expanded on this thought:

I was thinking you know; you could create a rap with “The Song That Never Ends” as a demonstration for looping. You know, (Bradley sang) this is the song that never ends… But you could do like a primary version that’s more of a rap. Like, (Bradley rapped) this is the song that never ends, it goes on and, on my friend, this is the song, and it just loops, right? Just to show them what a loop is and how you could even like, I’m getting ahead of myself because I do that. I’m kind of an ideas guy. You could even, you could teach them what a sample is like, I just want this in a song. I just want that clip and I’m going to do this, (Bradley sang) this is a song, this is a song, this is a song. And it just repeats over, and over, and over again. So yeah, I would say like the biggest thing with the DAW for the primaries anyways, I think with the intermediates and the juniors, you could probably get away with like a kind of like brief definition and demonstration. Whereas I find with younger kids sometimes they need to conceptualize it a little better. Yeah, especially not all of them. Some of them can just roll with it.

Bradley was interested in composing a rap with his primary students, just as he did with his grade fives, but he felt that primary students needed more detailed instruction. Rather than having them explore loops and samples on their own, he preferred to show them concrete examples on how to import loops as a full group. Even though he was teaching his students as a group, he provided them with plenty of time to explore the concepts individually. This was easier to do with the primary students since they would meet for 50-minute periods twice a week. He continued to explain:

I did like the overall videos you made, and I would just pause and then it would spawn like a two-minute discussion. And then I would hit play and then we would watch some more, and I would say like, “Ok, what is this?”

Bradley had shown his students the Dr TooNice video, The Fundamentals of a DAW. The critical discussions he had with his students related to conversations I had never experienced with my own students. It was interesting to hear his dialogue relating to the contents of the video:
So, like the discussion about the symbols at the bottom of how any player works, with the stop and the record. Some kids knew the concepts right away. Others needed to hear that refresher, or they needed to know that like the double, you know, double triangle means rewind, triangle with a line means rewind. At the very beginning, I had some kids who were really wrestling with the philosophical question of what’s the difference between stop and pause, and I was like, interesting. I said stop is when you need to stop something completely and work on it and retool it and you just want to complete stop. Pause is just, it’s just makes it… But they kept, they were kind of arguing with me, And I said, well, you know, it’s a convenience thing too. I just click pause and I don’t have to move my mouse or change it or hit play again and I can just click it again and it starts up. I tried to tell them it’s like a time saving mechanism. I mean, they’re all interesting points, like they were critically thinking.

In the proceeding classes, the students grasped more of the fundamental concepts.

Bradley texted me saying, “Now that they are all on board, we will be ready to do something more targeted/structured.” Bradley was ready for me to meet some of his students over Zoom.

Before I arrived in class, he wanted to have all his students independently working to avoid any potential problems. When I arrived, Bradley explained to his class who I was, and why I was only speaking to certain students. The students that I was speaking to were those who signed their letters of consent. They were set up together on a table away from the other students that were not participating in the study. As Bradley greeted me, he commented:

Just today was the first time I overheard like five or six different kids like going, “Check this out,” and it kind of spreads like wildfire and they discover like a little section of the loops and so and it becomes, so it’s kind of a positive version of, he said she said kind of like finding different things.

When I was speaking with the participating students, they took turns one by one to speak with me. While they were waiting for their turn to speak, they wore headphones and focused on their projects. Bradley was circulating in his class and listening to the work of the other students and providing them feedback and questions. During this time, he was struggling with the number of students wandering around. Bradley noticed:

And it’s one of those things too, I’m noticing like if they’re being productive and out of their chair, like I’m watching one student right now clicking on another student’s
computer, and so that engagement level, you kind of have to, for this, for some teachers, it would be hard because you kind of have to let them get up and interact. In grade two, you hope that they’re on track and they’re helping each other out. It’s tough because I don’t know, some classrooms may struggle with the freedom, or with the lack of structure, in which case, for some students in particular like that I’m on, I know that they need headphones and they need to work on their own projects, and walking around is just a bad idea. Yeah, just different learning needs.

Outside of school, those working in music production would work on their own, share ideas with others, and create music as they choose to create music. This model could happen in the classroom if teachers could let go of some control and provide opportunities for students to create in such a way. Even though the students wandered around, were noisy, and shared music with others, Bradley said that each student was creating and was focused in one way or another. This was apparent with the participating students since Bradley had to ask them to remove their headphones and discuss their songs with me. During some of these discussions, there were students at the participating table dancing to each other’s songs.

As the students played their songs for me, I realized that they were all working on very different song ideas such as originals, remixes, and covers. Understanding that Bradley had introduced music production to his students as a large group, I asked him if he believed the flipped classroom format would be beneficial for his primary students. He responded:

I think there are teachers that are going to need, like for me, I had a pretty good idea what I was doing but there were little things that you said in the video that I hadn’t considered or that I think of, or those, even the way you explained it, I would have explained it differently. But I like your way better. And on top of that, what I love about it is when students decide they want to work on it at home and they’re like, wait, what did Mr. Bradley teach? If I use most of the details from your video, they can. I actually posted the link to your video on their Google Classroom. They can go watch Dr TooNice give them the low down all over again, you know, specifically when it comes to specific things about Soundtrap.

Bradley’s initiative to post the video links in the Google Classroom was his first step in designing the flipped classroom. He was deliberately thinking about how useful a central
location to access these videos would encourage students to continue creating music outside regular classroom hours. As we wrapped up our meeting, we scheduled future observations and interviews. I share some of these observations in the following sections. Before I do, I would like to share Aimee’s initial observation.

**Aimee’s Perspective**

I had difficulty recruiting Aimee’s students for this study. After our initial interview in March, she had changed roles within her school from being a full-time music teacher to a half-time music teacher and half-time librarian. Furthermore, she only worked during the afternoons. Even though her situation had slowed down our process and did not go according to plan, Aimee had finally recruited junior students by the end of May. Since it was late in the school year, she decided to have her participating students join her during lunch and recess breaks to work on a music production project. She also asked these students to do additional creating at home. I was able to sit in during these extra-curricular times once a week to speak with Aimee and the participating students during the same time. Aimee’s experience consists of instrumental performance in Western art music, however her love for popular music and her journey towards the learner-centered approach helped her plan on implementing the flipped classroom design during the initial stages. Aimee gave the students access to Soundtrap and Dr TooNice by emailing the links to them.

In the first session with the students, I realized that they had never logged into Soundtrap on their own. Therefore, our initial meeting turned into a workshop, where Aimee and I helped the students log in. Once they were logged in, I gave them a quick overview of the functions. We proceeded by asking them to open the *Fundamentals of a DAW* video and complete the task. As the students worked, Aimee gave me some music background on each of the students. She told
me, “Charlotte was one of our soloists in the choir this year. We got silver. Oliver is also in our choir.” I took this opportunity to see if the students would be interested in recording their voices. They showed interest with the excitement in their body language. Aimee told me that the only voice recordings they had done in the past was a choir recording of “O Canada.” However, they simply hit record and did not manipulate it in any way. The students were instructed to continue working on this first task at home and show us what they had completed during our following meeting.

Throughout the week, Aimee had asked the students about their progress, and she reported, “Oliver has been playing very, very frequently. He has been working on a hip-hop song for one of his friends who’s in a band with them.” The students had shown her the songs they had been working on, and she was very impressed with their work when she shared, “It sounds pretty cool actually, what’s coming from them.” Without realizing the potential positive impact that music production had on the students, and the creative possibilities that met student interest, the songs that Aimee’s students had produced impressed her. Through the excitement that her students expressed to her, she had become convinced that she should incorporate music production into her regular programming. Aimee told me, “I’m hoping for the intermediates to use this next year. I’ll have to chat with you later and how it’s possible to maybe get a subscription to this next year.” The underlining worry of each of my participants was the costly subscription to Soundtrap. I mentioned to them that my hope was to overturn the school board’s decision on banning the free DAW Bandlab. Further to her plans, Aimee was excited about her new space in the library, she proclaimed:

I’m not sure if you can see behind Oliver, but we’ve got the makerspace room at the back there and it’s got a green screen and I’m gonna give it a full makeover and it’s gonna become our video music recording area.
Aimee had previously planned to incorporate video production into her music program. I shared with her that the audio in music videos is typically pre-recorded and produced in the same fashion as proposed in this music production curriculum. In agreement, she shared that this experience would supplement her idea. She continued, “We just signed up for We Video. So, we’re going to have that available to us next year as well. And so, I was thinking that combined with this would be a really neat combination.” We Video, is an online video production and editing program. Once the students record songs, they can import the audio file into We Video and proceed to filming a music video.

During my conversation with Aimee about next year, the students were working on their projects and had accumulated some questions. Aimee expressed, “Three of my friends here wanna talk about adding vocals.” The students and I discussed some options on adding vocals, which generally related to equipment. I asked them if they had access to headphones and microphones, and Aimee responded, “No [laughter], but that’s ok because then it’s on my list. I have music stands and microphones on my list.” She proceeded by asking me for recommendations on what equipment to purchase. I gave her a few different options based on her budget.

Aimee’s focus continuously revolved around discussing hopes for the following year rather than focusing on the current project we had set up. She expressed that June was a busy time of year and her work was often interrupted by additional activities such as track and field. Thinking about the following year, Aimee told her participating students, “I think that it would be really neat if we could incorporate more of what your class wants to listen to, I’d like to include that next year.” Then, looking at me she continued:

It will be a very different feel that like this year I’ve been going class, to class, to class and so having Chromebooks available has been a challenge. So, I think next year, being
in one location and everyone comes to me, then we can have a whole bunch of Chromebooks and we can just pop them open, it won’t be quite the same.

Each participant had brought up that they are traveling teachers. Not having a music room is very challenging for many teachers as they need to change spaces and carry their equipment many times throughout the day. Aimee announced:

Next year it’s gonna be dual space, so yeah, it’s really big and it’s not next to anything, so we can be as loud as we want, and it won’t bug anybody.

Besides the conversations about the future, I checked in on the students regularly. They had been working mostly on original compositions. In the next chapter, I share the conversations the students and I had.

Collaboration

Due to scheduling, Bradley and I had to meet while we were both teaching our participating primary students. Therefore, we decided that these students could either work alongside friends in the classroom, or in a school-to-school collaboration. In Soundtrap, this is possible with the collaboration function. To test it out, Bradley and I set up student groups, two from his school and two from mine, and invited each other into a collaboration. Bradley showed his students where these invites were in the DAW and how to accept them. The collaboration setting in Soundtrap has a special process. The process is almost in real time. For example, if student one (Arthur) is from my school and student two (Jennie) is from Bradley’s school, they will get real time notifications when something new has occurred in their collaboration. The student with the notification will not see the updates until they refresh the page. Therefore, we showed the students how to do this. Also, for Arthur to send Jennie a notification that the project had changed, Arthur needed to hit the save button. The students were excited to collaborate with
other schools. Once the students understood how to work together, they were sent into the halls. As the students were collaborating, Bradley found a new function and exclaimed:

People who are working here, if you would like to type things to the people that you’re collaborating with, so let’s say you wanted to type to the two people that you’re hooked up to that song, you can actually click on the little heads in the top right corner. It opens a little chat with them. So those are the kids at the other school, they’re saying hello. It’s the students that are working on the same piece of music that you’re working at the same time.

Not only was there a chat function, but there was also a video function. Therefore, students could in fact work in real time. As the students spanned across the school hallway, I could hear giggles, music, and see dancing. Arthur was showing me how he was conversing with Jennie through text. These two had been importing loops into their project, saving them, and refreshing the page to see what the other student had included. Every time Arthur noticed Jennie putting in a new track, he would refresh his page to hear the new sound.

Seeing that primary students were excited to collaborate with other students in another school, I shared this information with my other classes. I had some intermediates team up with friends in other classes within my school. Without being in class together, they were able to create music asynchronously. I also had many groups form a band within the same class. These students were able to work on the same project, while using their own device. Their device became their instrument (Williams, 2014), as they were able to jam with others, create music, and record their work.

**Troubleshooting**

Throughout numerous lessons, the participating teachers and students had encountered several issues related to computer literacy and content knowledge. However, with time and experience, most of these issues could be solved. Rachel discovered one way to solve an issue in class was to ask students for help, as she explained:
I had a student in my previous school who knew way more about music than I did. And all you do is alter the program so that you’re extending their learning by doing things like have them lead it or have them teach you. I am not intimidated by students knowing more than me. It’s a way to solve problems together. If I don’t know it, let’s figure it out.

This may be the case for many teachers when it comes to technology, just as Sichivitsa (2007) discovered, “today’s students are so accustomed to using their cell phones, instant-messaging each other, and playing computer games that they might be even more comfortable with technology than their teachers” (p. 49). Even though students may be comfortable with technology, sometimes the issues are beyond their expertise. Throughout the process, Bradley and Rachel had encountered several issues logging into the software. This was beyond troubleshooting in the classroom, which may or may not have to do with the computers in use, but it may be a problem with the servers on given days. Even though this is out of one’s control, Bradley’s positivity was commendable when it happened to him. He texted, “Hectic day today for just logging in. I had about 70% do it by themselves. For grade two that’s a win.”

If most grade two students, seven-year old’s, can log into Soundtrap themselves and explore it on their own, not much instructional time would be needed in computer literacy skills. In my classes, the students had become accustomed to the following log in process: (a) log in to your computer using a username and password, (b) find the link to Soundtrap in Google Classroom, (c) log in with a different username and password for Soundtrap, and (d) select the “enter studio” function to begin creating. When Rachel was unable to log into her account and only a handful of students were able to log into their accounts, she decided to have them partner up and continue working this way.

The biggest issue that all three participants had faced, was teaching outside their comfort zone. Bradley described it as the following:
Often times the thing with teachers is tough is that you have to learn a lot of knowledge very quickly in a short span of time. But be able to retain it and then like apply that in your teachings. Like so, let’s say you were like a traditional opera singer type musician who wants to jump into music production. If there’s some type of video resource, like you’re creating, is exactly what would be needed. Essentially, it’s like a shortened version of a master class.

Bradley envisioned the Dr TooNice videos as masterclasses. Even though the content could be used as a guide for teachers, he felt that he still needed to gain personal experience in music production. He also viewed the learner-centered approach as a mode of discovery when he mentioned, “It’s kind of like, it’s almost like, it sounds even like a kindergarten play based for that type of instruction.”

The theory behind play-based instruction in kindergarten aligns with inquiry-based learning, as it focuses on exploration, discovery, and problem solving (Maynes, 2013). The main difference is that play based learning is designed to occur at a younger age. Another issue teachers faced was their access to physical locations to teach music. In Bradley’s and Rachel’s cases, they had to travel from classroom to classroom. Their computers were stored on carts which were available to their entire schools, therefore accessing the equipment was a matter of availability. Often, students had to share their computers and work in groups. Bradley improvised by allowing students to utilize his office as a recording studio or provided additional space if students needed to access a quiet area. Rachel had students spread throughout the school hallways. Inside the classroom, Bradley said:

So, it’s like when I set up a station like at a reading station, at a reading table and then like have two or three kids working there whilst other kids are working in other parts of the class. So that you can kind of have those interactions, like overhearing them and stuff.

Unconventional seating arrangements, and trust in sending students to the hallway were two solutions to noise management. When students tried to record their voices, Bradley encountered another problem:
One of the things that came up often-times was the mic. There’s like a firewall blocker for the mic for the Chromebooks. It’s really easy to just, it’s easy to disable. But if kids aren’t specifically told how to, you just go up to the top where the URL window is at the top here, click on it and accept. But it’s funny unless, you know, as a kid to do that, you’re like kids are just kind of, well, I don’t know how to do it.

When accessing the microphone setting in Soundtrap for the first time, there is a pop-up window asking students to allow, or not allow the use of the microphone. Bradley and I noticed that there was a tendency to click on the “not allow” function when it popped up. Bradley shared another fundamental issue that he encountered:

Another thing too, is teaching kids what a drum kit looks like and all the names of the different drums. I think at this level in this grade, like next year if I were to do this again, I would bring out a drum set right in the class, let them try it and then label it like have them physically label it. But then when they go in the kit, in the program, they’re like, “Oh I know what a high hat is, I know what a kick drum is, I know what a…” Because rather than having to test every single sound, they had physical experience with it.

The virtual drums in Soundtrap are little squares that play sounds. These sounds are described by the name of the drum, and once the sound is activated, a little rhythm square is highlighted. If the students did not have any prior experience with physical drums, they may not know how to create a drum pattern on their own. Furthermore, in Soundtrap, all the pitched instruments are played on a piano keyboard. The students change the name and sound of the instruments in the DAW, but the notes are played on the keyboard. Therefore, prior knowledge of instrument names and sounds would be beneficial to students. Moreover, prior knowledge of keyboard notes and instrument range would be beneficial as well. Bradley encountered another technical problem. He shared:

So, this is a lesson to be taught. Actually, this is just something we caught yesterday. It’s trying to drop a loop in the same track as a MIDI file. So, like the percussion files or the percussion tracks have a different formatting as let’s say like a guitar track. So, one’s like an MP3 file and the other is like maybe a MIDI file. And essentially, the program will tell you like, hey, you can’t put both these types of tracks in the same track. Like, you have to create a new track for this.
This issue occurred in Bradley’s class. A student clearly had a track placed in the DAW, but the track would not play. Eventually, Bradley realized there were MIDI tracks and audio tracks, and both formats are not compatible with one another.

Sometimes, problems are out of teacher and student control. However, if the students could be part of a flipped classroom, this could solve many access issues. For example, Bradley stayed home one day because his son was sick. On a separate day, everyone missed class since the school lost power. Another day, the students had no access to computers since other classes were using them to complete standardized tests. Rachel missed an entire period as she needed to deal with in-class drama. Aimee missed a day since her principal placed her into a meeting with short notice. Even though there were multiple disruptions during the study, the participating teachers had enough time to introduce the fundamentals of music production to their students. They all indicated that implementing music production earlier in the following year would provide them more time to explore concepts beyond tracking.

Next steps

Bradley had put a lot of effort into developing his music production curriculum by continuously researching concepts online, developing new ideas, and creating analogies such as:

If you put too many loops together it’s like soup. What happens if I put lamb, beef, chicken, and too many meats in a soup? Is it going to make a good soup? Probably not. And I put noodles, and rice, and I put mashed potatoes, and gravy. They’re going to make a good soup?

These descriptive analogies made students laugh, yet they connected new knowledge to language students understood. The progress in Bradley’s class was apparent after a few months of experience since his primary and junior students were already working on concepts that the professionals in this study claimed as advanced. These concepts were multi-micing and layering voices. Bradley had turned his personal office into a recording studio. The students were able to
come in at recess and do additional recording. He preferred recording the vocals in this space to eliminate additional sounds in the background. Bradley discovered:

Well, there was two ways of doing vocals, actually. It was better in some situations. It was better to just record Tracy’s lines and then just another and then maybe just Derek’s lines and then cut them together in the beat. Yeah, or with some groups, we literally had live, all four kids wrapped around the mic. So, they had to know their line and they had to come in and do the whole verse.

Bradley explored two options of voice recording. One option was to record one student at a time on separate tracks. This option provides more opportunity in the mixing stage, to blend and balance each students’ voices. It also provides more options for shaping the timbre of each individual voice. When students record as a group on one track, there are fewer options to balance each voice. However, this process is often used in the studio as a process known as live off the floor (Brown, 2009). Bradley continued to explore options:

I watched a bunch of YouTube videos to try and figure it out where to put your pencil mics. I have, they’re about six feet apart. I’d recorded an “O Canada.” I had a group of boys and a group of girls all singing into the two different mics. And it turned out really, really well.

Bradley forgot to share the videos he had found on YouTube with me; however, it would have been helpful to add these resources to our central location of videos. Although there are standard uses for studio equipment, many artists choose to explore different timbres in the studio by utilizing recording equipment in non-conventional ways (Hughes, 2017). Bradley’s example of recording vocals with pencil mics was one of those moments. His students have benefited from his research online and through his modeling of creative uses with equipment.

Aimee and Rachel did not progress further than tracking with their students. They provided them time to import loops, and do some editing, however they mentioned that they did not explore any of the mixing features with their students. Even though their students had
expressed to me that they were interested in knowing these concepts, due to time constraints, both Aimee and Rachel did not reach this goal.

The students at my school were introduced to the mixing planes (vertical, horizontal, and proximity) early in the year. Once they could navigate the DAW and create a short composition with multiple tracks, I guided them to the mixing stage. Once they had experience with these mixing functions, we returned to the tracking stage, and explored different options. These options generally related to recording with physical instruments, recording new songs in different genres, or continuing adding elements to their songs. When they had a song recorded and mixed, I had the students submit their songs to me in Google Classroom as an indication that their songs were finalized and ready for distribution.

Summary

The teachers and I communicated through text, telephone, and Zoom several times during this study. Together, we planned classes, applied new concepts, and reflected on the process of integrating music production into the music classroom. In the planning stages, the teachers typically gave me an overview of what they taught their students, which was mainly tracking, hence why the students had multiple compositions. The teachers also shared some success stories, concerns, and issues. The success stories generally related to what the teachers had observed, such as the excitement students were showing, the ongoing focus, and the amazement at what students had created. Some of the concerns related to lesson structure, time, space, and noise level. Most of the issues related to login problems, content knowledge, and use of equipment. The students, the teachers, and I worked through these issues by troubleshooting them together during class time. As we encountered issues, we would determine if they could be
resolved by applying knowledge shared in the Dr TooNice videos, or in the Soundtrap FAQ section.

Even though our workspaces looked different from one another’s (Bradley and Rachel were traveling teachers, Aimee’s music room was the library, and I had a music classroom), all the teachers and I were successful in providing our students the opportunity to produce their own music. The concept of student independence was practiced through the flipped classroom that the teachers had created for their students. The idea was to provide students with guiding instructions to see if they could explore various music production concepts on their own. The teachers served as facilitators and provided feedback on student work to engage critical thinking. In the primary grades, Bradley felt as though students would require some base knowledge, such as hands-on experience with physical instruments, before engaging with a DAW. This would provide students a better sense of sound when working with virtual instruments. As he built a foundation, Bradley connected concepts with analogies, and after only a few months, his students were working on advanced production concepts such as multi-micing. As a means to an end, Bradley had the students share their recordings in class as a performance. The students sent Bradley their creations with the “invite” function in Soundtrap. Upon accepting this invite, Bradley had access to the students’ songs on his computer. He connected his computer to speakers and played a song from each of the students consecutively as a performance.

Aimee worked with junior students. She adapted her teaching role to the learner-centered paradigm. Her students mainly explored the DAW during their own time and created songs using the pre-recorded loops. One student went as far as writing original music for the band he was involved in after school. Aimee was also ready to take music production to the next stage by providing her students additional space to shoot music videos.
Rachel tried the traditional large ensemble scenario with her group at first. This method was not successful, but her flexibility in adapting to the learner-centered paradigm worked better. Every student in her intermediate class had a different level of experience with music production, from beginner to advanced, therefore as they shifted to the learner-centered paradigm, the noise level in the class was reduced, and student engagement was enhanced. Rachel’s flexible mentality to learn alongside her students enriched this approach. The introduction to music production in the primary, junior, and intermediate classes was a success in the eyes of each participating teacher. In the following chapter, I share the students’ perspectives of their experiences with music production.
CHAPTER 6

The Students’ Perspectives

The year was 1990. As a young child, I turned on the television set to Much Music, a Canadian TV channel that played all the popular music videos of its time. I remember watching and loving the hit song, “You Can’t Touch This” by MC Hammer. I would practice his dance moves in the mirror while singing along to a cassette tape playing in the background. Looking in the mirror, I always imagined myself older than I was. One day while I was practicing, I distinctly remember hearing my parents discussing some sort of issue, which was unrelated to the performance I was giving to my reflection. However, when I asked them about this issue, they said, “I’ll tell you when you’re older.” I heard that phrase on numerous occasions throughout my childhood. Even though my parents may have thought that they were protecting me from being exposed to adult conversations, I was aware of my surroundings, and could feel when there was uncertainty in the air. I may not have known what the underlining issues were, but I knew when there was a problem. Returning to my mirror, I wondered why my parents could not see me as the mature person I saw myself. I also wondered why they thought my opinions would never matter. I wanted to be a part of their conversations, yet I could never understand why I was not included.

Now that I am an adult and have children of my own, I understand why my parents may have protected me from issues that had no relevance to me and why they would have seen me as too young. However, as an educator, I should return to my feelings as a nine-year-old and recognize that young students have valuable opinions, and their voices should be heard in the classroom. Furthermore, I must recognize that children today are not growing up in the same world that I did. Today, children as young as seven years old walk around with cellphones in
their pockets and constantly engage in conversations with their friends via texting. They have endless access to worldwide information and are being exposed to knowledge that a child in the 1990s could have never imagined. Today, children are also faced with daily anxieties due to the pressures to justify their existence to peers by the amount of likes and followers they obtain online (Bark, 2020). As an educator, one must recognize the differences between one’s own childhood experiences versus those of one’s students, especially when considering the popular culture that children are exposed to today. Wright (2017) highlights:

Although the mass media industry has some role in originating the cultural products consumed by young people, the young people also play an active role in recontextualizing and changing these products and their personal meanings and using them to navigate the circumstances of their own lives and construct their individual identities. Young people are not seen to be at the mercy of popular culture but are active participants in making and remaking it to fit their needs, using their creativity to weave the particular cultural product into the evolving patterns of their lives. (p. 13)

To gain a better understanding of how educators can relate to today’s students, and encourage such creativity, I examine the implications of the current generational gap in our schools; a gap between teacher and student generations that has never been so extensive due to the dichotomy of growing up before the internet was invented, versus growing up with the internet as a necessity (White, 2022). Since Halliday et al. (2019) have highlighted that there is “little research that involves student voices in the development and implementation of a school’s education strategy [and that] frequently, assumptions are made about what might be best for student well-being, with little input from the students themselves” (p. 174), in this chapter, I illuminate how I provided time and opportunities for young voices in elementary music
classrooms to be heard, reflecting student voice research as advocated by Rudduck and Flutter (2004). My approach was not only to hear what these students had to say, but to critically listen to them and consider how their information could shape a music curriculum. I listened to what these students had to say before, during, and after a music production curriculum was implemented by myself and three other elementary school music teachers. These teachers and I used a learner-centred approach (Caposey & Whitaker, 2014). This approach provides students more choices, differentiated instruction, and critical feedback. Before sharing the thoughts, beliefs, and interests of the students in the music production classroom, I examine literature on the generational gap in our elementary schools.

**Understanding the Generational Gap**

When music education entered North American schools in 1838, its curriculum mainly focused on developing the performance skills associated with Western art music (Birge, 1938). This was before the phonograph was invented in 1877, when additional music from around the world could be captured and shared (Leake, 2014). In 1967, historic discussions between leaders in education, business, and the government took place at the Tanglewood Symposium in the United States, addressing the entry of present-day popular music into public schools (Gurgel, 2019). To remain fully transparent, “previous to the Symposium at Tanglewood, pertinent issues related to the subject, ‘Music in American Society,’ [was] discussed by fifty to sixty music educators at each Division Conference” (Choate, 1967, p. 38) and the results of these discussions were shared with each of its music educators. Among other recommendations, teachers were encouraged to include rock music and other popular genres into their programs to meet the interests of students. Further to these discussions, Housewright (1969) wrote, “The Music Educators National Conference through its Tanglewood Declaration not only accepts rock and
other present-day music as legitimate but sanctions its use in education” (p. 43). Therefore, some teachers welcomed popular music into their programs. A few years later, technology-based learning began entering the music classroom and students composed melodies using a computer and “music box” (Bamberger, 1977). Based on the information typed into the computer, the music box would instantly play melodies and percussion accompaniments.

Twenty-four years after the symposium, Cuttieta (1991) highlighted, “we have included pop music in the curriculum, but for all the wrong reasons” (p. 27). He claimed that music education remained rooted in Western art traditions since many educators saw fewer musical qualities in pop music, and simply added some arrangements of rock music to their large ensemble repertoire. Furthermore, he believed pop music was used as bait to attract students to music programs to eventually get them involved in Western art music.

Demonstrating that some students were interested in roles beyond instrumental performance, some studies revealed that students preferred using computers as instruments or tools to compose music (Hickey, 1997; Folkestad et al., 1998; Seddon & O’Neill, 2001; Stauffer, 2001). Recognizing these issues, modern progressive music educators and researchers continued advocating for popular music education (PME) in public schools (Bell et al., 2019; Green, 2008; Kratus, 2007; Powell & Smith, 2022; Rodriguez, 2004). With growing success, PME has been spreading across the public school system in North America with diverse programs such as: (a) Musical Futures, a pop resource and pedagogy platform for teachers and students that began in 2003 (Musical Futures, 2023), (b) Music Will, founded in 2002 as Little Kids Rock, a non-profit charity that provides free instruments and pop music instruction to public schools in the United States (Music Will, 2023), and (c) TI:ME, established in 1995, a non-profit organization that provides music educators with professional development in music technology (TI:ME, 2023).
Furthermore, technology-based learning continued entering the classrooms, however, the focus mainly remained on composing with computers (Mellor, 2007; Gall & Breeze, 2008).

As the years pass, the music industry continues to evolve, Powell et al. (2019) illuminate this by saying, “once again, times have changed, as popular music has changed, as have students’ music experiences, with the advent of YouTube, digital downloads, music apps, MP3, iPad ensembles, Amplify, GarageBand, and many other innovations” (p. 23). Yet music education seems to lag behind. Additionally, just as I presented in Chapter 5, and other studies have shown (Peppler, 2013), “PME negotiation processes are conducted from the viewpoint of the teacher and the school’s norms rather than from the viewpoint of students” (Koskela & Leppänen, 2020, p. 305). Even though teachers are using PME to introduce electric guitars, drums, and keyboards to students, many of the genres of music and songs that use these instruments may have little to no connection for this generation of students. Many PME teachers are focused on their personal experiences growing up, and teaching what they wished they had learned in school, rather than discovering what students wished they were learning today. Furthermore, I expand on the limited discussion of music production included in PME by highlighting the distinction between how music was recorded and used in the past in comparison to the way music is recorded and performed today.

Music studios from the 1950s to the 1990s utilized analog tape to record music, until computer technologies eventually made their way into the studio. During this transition, there was a hybrid era that consisted of mixing analog and digital recording technologies together (Bell, 2018). It was not until the early 2000s (before the 2010s) that most recordings were fully recorded using a digital medium (De Bruin et al., 2022). Furthermore, Seabrook (2015), author of the book titled; *The song machine: Inside the hit factory*, claims he “did not see a single
instrument played in any studio that [he] visited when he was reporting this book, it is all done on machines” (03:23). Moreover, the recording studio has evolved into home studios, where most musicians can record in the comfort of their own space (Bell, 2014). We, as music educators, need to evolve from the traditional instrumental performance approach (orchestra, band, choir, jazz, and dad rock) in schools and focus on present means of engaging with music, such as those detailed above. I recently realized that the musical values of music teachers may differ due to the popular culture that they were exposed to during their upbringings. There are four different generations among the staff in most public schools, and each generation is different from one another (White, 2022). Generations are generally sorted by fifteen-year time spans. Teachers today represent a lifespan of four of these generations: Baby Boomers (1946-1964), Generation X, (1965-1979), Generation Y, or Millennials (1980-1994), and some from Generation Z (1995-2009). The entire current student body in elementary schools do not come from any of these generations. The student body in elementary schools consist of Generation Alpha (2010-2024), also known as “screenagers”⁴ (Little & Etkin, 2019).

White (2022) suggests, as he describes Alpha students having a new outlook on life, that “if we’re going to make the most of reforming our schools in the 2020s, we must understand today’s students and the four disparate generations in our staffs” (p. 1). During a YouTube interview, Mark White, author of the book 5-gen-leadership: Leading 5 generations in schools in the 2020s, generalized that Baby Boomers and Generation X are more likely to follow the rules and directions, whereas Millennials and Generation Z tend to oppose the status quo, and Generation Alpha are not afraid to speak up and demand what they want from people in positions of authority (Corwin, 2021). To understand my own positionality in writing this chapter, I

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⁴ A screenager is a young person who is proficient with digital technology such as computers and smartphones due to the amount of time spent on these devices.
position myself as a Millennial, who has children of his own in Generation Z, and who teaches Generation Alpha students.

Music educators cannot assume that they know what their students need if they do not have a conversation with them. During these conversations, teachers should practice non-judgemental listening to create a safe environment. Then, students may feel confident enough to share genuine information, and “by speaking in their ‘authentic voices’ students make themselves visible and define themselves as authors of their own world” (Ellsworth, 1989, p. 309). For educators to make the music classroom environment more meaningful to Alpha students, there needs to be a transformation from teacher control to student control, which can occur in conversation, action, and reflection.

Now more than ever, students are invested in a digital world that adults may never understand. To diminish this gap in understanding, the students in my study were provided opportunities to work independently and shared some of their musical interests and learning goals with their teachers. In research, calls for such actions have been raised by Mantie et al. (2021), who expressed:

The learner’s voice is often neglected in this process of transformation. In other words, research has examined what students are doing in terms of musical learning, both formally and informally, rather than seeking to understand learner intentions - i.e., what they would like to learn and how they would like to learn it. The music learner’s voice is arguably currently undervalued by researchers, educators and policy-makers. Youth voice is crucial for reimagining music education taking place outside the school contexts from a global, multistakeholder perspective, and for fostering youth music engagement in order to promote more meaningful music learning experiences. (p. 44)
In the following sections, I will share the perspectives of students that have been heard while working on music production projects through a learner-centered approach. I spoke to primary, junior, and intermediate students in four different elementary schools. We discussed music production in their general music classes and their experiences in music outside of the school context.

The Participating Students

The participating students that agreed to join this study were from four different schools. They participated for approximately three months, which is the duration of a semester. To protect their identity, each of them was assigned a pseudonym. In Bradley’s school (Table 1), these students include Jennie, Jeff, Veronica, and Raymond in grade two (primary), and Derek, Rylee, and Tracy in grade five (junior). In Rachel’s school (Table 2), Mike, Evany, Colin, Alyssa, and Rory from grade seven (intermediate) partook in the study. In Aimee’s school (Table 3), Oliver, Charlotte, and Ava from grade six (junior) contributed to the study. In my school (Table 4), participating students included Casey, Hendrick, Craig, Harrison, Arthur, Jasmine, Simone, and Kim in grade three (primary); Aurora, Brodie, and Carl in grade four (junior); and, Tiffany and Jake in grade eight (intermediate). In total, 28 students participated in this study.
### Table 1

**Bradley’s Participating Students**

<table>
<thead>
<tr>
<th>Division</th>
<th>Student</th>
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</thead>
<tbody>
<tr>
<td>Primary</td>
<td>Jennie</td>
</tr>
<tr>
<td></td>
<td>Jeff</td>
</tr>
<tr>
<td></td>
<td>Veronica</td>
</tr>
<tr>
<td></td>
<td>Raymond</td>
</tr>
<tr>
<td>Junior</td>
<td>Derek</td>
</tr>
<tr>
<td></td>
<td>Rylee</td>
</tr>
<tr>
<td></td>
<td>Tracy</td>
</tr>
</tbody>
</table>

### Table 2

**Rachel’s Participating Students**

<table>
<thead>
<tr>
<th>Division</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermediate</td>
<td>Mike</td>
</tr>
<tr>
<td></td>
<td>Evany</td>
</tr>
<tr>
<td></td>
<td>Colin</td>
</tr>
<tr>
<td></td>
<td>Alyssa</td>
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<tr>
<td></td>
<td>Rory</td>
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</tbody>
</table>
### Table 3

*Aimee’s Participating Students*

<table>
<thead>
<tr>
<th>Division</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior</td>
<td>Oliver</td>
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<tr>
<td></td>
<td>Charlotte</td>
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<td></td>
<td>Ava</td>
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</tbody>
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### Table 4

*Johnny’s Participating Students*

<table>
<thead>
<tr>
<th>Division</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>Casey</td>
</tr>
<tr>
<td></td>
<td>Hendrick</td>
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<tr>
<td></td>
<td>Craig</td>
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<tr>
<td></td>
<td>Harrison</td>
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<tr>
<td></td>
<td>Arthur</td>
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<tr>
<td></td>
<td>Jasmine</td>
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<tr>
<td></td>
<td>Simone</td>
</tr>
<tr>
<td></td>
<td>Kim</td>
</tr>
<tr>
<td>Junior</td>
<td>Aurora</td>
</tr>
<tr>
<td></td>
<td>Brodie</td>
</tr>
<tr>
<td></td>
<td>Kyle</td>
</tr>
<tr>
<td>Intermediate</td>
<td>Tiffany</td>
</tr>
<tr>
<td></td>
<td>Jake</td>
</tr>
</tbody>
</table>
Throughout the study, the students were encouraged to listen to recordings and identify music production concepts. As the weeks progressed, the teachers and I introduced the students to these concepts by posting information in their Google Classrooms accompanied by the date it was created. For example, in week one, my students explored song hooks. In week two, we identified the verse and chorus in multiple songs. In week three, we analyzed instrumentation in various songs. The instrumentation was then related to tracking in a DAW. From there, the students observed the *Fundamentals of a DAW* video, and imported tracks into their projects to complete their first task, as asked by Dr TooNice. Some students spent more time than others listening to the loops offered in Soundtrap. Some students listened to the loops by instrumentation, whereas others listened to them by genre. After a few weeks of exploring the loops (there were two primary classes per week, and one junior and intermediate class per week), the students began looking at the other options Soundtrap had to offer. These options included digital instruments, a drum beat pattern maker, and voice recordings. As the students explored these options, they were given the task to write, recreate, or arrange a song in any genre, using any instrumentation.

The project was divided into three stages. Stage one was tracking, stage two was mixing, and stage three was distribution. For stage one, some of the students preferred using digital instruments whereas others flocked to the physical instruments such as the keyboards, ukuleles, and percussion instruments. Most of the students had taken several weeks to complete the tracking stage. For those who finished before others, they were directed to the mixing stage. This stage consisted of applying techniques relating to the vertical, horizontal, and proximity planes discussed in Chapter 4. Once the students had completed their songs, they were asked to post their music in their Google Classroom, which represented the distribution stage. Since the
students could work at their own pace, some completed all three stages, whereas others had to skip stage two due to time constraints. However, they were able to continue accessing their work after the study concluded. Due to the number of students in this study, the information in the following sections is presented collectively by division (primary, junior, intermediate), not by individuals.

**Student Background**

Knowing that the average student spends seven to eight hours a day on their devices (Bark, 2020), I was curious to know how many of our participating students played physical instruments or created music digitally outside of school. First, I asked the primary students about their experiences, and Jeff shared, “I think I used Soundtrap when I was in grade one, a program that had instruments like this, but I’ve just been listening to instruments mostly on YouTube.” Veronica replied, “This is my second time using Soundtrap. I have a guitar at my house, and I have a ukulele and I’ve been working on those too. It would be cool if I could bring my guitar to school.” Craig responded:

> Like, let’s say that there’s that one kid who wants to be a musician when he grows up. It’ll help him learn about music production early. Also, if there’s that one metal kid, not in every class, but in this class that wants to record metal music, I want it just for that kid.

Jeff had been producing music since he was in grade one and accessing YouTube on his own. Veronica had been playing with digital and physical instruments in her spare time, whereas Craig had been singing metal for a while now and was showing interest in recording his voice. These students already had more experience with digital music at seven years old than their teachers had before engaging in this study.

I continued by asking the junior students about their experiences outside of school, Oliver shared, “I use GarageBand, I use it all the time at home. I was playing the piano since I was like
five, but like I stopped.” Ava simply said, “I sing,” whereas Charlotte replied, “I think that I used this thing that I’m using.” Charlotte was referring to the DAW Soundtrap. The junior students had experience singing, and using digital instruments outside of school, but I was hoping to obtain more information about their experiences as our interviews progressed.

The older group of participants were in the intermediate grades. Regarding instruments, Mike explained, “At sleepovers and stuff, we’ll all just mess around on Soundtrap.” Evany proclaimed, “I played piano for a few years and then this year I stopped because my piano teacher left.” Rory shared:

I did play the uke one time and I did play the drums one time when I was very young. My dad’s a musician. I did hear about GarageBand before and I’ve always wanted to try it, but like never really had the chance to though.

Colin replied, “I don’t really know how to play instruments,” whereas Alyssa responded, “I play keyboard and write my own songs.”

From the primary grades to the intermediates, the students had a variety of experiences on physical and digital instruments. Interestingly, the only student that mentioned taking private lessons was dependent on their teacher’s presence to play the instrument, whereas the students experimenting with digital instruments were independently using them. I was curious to know if their instrument selection reflected their musical tastes. Therefore, I asked them who their biggest influences in music were.

In the primary grades, Jeff said, “I just like any kind of music.” Veronica replied, “Well, I have a CD that the person actually sings the song, and her name is Fefe Dobson, and I just like listening to her cause she has an electric guitar and she’s nice.” Jennie responded, “So, one of my favorite bands are Chainsmokers. I really, really like their songs. Just because it’s really like high and good. One of my favourites is ‘So far so good.’”
I asked the junior students the same question as the primary students, and Oliver said, “Country,” Charlotte replied, “Pop,” Aurora responded, “I’m more of a country person,” and Ava told me, “I have been listening to way too much pop in the morning at like 6:30, and I’ll play like an entire playlist of like, Kelly Clarkson, Miley Cyrus, like Katy Perry, Taylor Swift.”

On the same topic with the intermediate students, Evany shared, “Well, I sometimes listen to K-pop. And I listen to slow songs, like ‘Scars to be Beautiful.’” Colin responded, “I listen to Taylor Swift,” and Olivia said, “Not really anything.” Although the students’ responses were short, it was clear that there was a variety of musical tastes. This may have to do with the ability to access music from different mediums easily. Furthermore, most TikTok videos average 30 seconds in length and do not remain popular for extended periods of time. Therefore, students are likely to imitate a similar model. Analyzing the language the students’ have used in their responses, I noticed that they do not have favourite bands, with the exception of one student. Instead, they have favourite solo artists, specific songs, or genres. This made me curious to know if the students had ever been to a live concert or mostly listened to music online.

In my school, I asked the students if they had been to a live concert and about three quarters of the participating students said that they have seen a live concert at least once. I followed up by asking them how often they listened to recorded music, and every single one of them said they did on a regular basis. In the participating schools, I asked the students the same questions.

In the primary grades, Natalie admitted to never seeing her favourite band, The Chainsmokers live in concert, as she expressed, “I only listened to the recording.” Moving on to the junior students, I asked if they have ever been to any live concerts. Oliver and Ava both said, “No,” however Aurora said, “Yeah, I’ve been to a Lady Gaga concert.” I asked her if Lady Gaga
used backing tracks on stage and Aurora said, “I don’t know.” This sparked some of my curiosities as I wondered if any other students were aware that many artists use backing tracks during live performances. Therefore, I continued to ask the other students if they had been to a live concert. Brodie responded, “I’ve been to an Ed Sheeran concert.” Then Carl said, “I’ve been to an Eminem concert.” As Carl shared this response, Brodie jumped in and said, “Yeah, I was at the same Eminem concert too.” I was very surprised to hear that two grade four students attended an Eminem concert. Further, to my surprise, they did not go together. The millennial parent may be more lenient than previous generations regarding explicit content since children are exposed to mature material on a regular basis at a young age (Bark, 2020). Aside from the explicit content, I wondered what an Eminem concert may look and sound like. I asked Carl if Eminem used any production techniques live, and he said, “Yes, in the background, cause there’s like, there’s no instruments. All there is, is speakers with a big computer at the back and just him.” I asked the students if they thought an artist simulating a performance was just as cool as listening to live instruments, and without hesitation, they all said, “Yes.” Finally, I asked the intermediates if they had been to a live concert, and Evany said the following, “No, I haven’t heard anyone live. I listen to my favorite songs on Spotify.” Her favorite song was “Don’t Worry Child.” I asked her which artist sang this song, and she did not know.

Following our conversations about “live” music, I asked the students how often they listened to recorded music. All the students from primary to intermediate said, “every day.” Oliver expanded on his response, “I like to listen to the radio a bunch. And sometimes when I’m doing work on my computer, I kind of just like listen to the music at the same time.” It was apparent that recorded music had more impact on the musical lives of the elementary students in comparison to live music. Therefore, I wondered how many students had been exposed to music
production in the classroom. The students shared that they had accessed DAWs outside of school, however, none of the primary students nor the intermediates had used any DAWs in the classroom, except for one of the juniors, Oliver, who thought he did at one point, stating, “I think we’ve used Soundtrap before.” I was curious to know more about the students’ experiences, therefore, I began by investigating their exposure to music production in the classroom.

**Soundtrap in the Music Classroom**

During an observation in the primary classroom, Bradley, the students’ teacher said, “They’re in the process of recording right now. You can probably hear lots of sounds going on at once.” In the previous chapter, the teachers expressed their concerns with classroom management due to movement and noise levels, and I wondered how the students felt in this type of classroom environment. I was curious to know if the students were working or simply chatting as the teachers had assumed. Speaking with the students, they seemed oblivious to the teachers’ concerns as Jennie exclaimed, “I’m very, very happy that my class got chosen cause I love working on this.” Jennie had been exploring the DAW for her first time in class and on her own she had already titled a project, “Jennie’s song.” This link directs readers to Jennie’s song ([https://youtu.be/7NuhgIRWtBo](https://youtu.be/7NuhgIRWtBo)). Figure 9 demonstrates Jennie’s abilities to import various pre-recorded loops into a project, as asked by the Dr TooNice task found in the *Fundamentals of a DAW* video.
As I continued my inquiry regarding the teachers’ concerns over classroom management, Veronica told me, “I’m working on a new song, and I was thinking of putting this into my phone” (https://youtu.be/g_pMFdTr6O4). Veronica had completed the same task as Jennie, and she was already wanting to hear her song on her phone just as she did with her favourite music. Since I was on Zoom, I asked the students if they would be willing to share their songs with me through Soundtrap. Willingly, and with the help of Bradley, the students shared their songs with me. After being shown once, the students were able to share their songs with others on their own. From that moment on, every time I met with the students, they were excited to share their music with me. Jeff was excited to hit play on his song (https://youtu.be/CkfVtnImQhs) as he proudly said, “I made this all by myself. I only used loops, no instruments. I’m better with loops.” Jeff experimented with the horizontal placement of his loops in this project.

Throughout the interviews with the participating students, I could hear constant speaking from the rest of the class in the background. Even though the participating students were being interviewed, those that were not formally part of the study were working on creating music in Soundtrap as well. Most of the conversations revolved around music production. During a
conversation with the intermediate students, I recalled a moment when their teacher seemed overwhelmed with the noise level of her class. However, the students were in fact focused on their work. Naturally, there will be a certain noise level in the classroom, especially when students are sharing information with one another and listening to each other’s creations. To minimize some of this noise, headphones and headphone splitters could be utilized. In the following section, I describe some of the students’ projects.

**Independent Student Projects**

During the first few weeks of the study, the students were given independent time and the freedom to explore Soundtrap. They had accessed the flipped classroom, which included the Dr TooNice videos. The teachers were at liberty to provide additional information to their students. The instructions to the students were deliberately broad, as they were simply asked to explore Soundtrap and create a song. The idea was for students to pursue their interests. The students in my school had previous experience working in such a manner, however some of the participating students were new to the school.

**Primary Students**

I was curious to know what the primary students were working on. In grade two, Veronica said she had been creating play along music videos at home. These videos consisted of her playing an instrument and singing along to her favourite songs. Her goal with Soundtrap was to create original music and then make similar videos of herself playing along to her recordings, as seen on TikTok or YouTube. Veronica said, “I have a camera at my house and sometimes after school I make some videos, usually I have a CD, it plays music and then I can play my guitar going with the music. I have my own song of me that’s singing.” This YouTube link is
Veronica’s work in Soundtrap (https://youtu.be/NwtcWIFxx-g). She had imported multiple loops, and then recorded herself singing in two separate tracks.

Raymond told me, “I am working on ‘Song 9’” (https://youtu.be/_6HJ0KL_b3o). Song nine consisted of ten imported loops. I had asked him how he came up with this song name, and he responded, “That is the ninth song I made today. All I do is put random notes in. And it creates something good.” It was not uncommon for most of the primary students to create multiple songs. Many of them loved to put loops together and hear the outcome on Soundtrap. Jeff shared, “I was like, well, adding to an old creation and making it better. My song only had like the two tracks, so I made it have the four tracks. All I do is hip hop drums and rock” (https://youtu.be/4IDDLBefpD0). Although it seemed like Jeff was adding random tracks at first, he was focused on blending hip hop drums with rock loops while gaining an idea of stylistic differentiations. Once he was satisfied with his sound, I asked him if he was going to add vocals to his song. He replied, “Nope, I’m gonna go see, like, what kind of rappers do, a little bit of beat boxing.” He wanted to add sound effects to his music by using his voice. I continued asking other primary students what they were working on. Jennie responded, “So, I made a song. The song title is ‘Pop, hop’” (https://youtu.be/ivmgI9y5pFg). “Pop, hop,” was another example of students blending loops together.

At my school, the primary students worked on various song ideas. Casey shared, “I have been trying to work on mostly just making songs by combining other songs that have already been made to make better or good songs” (https://youtu.be/3aKuJjmitpY). Casey was experimenting with making mashups and remixes. In Figure 10, he demonstrates his abilities beyond importing loops by cutting certain tracks to obtain specific rhythmic accentuations.
Hendrick had been working on writing an original song. He shared:

So, I’ve been in Soundtrap. I have been working on the beats and like the tempo of the music and when I made, when I made some of my songs, I’ve combined it with what I made before, I have made sure it sounds good and I have to add words to the song to make it sound better (https://youtu.be/VeXGMwolAqg).

In this example, Hendrick had altered the tempo of the loops to obtain the sound he was envisioning. Craig mentioned, “I record metal songs by using karaoke and it’s fun. And I might start using them to make my own song. I hate pop music” (https://youtu.be/IXmm0Y2YUBA). Craig was able to locate the karaoke version of his favorite metal song on YouTube, convert the video to Mp3, download the Mp3, upload it to Soundtrap, and record his voice to the song. Figure 11 demonstrates the set-up Craig used to record his vocals.
Craig’s next goal was to create his own lyrics and record those over the tracks. Harrison said, “I’ve been working on ‘Smoke on the Water’ because I’ve been working on make a repeat” (https://youtu.be/tGlE3TEkPZA). Harrison meant he was working on creating a cover version of the song “Smoke on the Water” and he was working on recreating it through Soundtrap. He recorded his guitar using an interface plugged into his computer (Figure 12).
As for the other primary students, they were all working on creating original songs at this point, however they each took a unique approach. Arthur told me, “I’ve been working on making a chorus and verse and combining those together to make songs.” Arthur watched the Dr TooNice Verse and Chorus video to help him create his song. He imported loops, edited the loops, placed them rhythmically in his project, and created verses and a chorus. He also added elements such as fading to add additional effects. The following link directs readers to his song (https://youtu.be/zvB15estzm4). Jasmine expressed, “I’ve been working on pop songs because when I grow up, I kind of want to be like all those other pop songs and stuff like that.” Jasmine followed the same process as Arthur, however, the loops she chose represented the style she was interested in. This is the link to her song (https://youtu.be/tQavf8-Xbww). Simone exclaimed, “I’ve been kind of working on making rock and funk songs. And I’ve been listening to some while I’ve been recording, so I could kind of make them like the songs.” Before starting the recording project, all the teachers directed students to critically listen to songs that interested them. They had to listen for instrumentation, what may make a style sound different than another style, and if they heard any special effects. During their analysis, the students were instructed to look for loops that matched their inquiry. Therefore, at this point, Simone was importing loops that matched the genres she was interested in, into her project (https://youtu.be/FoGqXtj0b30). Kim said, “I’ve been working on like making new beats and like trying to make like songs, new sounds.” Kim was following a similar process to Simone and was currently exploring the loops to find her desired sound (https://youtu.be/dCzRhTM6AzQ). Without the freedom to explore and to create music independently, the students would have never been able to express themselves in the numerous ways they did using Soundtrap. A teacher would have never been able to meet all
these needs if they were teaching the class as a large group. Furthermore, the students could capture and save all their songs and share it at any time with anyone they pleased.

**Junior Students**

I wondered if the students felt more constraints to express themselves as they grew older, especially those taught in the previous setting of the large ensemble. Therefore, I asked the junior students what they were working on. Derek replied, “Just like a song that kind of like, it’s like a sad song, for like a sad movie” ([https://youtu.be/CvWWdbw3GKQ](https://youtu.be/CvWWdbw3GKQ)). Derek wrote lyrics and recorded his voice over some of the pre-recorded loops. To bring his voice forward, he adjusted the volume faders of each track to balance them accordingly. Furthermore, this student was interested in creating a cinematic soundtrack. Rather than a short TikTok clip, he had a full-length movie in mind, and wanted to create music for this movie. As for the other students, they were using Soundtrap for the first time, and exploring its options. Ellen told me:

What I’ve got right now is after the beginning of this song, it goes into something almost completely different. I’m trying to see if I want like another part after like the middle part or if I want to just keep on going with like yeah, just looping yeah ([https://youtu.be/vxXjESxGbPU](https://youtu.be/vxXjESxGbPU)).

Ellen imported loops into her project and edited the length and the rhythms of each track by cutting and pasting them to her liking. She also adjusted the volume faders of each track to clearly hear each one of them. As for Raina, she responded, “I’m working on making my own music. So, I’m just going through all the sounds on the beat piano pad to see what sounds I want to use” ([https://youtu.be/x4uwjvx5GJA](https://youtu.be/x4uwjvx5GJA)). Raina imported loops into her project and was using the digital piano to create an original riff that would fit the song. At this point, she did not write the riff as she was still looking for a specific sound she had in her mind. The junior students did not seem to be fazed from their previous large group experiences.
**Intermediate Students**

Next, I moved on to the intermediate students and asked them what they were working on. Mike shared with me:

Well, I’ve kind of just been like figuring things out. So, I was just like finding something and I found a few… I don’t know exactly how to describe everything, but I found a few things that I like how they sound. I really like using the fade in, fade out, to just add like smoother transitions between two different notes and different instruments. And like just making like a one, one-and-a-half-minute thing, it took like 20 minutes. But I really liked, I really enjoyed using it ([https://youtu.be/dayJ1HRMdHg](https://youtu.be/dayJ1HRMdHg)).

In his song, Mike imported loops, edited them, and placed them strategically in his mix. He used some features such as volume fading for proximity effects. Mike realized that music production takes time. Perhaps the 30 second TikTok video reflects the difficulties of editing, and the need to produce a large quantity of music, in a short amount of time, for a fast-moving industry. Regardless, as students build knowledge and music production chops, they will become quicker at producing good quality sounding songs. Evany said:

Well, when I first played Soundtrap, I wanted to create a song that was already created. It’s called “Coffin Dance.” I made it on like this other program called Chrome Music Lab. It was really fun. But with my current song, I’m almost done. I don’t know if I actually wanna record my voice, because sometimes when I record my voice, it like goes like higher than I expected.

This student was working on re-creating an EDM song as well as creating an original song. In this example ([https://youtu.be/GvSVl2ioavs](https://youtu.be/GvSVl2ioavs)), Evany was “almost done” selecting her loops for this project. She worked with the volume faders to balance her tracks and faded out the song at the end. To add length to this song, her next step was to create verses and a chorus. Even though vocals were not required, she expressed that she was thinking about including some, but was hesitant to do so. I gave her a few technical tips that may have helped to steer her fear away and she was excited to give singing a try. The tip I gave to Evany was to record herself singing the same line three times on three separate tracks. She was to pan one track to the left, keep one
track centered, and pan the third track to the right. For the tracks that were panned to the right and to the left, I asked her to add some reverb and for the track in the center, I asked her to keep it dry by having no reverb. This is a common technique used in the popular music industry (Hodgson, 2019). Moreover, I asked her to slightly stagger the tracks by time, as shown in Figure 13, to create a slight time difference (delay) known as the Haas effect (Izhaki, 2023). This conversation inspired me to add this concept in the Dr TooNice video titled *Tips on Recording Your Voice in Soundtrap*.

**Figure 13**

*Example of the Vocal Tips in the Dr TooNice Video*

![Example of Vocal Tips in Dr TooNice Video](image)

*Note.* This video was created after the conversation with Evany occurred.

Rory explained to me, “I get to like make a song, I search up songs and I take those songs and then create, and I remake it” ([https://youtu.be/EPAo8BySZLE](https://youtu.be/EPAo8BySZLE)). This student was interested in creating hip hop remixes. With a partner, they had written new words to an existing song. In Soundtrap, they imported a loop, and recorded their new lyrics while listening to the original song. As for Colin, he shared, “I made two [songs] just to play around. I made one that’s kind of like LoFi and then I kind of made one that’s kind of has like more heavy beats with it. It’s instrumental and all virtual instruments.” Colin was particularly interested in analyzing the sound
qualities of LoFi and HiFi recordings. Low fidelity (LoFi) is typically a style used to include imperfections in a recording, however, it can also be associated with a sound that is more distorted in quality, whereas high fidelity (HiFi) typically relates to professionally sounding recordings. The following link is Colin’s LoFi example (https://youtu.be/OQmeJXxAq). He combined various loops together and adjusted the volume fader of each track to match the LoFi recordings he had listened to. He also created fade in and fade out effects on certain tracks. Alyssa, the following student that spoke to me, wrote a song in an EDM style. She shared:

I have that song that we did with loops. But then I also tried making some of my own songs too, with some of the other stuff in the editor I played with. I so far, I have like a little intro thing (https://youtu.be/e4p_fSk5jV).

Alyssa was using Soundtrap for the first time and created a song based on the task found in the Fundamentals of a DAW video. Upon listening to this video, she was inspired to create original songs with the loops found in the program. Next, Tiffany explained to me what she was working on, “Piano, I think I might put a couple beats in it. It’s piano songs I’m creating” (https://youtu.be/EcUhofeOXjg). In this song, the beats were created by using the “pattern maker” option. With this option, students can physically input rhythms to the pre-recorded drum sounds.

As I continued to listen to the various songs created in each division (primary, junior, and intermediate), there was a wide range of interests revealed. The interests of students, their passions, and their focus was apparent in the work they produced. Regardless of when a student was introduced to the DAW, they were able to create originals, covers, remixes, and mashups in multiple genres by using beginner to advanced options. Through some coaching and some independent learning, the students were progressing well on their projects. I wondered where they would take their music next.
Next Steps

Primary Students

After a few classes, the primary students were comfortable navigating the basic functions of the DAW. They were able to import loops, create rhythm patterns, and use the media control buttons (play, stop, rewind, etc.). Rather than showing what the students can do next, I was curious to know if they had any aspirations. Jennie explained, “It would be cool to have like where you can mash your song, like a rap, a real rapper song. And you can mash that into one of your songs to create like a singer.” Jennie was referring to sampling. With this wish list, my aim was to create an instructional video for each of their requests since in the flipped classroom paradigm, the classroom teacher would be able to direct students to the proper resource. Craig responded:

Learning how to get, like, the effects for the audio. Like I had to scroll through the effects and learn what they did just to make a song that sounded like an actual recording. And instead of just like a bunch of instruments going all at once, where it’s like actually bonded together and stuff like that.

Craig was ready to begin the mixing stage. He was led to the vertical, horizontal, and proximity plane videos. By mentioning that he wanted to bond instruments together, he meant that he was wanting to balance and blend the sound of each instrument. The idea of directing students to the proper resources was to help them gain a sense of independence, to develop research skills, and promote experimentation. As for Arthur, he described to me how he liked the Verse and Chorus video because it had a visual component that accompanied the audio. Arthur was interested in having more resources that would help explain audio concepts with visual examples. Next, Simone replied, “Well, I kind of like playing songs and playing to it, like to a click and trying to play to it. So, I can kind of would like to learn how to build a song.” Simone was referring to the techniques used in the rock studio set-up. She was interested in recording
physical instruments since she played guitar, bass, drums, and sang. She was able to play songs from beginning to end on each of these instruments. Her next step was to record all these instruments since she had written an original song. She was interested in going through the entire process of recording her original song in the studio. As for Jeff, he expressed:

I think I would, this is why I wish there were, I wish there was more like instruments. I’ve tried the mic and the keys and the drums. I think I might want a clarinet and a harp to be in it.

Jeff had been watching musicians play a variety of instruments on YouTube, therefore he was interested in recreating these sounds. I pointed out that he could click the “play the synth” option in Soundtrap and change the sound of the synth into any instrument he desired. In many DAWs, numerous instrument sounds are available, yet regardless of the sound chosen, they are all played using the virtual keyboard. This became a great opportunity for Jeff to learn notes on the keyboard. It also helped him understand that the notes on the keyboard are the same as other instruments, but each instrument has its own timbre. During the process, it was important for teachers to continue asking students what they were working on, what they would like to work on next, and if they were encountering any issues.

**Junior Students**

Moving on to the next steps in the junior grades, Derek shared:

I want to learn how to like, find like beats on the pattern beat maker. Like, I wanna try to find the perfect beat for it, but that’s kind of hard to work because you have to test out everyone then like delete everyone. Also, how you can like find different instruments to use like original beats and you can also fade things out and fade things in.

Derek had encountered a few issues. He wanted to recreate beats he was hearing in his head. It would have been helpful for him to know more of the available options in the “pattern maker.” However, his process of exploring rhythms would eventually become easier since learning a DAW is like learning to play an instrument. Derek was also curious about the same
issue that Jeff was experiencing when he was looking for other instruments to include in his project. Moreover, he was interested in advanced features that he had heard on other recordings such as fade in and fade out. As for Ellen, she expressed:

Making more of the beat pads. Yep, because I’ve, only I tried it once and it didn’t really work out as well the second time. I was just trying to trial and error, so I want to try getting better at that (https://youtu.be/rhfECoX3NoU).

The link to Ellen’s song demonstrates her attempt to use the digital drums found in Soundtrap, named “pattern maker.” Ellen was having similar issues as Derek with the pattern maker. Therefore, pointing them to a video resource explaining “pattern maker” would have helped them in obtaining new ideas. However, the Dr TooNice video was not created yet, so I aurally explained to them how they can access these features. As for the other junior students, they were interested in knowing more about vocal recording. This became a pattern across all divisions. Tracy said, “I want to like do more like vocal recording because that sounds fun.” Oliver shared, “Yeah, like more rapping songs.” Charlotte wondered, “How do you record your voice?” Even though I provided some aural tips on vocal recording, it was apparent that a video resource was needed concerning this topic.

The following student was thinking ahead for future years. Ava expressed:

I would think probably explore it, cause definitely thinking about like if we are doing it next year, thinking about everybody else, I feel like they would want some time to explore it too, cause if you do get some freedom to explore, I think it’s a really fun program.

Ava mentioned the “freedom to explore” was an added benefit to the learner-centered approach. She was excited to use a DAW the following year and added that new students could explore the program while those with experience can continue working on developing advanced skills. Recognizing that DAWs do not always produce instant gratification, Brodie explained, “We can make like remixes. It takes time.” The junior students showed lots of interest to pursue
recording in the following school year. At this point, I would like to remind that I am sharing only the information gathered from the students that obtained ethics approval. Perhaps not all the students in the class showed this level of interest, however, those involved in the study displayed high levels of enthusiasm.

**Intermediate Students**

For the intermediate students, a common theme emerged: they were eager to learn skills beyond tracking. Mike said, “I would really like to learn how to like mix them together and more about this reverb and stuff.” Evany mentioned, “Mixing. Well, I mean, I do have my own YouTube channel, so I would like kind of want to post my first singing video on there.” Jake revealed, “I mean, like some people want to grow up and produce music, so it would be kind of useful to be able to learn it now.” Even though the students had some recording experience before this study, none of them were aware of the mixing techniques associated with the recordings they would listen to. Often, when teachers include music production in their classes, they do not teach concepts beyond tracking. The next steps for the intermediate students varied from wanting to record physical instruments, to trying other DAWs, and to applying skills learned on other DAWs. Alyssa shared, “I think it would be cool to learn how to record my keyboard.” As for Cory, he reflected:

I wanna know if there’s like, I worked with Audacity before and in that one you can change the tempo. And it would keep the exact same notes in the same position, the exact same waves in the same position, but then just shorten it down and stuff. I don’t know how to do that in Soundtrap though.

The students were encouraged to listen and analyze the music they enjoyed. Also, they were asked to create, recreate, or arrange a song of their choice using Soundtrap. To help guide them through the initial stage of exploring and importing tracks into the DAW, the Dr TooNice video *Fundamentals of a DAW*, and teacher facilitation made this process possible. For multiple
weeks, the students listened to the pre-recorded loops in a DAW, experimented with available options such as pattern maker and other digital instruments, and recorded their voices and physical instruments. As they imported their tracks, the Dr TooNice video, *Verse and Chorus* provided tips on editing the tracks by cutting and pasting them, eventually creating AB form. After a couple months, as the students completed the tracking stage, they were directed to the Dr TooNice mixing videos, *Panning, EQ, and Proximity Plane*, to create a dimension of depth in their songs. Some students reached the mixing stage before others. I did not know if the pacing had to do with their experiences outside of school. Also, some tasks may take longer than others. Furthermore, those who were recording instruments and their voices in my school only had access to one audio interface, and as a result, there were longer waiting periods to obtain the equipment needed to record.

**Music Production Outside of School**

As I expected, the students all worked at different paces. I wondered if those that had included more production techniques into their work had additional experience outside the classroom. In the primary grades, Casey responded, “I just really like recording that I do it. I also do Soundtrap at my house. I just think it’s a really fun project to do on your own.” As for Hendrick, he shared:

So, I have been working on Soundtrap at my house, like I’ve used my guitar, like I’ve used Soundtrap to design a song and then I’ve used the instruments that I have to try to make that song real and some of it’s worked but not much of it because I haven’t gotten used to like the chords yet. YouTube helps me understand music a little more cause it helps me understand what types of instruments are playing and how to play them properly. Sometimes I tried to get better at doing “Seven Nation Army” on the guitar. I’m trying to learn like the power chords on Soundtrap. When I listen to some of the instruments that use power chords, it helps me understand what I need to, what it needs to sound like, and then I find a video that shows me how to do it. And if it sounds right, then I can use that power chord in songs that I’m making.
After hearing that Hendrick uses YouTube as a teacher, and Soundtrap to reproduce the sounds he hears, Casey exclaimed, “That’s exactly what I was trying to say.” Casey was referring to the fact that he also uses YouTube as a teacher and then uses Soundtrap to try and imitate the sounds he was hearing.

On the topic of creating music outside of school, in the junior grades, Oliver said:

Like right now, at home, I’m kind of like working on the effects and then start doing the song. But yeah, in my band, I’m the person who keeps track of the money and the free days. I haven’t agreed with it, but yeah, there’s some debate over who should be singing in the band.

Oliver was working on the business side of things at home, while also composing and mixing. As for Derek, he explained, “My brother plays the guitar. I want to learn how to play the piano.” Next, Carl expressed, “I’m working on my, I’ve been writing songs at my house.” At home, the students had mentioned that they accessed various platforms online, however, they did not refer to TikTok as an inspiration. They had responded to my questions by using language such as apps, uploading online, Spotify, and YouTube. Therefore, with respect to parenting and listening to the students, I was conscious of not mentioning any specific platforms as they may guide students to access sites that some parents would not allow their children to engage with.

Many students mentioned accessing DAWs outside of school, however none of them declared how often or how long they would work with the software. In my school, students were given the opportunity to come to the music classroom daily during lunch and recess breaks to do additional music production work. This would provide them with an additional 40 minutes a day to work on their projects. Many students in the primary, junior, and intermediate grades took advantage of the additional time, however none of the students were consistent in attending from day to day, it was rather sporadic. I suspected that it had to do with balancing other school related activities.
Music Class Before and After Music Production

To obtain the perspectives of how students viewed their music classes before music production was introduced, I asked some students to describe their experiences. In the primary grades, Harrison exclaimed:

I’ve looked at Soundtrap a different way because I’ve only been here for like one and a half years and this is my full year being here and when I first came to the school again, I didn’t know what we are going to do in music. And when you said we’re going to do Soundtrap, I’ve looked at music as a different way. Before, I just looked at it as playing instruments and like people singing, but now I feel like it’s my whole life.

Harrison was content with music class before production was introduced, however, after it was presented to him, he had developed a passion that he was not aware he had. As for Veronica, she shared, “I like how I can actually like, pick different songs, like the loops. And you can make like, you can make like your own song without having someone.” She preferred composing on her own. Jasmine expressed, “It’s better than normal.” When the school board implemented its music programs in the elementary schools, the teachers were provided with Orff and Kodály training and resources. When the students had mentioned that they were singing and playing instruments before music production was introduced to them, they were relating their experiences to these methods. Even though none of them expressed disliking music, I was under the impression that they enjoyed music class, but music production seemed to heighten this love.

In the junior grades, Carl revealed, “For me, I feel like it’s been different because we’ve been using different programs to make our music. We’ve been able to use like electronic instruments.” By saying electronic instruments, Carl meant digital instruments. In agreement with Carl, Aurora added, “This year we’re actually using programs where you can use like electric guitars and stuff. Some people don’t know much of these things.” Aurora was excited to use an interface to record the electric guitar, and access digital instruments. During their music
classes, many of the junior students had created music using Chrome Music Lab. Even though they enjoyed using these software programs, Soundtrap brought an additional component to their use of technology, as they recognized a DAW was “different.” The DAW was different since the students had access to playing digital instruments, and could record physical instruments, whereas with programs like Chrome Music Lab, students select boxes and colours to represent sounds and rhythms. Furthermore, students like Aurora were excited to use a combination of both physical instruments and software programs together.

In the intermediate grades, Mike explained, “Before we just kinda chilled and did nothing. I think this (music production) should be a part of music cause it’s really fun.” As for Rory, he said, “I enjoyed music class, but this just makes it even better.” There was no doubt that the students enjoyed music production, in fact there was not one student that said they did not like it. To continue expanding on the idea of music class before and after music production was introduced, I was curious to know how students felt about sharing their music with me once they had finished a song.

Sharing Music

In most music classes, students are asked to perform music by singing or playing an instrument in front of their peers or an audience. I wondered how students felt about performing and if sharing their recorded music online would be any different than performing live. In the primary grades, shaking her head no with big eyes, Veronica revealed, “I wouldn’t want to sing in front of anybody.” However, when I asked her if she were to record her voice and play the recording for others, would she do it, and without hesitation she replied “yes.” I wondered if any other students felt this way, and if music production may help reduce stage fright. In a similar conversation with the junior students, Carl explained:
We (referring to himself and Brodie) would probably have beats, yeah, behind us while we’re playing our instruments. So, we don’t have to like, have someone doing this and this, you can have someone do like, instead of having five people doing something, we could have two people. One doing this instrument, [and] one doing this instrument. If we want drums, we could have like a sound behind us.

Carl and Brodie were working on a song together. Brodie added to Carl’s explanation, “We could perform with others, but we don’t want to.” Carl and Brodie wanted to perform live but only if they were accompanied with backing tracks. They felt as if their performance would be more successful if they had the help of recordings rather than additional members. This setting was also what they had experienced when they both attended the Eminem concert. They wanted to replicate the performance of their favourite artist.

In the intermediate grades, Mike said, “I don’t know, I tried sharing a song online before, didn’t really work out well. I might try that again.” As for Evany, she shared:

Well, I always wanted to like make my own song and put it on Spotify for other people to listen, cause I just signed up for my talent show recently and I’m really nervous. First, I would post it on YouTube, then on Soundtrap.

The common theme that was shared between the students in each division was wanting the security of having recorded music accompany their live performance. The students expressed a preference in having a recording be part of their performances, such as the use of backing tracks, similarly to the ways their favourite artists perform.

Enjoying Music Production

I wondered what it was that influenced those students who expressed a preference for including music production in their creative work over physical instruments. In the primary grades, Jennie shared, “As a kid, I’ve always loved singing, but now there’s many, many different choices, chords of like choices.” As Jennie explained this to me, she played one of her songs. Jeff heard the song, came over to her, and they both started dancing to it.
In the junior grades, Ava enjoyed, “The pattern, the pattern beat maker, it’s the easiest.” She preferred using Soundtrap as an instrument since it was easier to learn, as opposed to a physical instrument. As for Tracy, she expressed, “I think it’s just more fun to make your own beats. I am testing out all the different options, but like beatmaker the best.” As the students were explaining their love for music production, Charlotte’s teacher Aimee, told her students that “they would definitely be doing music production again next year.” Charlotte seemed surprised to hear this, so she pumped her fist, and shouted, “YESSSS!!”

In most grades, the students not only discussed an interest of producing at home, but they also consistently asked their teachers to stay in during recess time to work on their songs. This eventually developed into extra-curricular music production clubs with numerous students attending. I asked them what it was about music production that they loved so much more than going out for recess. Brodie replied, “I prefer doing all this recording. Because then we can actually make our own songs.” Carl responded:

Because what if we want to get older and want to be like musicians and start our own band? [By recording] you can put in on an app and upload it. Then we’re able to actually perform it at like a concert or something

Colin shared:

I love digital instruments cause like with the real-life instruments, I have a hard time memorizing all the stuff that you have to do for those, cause like with the uke, I got, I got the hang of it fairly quickly. But then we stopped doing it the very next summer and now I don’t remember how to do it at all.

And Rory expressed:

Well, I just like how simple it is to be able to make music and get good results. But I also like that there’s so much, there’s so much that you can do and like find out. I like it more because I have a really hard time with like hand eye coordination, and you need a lot of that for a lot of instruments and stuff. So, I have a hard time, but this is like really easy, and I really like it.
Each student expressed a love for music production due to its simplicity. The DAW was not necessarily easy, however, producing a good sounding song on anyone’s first attempt using Soundtrap was likely to happen. Not only were students producing good sounding songs, but they could work with their favourite genres of music and compose music that interested them. The teachers were not choosing repertoire and asking the students to learn an instrument that may take months to produce a decent tone. As two students expressed, there was difficulty in coordination, and memorizing physical instruments, especially if there were no classes on it for a while.

**Troubleshooting**

Most students discussed the enjoyment of using a DAW, and because they enjoyed, the experience seemed to be easy. However, just like any instrument, I wondered what difficulties the students encountered and how they dealt with these issues. In the primary grades, referring to one of her Soundtrap projects, Jennie shared:

I didn’t know exactly how I wanted to have it sound because like it cut off, like it only played the starting like this much of the starting and then it just didn’t clear that, which was kind of frustrating.

Jennie was unable to solve this issue, however, her teacher Bradley went over the issue with her. Referring to the measure numbers, he told me:

So, I think we’re still grappling a little bit with returning to zero or making sure your loops start at zero. Like sometimes, I’ll have a student that says it’s not playing, but then I look at their player and it’s at the 3 minutes and 45 second mark.

Many students encountered the same issue with the loop function in the measures where it would be shortened and activated. Even though the *Fundamentals of a DAW* video described how to resolve this issue, the students only retained this information once they encountered the problem. Upon knowing how to activate, deactivate, extend, and shorten the loop bar, the issue
was solved. Beyond technical issues, Jasmine wished that the loop samples were from songs she knew. She did not recognize any of them, therefore she lost interest in exploring this option.

In the junior grades, Ava expressed an issue with, “Finding other loops to match with what you’ve already got, it takes a while to figure out like other ones like beats or guitar, have to find good ones to match it.” Ava had difficulty with instant gratification. However, it would have been beneficial for her to understand how long it takes to create and produce a song. As for Charlotte, she said, “Yeah, like even just singing to some of these songs, it’s like, there’s a bunch of voices overlapping.” She was having difficulty matching all her voice tracks together. In Soundtrap, as the pre-recorded loops and samples are imported into a student’s project, the tracks automatically align with each other to sound good. However, when students record their own voices or instruments, the tracks will not align with one another. The students must apply the editing and mixing techniques of music production in this case. When asking Carl about any issues he encountered, he replied, “Maybe we should understand what we’re hearing and recording so we can record it. Probably the most difficult would be learning how to set everything up and how to get it to your liking.” When Carl mentioned this, I had him view the Dr TooNice video titled, How to Get a Home Recording Studio Started. This video provided students an overview of setting up a microphone, an interface, and the computer. Figure 14 demonstrates Carl independently setting up his recording station.
Figure 14

*Example of the Microphone, Interface, and Computer Set-up*

Note. This figure demonstrates a student preparing to record his voice.

Carl watched the video and set up a recording lab in the classroom. He set up a music stand, placed his original lyrics on it, recorded his voice a few times, and added some keyboard lines with the iRig keyboard. On a separate day, he asked a friend to come help him with the computer as he recorded his voice (Figure 15).

Figure 15

*Example of the Microphone, Interface, and Computer Set-up Used by an Artist and Audio Engineer*

Note. This figure demonstrates a live session between an audio engineer and recording artist.
Eventually, Carl asked his friend Brodie to record some backup vocal tracks on the song. Kevin, the industry professional in Chapter 3, had mentioned how difficult it was to obtain the desired sonic qualities in a project, however, Carl was determined to achieve the sound he was thinking about in his head. Kevin had mentioned “it is an ongoing goal” for everyone. Carl eventually reached his goal and was pleased with his results. The following link directs readers to Carl’s recording (https://youtu.be/q1aHhl6rD0s).

In the intermediate grades, Evany told me, “Soundtrap wasn’t working for me, so it wouldn’t let me do anything, but I restarted my computer. So yeah, it started working and I’m like, “Oh my.” Rebooting a computer can often solve many technical issues. Rory expressed, “I eventually figured out how to make like my own beats with the keypad, which is pretty fun, and I was able to explore lots of sounds.” After some time with the program, Rory figured out how to use the program through exploration. Jake responded, “Like, say you want to record a guitar, like an actual guitar, then how do you connect the guitar?” Jake had been directed to the Dr TooNice video, *How to Get a Home Recording Studio Started*. In this video, students obtained a clear description of connecting a guitar to an interface and connect the interface to the computer. They received information on producing a sound with the interface and directions on navigating the buttons on the device. Once Jake had viewed the video, he took the school bass and recorded “Seven Nation Army,” while his partner was playing the original song on his phone (Figure 16).
Note. This figure demonstrates a live session between an audio engineer and recording artist. As for Tiffany, she expressed having difficulty with, “Some singing techniques on the microphone and stuff.” Most issues that the students encountered were related to next steps. There are multiple options related to microphone technique. Tiffany needed the Dr TooNice video, *Tips on Recording Your Voice in Soundtrap* to help her with this issue. The video was not made at the time of this request. However, there were many options on YouTube to help her with this. I directed her to a couple videos: *3 Recording Techniques for Vocals* (MusicTechHelpGuy, 2017), which could help her understand mic placement; and, *How to Record/Edit Clear Vocals on Soundtrap!* (AmaZane, 2020), which could help her apply these vocal techniques in Soundtrap. To resolve technical issues, most of the students turned to their peers, teacher, or Dr TooNice to help them solve these problems.

**Dr TooNice**

I wondered how helpful Dr TooNice was in the development of student knowledge in music production. Therefore, I asked the students for their opinions. In the primary grades, Jeff and Raymond mentioned to me that Dr TooNice helped them remember how to share songs with
one another without any guidance from the teacher, while Jennie shared, “He’s silly,” and Veronica said, “He’s fun.” Without describing the impact of the videos in-depth, the students in my classes expressed their feelings for the videos with their reactions. Whenever I projected a new video to show the class that it was available, they cheered loudly as they saw Dr TooNice on the board and said things such as, “Awesome!”

In the junior grades, Jeff shared, “It was definitely helpful, like with the way that you explained what to do in the Fundamentals of a DAW. Following this video, Jeff was able to import loops into his project and create the first of many creations he made. Aurora expressed, “Music production is not that difficult, because I used the Dr TooNice videos a lot of times.” She believed the videos made the process easier for her and gave her confidence to write various compositions. Carl said, “Yeah, I like little kid cartoons.” Even though he implied it was for little kids, the animation is what captured his interests, therefore it made the videos enjoyable to watch.

The intermediate students enjoyed Dr TooNice as well. Rory told me, “I wouldn’t have been able to figure out half of the things without these videos.” Colin responded, “I’d say yeah, the videos are helpful.” While Alyssa shared, “Yeah, it’s pretty helpful. It’s just a little quiet.” The volume issue was due to the noise level in their class at the time of viewing. Jake suggested, “Try different characters to make it more of a cartoon. Like add a different guy so they can ask each other questions.” I liked Jake’s suggestion, therefore in the Vertical Plane video I introduced two new characters. However, I had difficulty in animating this video. Due to time constraints, and minimal animation experience, I did not include additional characters in any other videos. Besides the production videos, I was curious to obtain the students’ perspectives on the role of their teachers in the music production classroom.
Role of the Teacher

In research, a shift from the teacher-centered classroom to a learner-centered approach has been recommended for numerous years (Corwin, 2021; Freire, 1970); however, in this study, the teachers initially gravitated to full group instruction. Even though these teachers were asked to let students explore concepts on their own in the flipped classroom and act as guides, they had difficulty crafting a do-it-yourself environment as they expressed that it felt unstructured. I wondered how the students viewed the roles of their teachers. In the primary grades, Jasmine replied, “They need to know how to set everything up and make videos.” As for Craig, he mentioned, “The teacher needs to know how to use the computer. The teacher needs to know how to be a teacher.” Kim said, “I just use YouTube to teach me a lot of things.” Whereas Arthur wanted the teacher to know all the information and be able to answer all his questions. Even though the teachers should be knowledgeable in computer literacy and be able to set up the music production gear as these students suggested, the goal of this research study was to provide students with hands-on experience in music production. My hope was that the students would learn the skills to become self-sufficient and continue producing music on their own after school hours. The teachers were supposed to provide time for students to explore concepts and only coach them when it was apparent that the students had tried all their options to succeed. Even though the teacher could learn alongside of their students, the aim was for students to be able to work independently.

In the junior grades, Carl shared, “I’m thinking maybe the teachers should know what type of like genre of music you want to do and how you want to do it, and then let me do it.” I had shared these suggestions to the teachers and observed how it worked in practice.
After a few months of working in this fashion, I recorded some of the conversations the teachers were having with their students. Here is a conversation between Bradley and his grade 2 student Jennie. Bradley said:

This is my feedback to you. Add a sixth track right here (pointing at her computer screen) and start it right there. I can show you how you can stretch them out. When you get to that point with the 22nd mark, start a heavy drum beat, a heavy hip hop drum beat right there. Keep everything the same but start a heavy, heavy drum beat.

Jennie responded, “I have a drum beat here.” Bradley replied:

I can hear it, it’s like a high hat, right? But start a really heavy one right there. So, you’re going to have to move the track over there. That’s my feedback to you because that would be the part where the singing would have, this would be like your intro or 22 seconds like intro to a song. And then when that heavy drum kicks in, that’s when the rapper or the singer or someone would come in and start singing.

Jennie expressed, “I want recorded voices from songs I know.” Bradley replied, “That sounds like sampling.” Then, I entered the conversation and said, “We have to be careful with copyright if we bring other singers’ music in your song.” Jennie responded, “I know how you copyright and sometimes the actual singers or the person that made this video, they can copyright and then have it and then they don’t. If you don’t like that, then they can find you.”

In a separate conversation, Bradley and Raymond troubleshooted voice recording. Noticing that Raymond was frustrated, Bradley asked him, “Raymond, what are you trying to do?” He responded, “I’m trying to record my voice.” After the first month of exploring loops, Bradley told me, “So we’re getting into voice recordings and the digital instruments now.” He turned to Raymond and questioned, “What’s challenging?” He responded, “I can only hear the people that’s outside the computer because my computer is connected to Mr. Bradley’s computer so I can only hear him talking.” Raymond assumed his computer was connected to Bradley’s since he was unable to hear his voice recordings. I wondered if the issue was related to headphones since I noticed that he was not wearing any. Bradley connected some headphones
into the computer, tested the microphone, and noticed the volume on the computer was off.

Bradley showed Raymond how to use the volume controls. Now, Raymond was able to record his voice and hear the playback. Bradley turned to me and discussed how some students’ computer literacy skills were more advanced than others. Raymond interrupted this conversation by saying, “Mr. Bradley, when you’re talking, it records your voice.” Bradley replied,

Which is why you’re going to go and do this in the hallway, where there’s a nice quiet space. You’re going to find a quiet corner nearby if you move by the door and you can talk, we’ll fix the reverb after. You know what the reverb is? (Raymond shook his head no). Reverb is what makes your voice sound like you’re in a canyon or an echoey space. So, if it sounds echoey, we’ll show you how to do that.

Bradley sent Raymond to the hall to experiment with voice recording.

In the junior class, I experienced another conversation. Oliver had mentioned, “A lot of the kids in my class hate music so they might find this boring.” I asked him, “Why do you say that? What does music class look like for you right now?” Oliver replied, “A lot of performance and composition, xylophone compositions, Boomwhackers, music games, free drawing while listening to music.” His teacher Aimee corrected Oliver and commented, “Creative interpretations of music with music listening, but I think that would be really neat if we, like, could incorporate more of what your class wants to listen to.” With excitement, all her students replied, “YEAH, YEAH, YEAH,” very loudly. Oliver continued, “Like rapping songs?” Confused, Aimee responded, “Rapping songs?” Aimee had difficulty transitioning from the teacher-centered approach to the learner-centered approach (Costes-Onishi & Kwek, 2023). She was accustomed to teaching content and instruments provided by the school board. Furthermore, her teaching training background experiences reflected the workshops delivered by the school board. She requested ideas on how to make this transition. Just as I did in this chapter, I shared
some of the other schools’ stories on the flipped classroom with her, some of the ideas that students had discussed, and some of their music.

**Summary**

The students in this study showed lots of interest in music production. They experimented with the program Soundtrap for an entire semester and did not show any signs of disinterest. It was quite the opposite. They were interested and continued asking to learn new concepts and find additional time to work on their projects. These concepts were discovered on their own through personal listening experiences and their exposure to online content. Even though the teachers had shown some discomfort with the high noise levels in their less structured classrooms, the students did not seem to be affected by these changes. Many students expressed to me that they enjoyed being independent and creating music that they were interested in, regardless of the space and their surroundings. In the span of a semester, roughly three months, students proved that they were able to track music by either using digital instruments or physical instruments. Furthermore, they were ready to enter the mixing stages. Even though the flipped classroom was helpful in the first stage of tracking, it would have been helpful for the teachers to provide their students with the mixing videos. In comparison with the students at my school, I believe that the mixing objectives could have been met.

Overall, the students showed excitement when working with a music production curriculum in their classes. They hoped to continue working within this context in the following school year. Moreover, they wanted to continue working on their projects at home over the summer months. Their interest was apparent as evidenced by some students creating full length songs ([https://youtu.be/V4eMu_Rwpzo](https://youtu.be/V4eMu_Rwpzo)). Although I would love to share all the student
creations, for the sake of brevity, I will conclude this chapter with a medley of some of their greatest hits, https://youtu.be/9pPM4nmLq1U.
CHAPTER 7
Discussion and Implications

Discussion

The purpose of this study was to adapt, implement, and reflect on a music production curriculum in public elementary schools, and to create an open access resource for teachers. Two music industry professionals informed the content of the study; four elementary school teachers, including myself, implemented the curriculum; and 28 students from the primary, junior, and intermediate grades applied the concepts in various projects. Using participatory action research as a methodological framework, the following research question and sub-questions were explored:

- How can music industry professionals, music teachers, and students collaborate, share ideas and their experiences, to inform a curricular design for public elementary school music education that has music production as its core?

  a) What would each of their roles consist of during the design process?
  b) What would their roles be when actively engaged in the classroom?
  c) What would be some of the possible issues and constraints found in this design, and how would they be resolved?
  d) How often would each cycle of PAR (planning, applying, observing, and reflecting) be adapted and repeated? What would the process look like?
  e) What are some of the outcomes and expectations found in a music production curriculum and how can it be adapted to the current provincial standards?
The Music Production Curriculum

Despite the availability of several academic resources on implementing music production in music education (Bell, 2020; Burns, 2020; Clauhs et al., 2019; 2021; Freedman, 2013; Kuhn & Hein, 2021; Pendergast, 2021; Watson, 2011), many elementary school music teachers lack the confidence to include music production into their regular programming. As described in Chapter 5, the lack of confidence found in the school board where I conducted my study may have originated from the emphasis placed on Orff and Kodály training. During the implementation program in 2018, the teachers were provided with this training at no cost and were also given complimentary resources. However, the teachers and students that included music production into their musical practice tended to turn to YouTube as the primary medium to seek guidance (Dougan, 2014; Yooji & Beatriz, 2019). Marks (2013) highlights that, “YouTube has become a mixed blessing. Posted videos can be an illuminating but a confusing place for source material. Anyone can post a video, and just because [students] saw something online doesn’t make it correct” (p. 591). This holds true for music production enthusiasts since there has been an abundance of videos uploaded online, yet according to the professionals in Chapter 4, not all these videos are accurate, nor explained properly. To narrow down the content available for students and teachers, bypass inaccurate videos, and complement the existing written resources on music production, with the aid of my participants I created an animated video resource on music production and posted it in one central location. The content of these videos included how to record sounds, manipulate recorded sounds, and distribute a final product. These videos are available as an open access source on the YouTube channel called Dr TooNice (https://www.youtube.com/@DrTooNice-rz6yy). Dr TooNice is the main character of my animation series that provides lessons on music production. The aim of the channel was to
provide elementary school students and teachers with strategies to produce recordings that match the quality of recording created by professionals in any genre of music. The videos were designed to provide new users with tips on how to navigate the DAW Soundtrap. Furthermore, the videos offered experienced users lessons on how to apply various advanced music production techniques such as sidechaining, shaping sounds with EQ, and adding different effects to multiple voice tracks to represent one singer. Since one of the goals of this study was to provide an academic open access video resource for teachers, each video contained a description that aligns with curricular expectations. In the following section, I describe how the participants and I cycled through the process of participatory action research (PAR).

**The Cycle of Participatory Action Research**

To recall from page 7, Solinger’s (2015) framing of the methodology “participatory action research” was to: “[a] draw out the thinking, [b] [use] critical interpretation, and [c] [utilize the] experiences of the participants” (p. 29), to create this design. Additionally, this methodology was suitable for my participants as the approach was meant for community members to become co-researchers by helping develop new knowledge (Cohen et al., 2018; Creswell & Creswell, 2018; Merriam & Tisdell, 2016). Due to the longer than expected process of receiving ethics approval and having students sign and return their letters of consent, as well as unexpected delays due to both Rachel changing schools and Aimee changing roles during the study, my research timeline goals needed to be altered from my original proposal.

I selected my participants using purposeful sampling (Conway et al., 2015) and conducted my research with them from February of 2023 until June of 2023. During this time, I met with the professionals, Alex and Kevin, twice on Zoom and corresponded with them via email. I met with the teachers Aimee and Rachel five times each, and Bradley ten times, to conduct semi-
structured interviews following the methods outlined by Yin and Campbell (2018) and observations following some suggestions drawn from Cohen et al. (2018) and Merriam and Tisdell (2016). During the observations, I met with the participating teachers’ students. In my school, I met with the primary students twice a week, and the junior and intermediate students once a week. Together, the participants and I planned, applied, observed, and reflected on a music production curriculum in elementary schools over the course of five months.

During the planning stages, the industry professionals provided content ideas to design the curriculum. Even though the teachers had busy schedules, they found time to volunteer and share their experiences with me as they facilitated music production lessons. With this information, the participants and I designed the content for some of the video resources. These resources guided future lessons. In the participating schools, the primary students participated in music classes twice a week, and juniors and intermediates received 40 minutes of class time. Eventually, their input helped with the design of new resource videos. The teachers and I met or spoke through text messaging, bi-weekly at minimum, to discuss our classes, content materials, and plan for next steps.

In music education, many teachers continue to focus on teaching performance, regardless of using a formal or informal approach. As described in Chapter 5, the teacher participants in my study had diverse backgrounds in music, yet each of them gravitated to a performance paradigm that excluded music production; however, they mentioned using game-type music technologies, such as Chrome Music Lab, to accompany their teaching. Many of these computer games capture students’ attention, yet most of them have simply replaced the paper and pencil methods of writing music and are otherwise known as “infra-instruments”5 (Savage, 2009, p. 153). Without

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5 Infra-instruments are technological tools that aesthetically engage students to help educators maintain focus and reach educational aims.
teaching towards an understanding of the process of music production, however, such performance programs in schools may lose relevance to the lives of students, especially since most music artists today use these techniques in their performances (Canfer, 2023).

During the application stages, the students listened to their favourite music and analyzed these recordings. They were asked to find some of the differences between performance and production concepts as a first step to develop their technical ear (Corey, 2012). Then, they had to choose a song idea to produce, be it an original, cover, or arrangement. They were given the option to work alone, or in groups of their choice with friends, similar to the model prescribed by Green (2008), inside or outside the classroom. The students had recorded with both physical and digital instruments, and most of them spent much of their time in the first stage of the curriculum, tracking. Upon completing the tracking stage, the students explored the mixing stage, which consisted of editing and manipulating sounds. Although most of the students explored some of the mixing features, only a limited number of students explored this stage in depth, possibly because of time constraints or inexperience. In the final stage, the students rendered their tracks and distributed their Mp3s through their Google Classroom accounts for others to enjoy. The three stages were meant to reflect the practices of music production professionals who work in the industry.

In the music industry, professionals work independently, or in teams with people who have specific skill sets (Seabrook, 2015; Warner, 2003). To model this professional practice, the teachers in this study were asked to apply the curriculum through a flipped classroom design (Keengwe & Onchwari, 2016; Mok, 2014). This meant that the students accessed the Dr TooNice videos in their Google Classrooms and applied concepts as needed to their projects. The

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6 Converting the DAW tracks into audio form such as WAV or Mp3.
idea was for students to become less dependent on their teachers, and for teachers to commit to the discovery process, in a similar way to what has been described in research studies by Bazzy (2019) and Witkowska-Tomaszewska (2019). This provided an opportunity for students to continue working on music production concepts that were of interest to them during their own time. In turn, the teachers could use class time to explore unfamiliar concepts alongside their students, especially in genres that the teachers did not previously explore on their own. As the students or the teachers discovered new concepts, they shared them with their classes and created collaborative learning experiences as advocated by Diéguez (2017), Kladder (2019), and Lynch (2016).

In the observational stages, I noticed students working in ways consistent with DIY models, such as those mentioned by Kahn-Egan (1998) and Smith et al. (2017) of music production, such as walking around the classroom and inviting their peers to listen to their projects. As a result, the teachers were guided away from a teacher-centered environment (Corwin, 2021; Freire, 1970) to a more learner-centered space (Weimer, 2002; Williams & Kladder, 2019). In a learner-centered classroom, it is assumed by many teacher-centered adherents that students are provided too much freedom to explore, while the teacher’s role is simply that of a “guide on the side” (Bazzy, 2019, p. 21). It is further suggested that some students may not thrive in this pedagogic model. There is some truth in the idea that not every student will thrive in the freedom offered by more student-centered approaches. For example, Stefanic (2019) noticed, “some students can thrive in a learner-centered environment, while others can drown” (p. 162). Therefore, during the observations, the teachers and I kept an eye out for students that might not have known where to begin or how to explore on their own. These students received more help from their teachers initially until they became more comfortable.
exploring the DAW. In a learner-centered approach, teaching still occurs, however it looks
different than having a teacher standing in front of the classroom lecturing (Burns, 2019;
Kladder, 2019). In this paradigm, the participating teachers often worked with their students one-
on-one and provided them with tips on the process of working independently. This approach
enhanced the students’ experiences and helped them flourish in an environment that a large
group setting might not have provided. Often, in large groups, those who are struggling can be
neglected, as they remain quiet, but in a learner-centered environment, I discovered that each
student had an opportunity to grow at their own pace of learning. Additionally, the teachers had
more time to question each student during classes, since they had time to roam around the
classroom rather than spending time lecturing.

Often the term “learner-centered” (Weimer, 2002; Williams & Kladder, 2019), and
“student-centered” (Dewey, 1956; Hayward, 1905) are used interchangeably. However, Weimer
(2002) provides a distinction between both terms:

Being learner-centered focuses attention squarely on learning: what the student is
learning, how the student is learning, the conditions under which the student is learning,
whether the student is retaining and applying the learning, and how current learning
positions the student for future learning. Being student-centered implies a focus on
student needs. It is an orientation that gives rise to the idea of education as a product,
with the student as the customer and the role of the faculty as one of serving and
satisfying the customer. (p. xvi)

Even though I catered to students’ needs and interests in this study, the focus was on the
process of learning. Furthermore, in this environment the participating teachers were also
learning, therefore the classroom transformed into a learner-centered atmosphere for them as
well. The teachers worked alongside their students, taught one another, learned together, and discovered new ways of exploring music production. In this approach, the students evidenced excitement to share new discoveries such as creating karaoke recordings, remixing modern music, and adding special effects to their tracks, which motivated them to explore new concepts even further.

With time, I observed the teachers becoming more proficient in using a DAW; many functions became easier for them to navigate because they practiced the same fundamentals with each student in all of their classes. Still, it was important for the teachers to continue working within a learner-centered environment to promote student independence (Witkowska-Tomaszewska, 2019), and to allow new discoveries to surface. As the professionals voiced in Chapter 4, there can always be clearer explanations of the fundamentals. Therefore, as the teachers became more experienced, they had to keep in mind that the process had to remain exploratory for students. Moreover, as I discussed in Chapter 5, full group instruction did not retain student focus as much as the flipped classroom design.

During the reflection stages, the teachers and I discussed our experiences of implementing the music production curriculum through conversations and text messages. The students also reflected on their work and shared their experiences with me during their interviews. As the students played their songs for me, they reflected on what they did and why. When the teachers and I spoke, they reflected on their roles in the classroom. Additionally, they shared their perspectives (Creswell & Creswell, 2018) on student projects, what they would like to try next, and what they would do differently if they continued facilitating a music production curriculum in their elementary classrooms. At first, it was apparent that the teachers needed and wanted some background knowledge in music production before introducing it to their students.
The feeling of unfamiliarity was not comfortable for them. For example, Rachel had a similar experience to that reported by Bazzy (2019) when Rachel “was stretched beyond [her] comfort zone. [She] preferred to execute highly detailed and structured lesson plans with precision and control” (p. 20). However, in gradually ceding more control to her students, Rachel shared that most of her students stayed focused and on task, more so than in most of her other lessons that she had taught in the past. The other teachers detailed similar experiences. With time, the learner-centered approach became a norm for them. Furthermore, the guided resources provided these teachers with additional instructional support as the videos included tasks with directions.

The group process of planning, applying, observing, and reflecting occurred on a weekly basis. However, there were numerous interruptions throughout the study, such as absences, school events, and slower progress than anticipated. This resulted in postponing some of the interviews and observations. Because it was difficult to find time to meet with the teachers and students, the teachers and I communicated through text and Zoom, and the students and I communicated through Zoom; therefore, the observations did not physically happen in the natural setting (Cohen et al., 2018; Merriam & Tisdell, 2016; Stake, 2006), instead, they occurred in their natural digital settings (Hjorth et al., 2017; Pink et al., 2015; Underburg & Zorn, 2013). Furthermore, the interviews occurred during class time, and the teachers and students took turns to speak to me on Zoom during class time. The open access video resources (Kafara, 2017), teacher programming, and time spent on exploring, provided students with a foundation in music production. In the following section I describe the roles of each participating group when designing and implementing the music production curriculum.
The Roles of the Industry Professionals, Teachers, and Students

The preceding three chapters presented the roles of the music industry professionals, the elementary school music teachers, and students from the primary, junior, and intermediate grades in designing a music production curriculum for elementary schools. Like Bell’s (2013) analogy, in which he presented his participants like audio tracks in a DAW because they can be “soloed and listened to individually or they can be heard all together at once” (p. 275), I presented the information from my study in a similar fashion. I began by soloing my three participating groups, the industry professionals, the elementary school music teachers, and the elementary school students. In this chapter, I present these findings collectively.

Industry Professionals

In Chapter 4, the professionals provided some fundamental concepts to apply music production in the elementary music classroom. When I met with the professionals over Zoom, they shared some of their field experiences with me. They discussed how they produced music, some of the techniques used in the creative process, and how they could be applied in the classroom. Both professionals were adamant about building a strong foundation for the students. Kevin suggested, “Just having that basic understanding from the get-go, I think will be so valuable. I always found this very beneficial to learning as opposed to, ‘Just do this.’” Kevin believed that knowing how to connect equipment, how the sound is converted from acoustic to digital signals, and the purpose of the equipment will help students gain a strong foundation in music production. Alex described the many roles students could undertake when engaged with a music production curriculum. He suggested including some of the traditional roles found in the studio into the curriculum. In his work, Alex was a recording engineer, mixer, digital editor, featured vocalist, editor, composer, writer, sound designer, mastering engineer, producer,
assistant engineer, additional engineer, second engineer, and Pro Tools engineer. He suggested for students to begin as interns (observing), then become assistant engineers (setting up a recording session), experiment with song writing (composing) and producing (beat making), and finally recording engineers (recording and mixing). The role of the music industry professionals in this study was to inform the teachers about music production concepts that occur in the music industry. Drawing from their personal experiences, they helped design a curriculum that was achievable in elementary school. The professionals suggested how to begin the recording process, where to go next in the mixing stage, and how to distribute music that matched the quality of professional recordings. Since I was the only one in contact with these professionals, I presented their information to the participating teachers as tracking, mixing, and distributing.

**The Elementary School Teachers**

In Chapter 5, the teachers implemented these concepts and provided their perspectives on the content, their roles, and the strengths and weaknesses of incorporating music production within the existing curriculum in a real-world setting and specific social context, following methods outlined by Merriam and Tisdell (2016). Two of the participating teachers had no experience with music production, whereas the other two had some experience. The teachers used the content information and shared it with their students. With time, the teachers created a learner-centered environment by teaching their students independence skills. These skills were developed by providing students time to explore Soundtrap on their own. These explorations were guided by video resources that I made and provided to the teachers and learners using a flipped classroom approach. In the primary grades, Bradley developed analogies to guide his students and help them gain a better understanding of the key concepts. In the junior grades, Aimee explored various styles of music. She guided her students towards project ideas that
matched the music they enjoyed listening to. In the intermediate grades, Rachel provided the students with time to explore Soundtrap independently and discover new functions in the program. This exploratory approach is common throughout other computer-based composition research (Gall & Breeze, 2005; Mellor, 2007; Seddon & O’Neill, 2001). The teachers in this study shared their classroom experiences with me as they applied the music production curriculum. This information helped the teachers and I develop new video ideas and some next steps for students to achieve their goals.

**The Elementary School Students**

In Chapter 6, the students applied the music production concepts to their music projects and provided their perspectives on producing music digitally and physically. Initially, I discovered that most of the students already had more experience with music production than their teachers. However, most of these experiences related to tracking digital instruments. Some of the students showed interest in recording physical instruments, whereas others were mostly interested in digital creations. To present their music, most students preferred sharing a recording, except for Brodie and Carl. These two students were interested in performing with backing tracks just as their favourite artist Eminem did when they saw him in concert.

The role of the students in this study was to share their interests, apply some of the music production concepts they learned to their projects, and then relay any issues they encountered in the process to their teacher or the researcher. The teachers used this information to develop new resource ideas. All the students constructed their own song ideas to record. For example, Jennie created samples, whereas Craig recorded metal karaoke, and Hendrick recorded guitar covers. Others, such as Arthur, wrote originals, made remixes, and mashups. At the time, I was focused on the process of recording these songs and did not think of asking the students how they came
up with their ideas. Often, in computer-based composition research, the teachers are asked to measure student creativity (Davenport, 2016) and the compositional process (Jennings, 2005; Reynolds, 2005; Ruthmann, 2007), whereas I was mostly concerned with the production process of recording (tracking), manipulating (mixing), and distributing. It was interesting to see the numerous ideas develop after introducing the project. The students designed each of their projects on their own, none of them asked for song suggestions. Through substantive engagement (Nystrand & Gamoran, 1991), the students achieved personal academic goals by demonstrating an understanding of their tasks, making conscious decisions, and explaining how they obtained specific sounds.

*The Industry Professionals, Teachers, and Students*

Individually, or heard all at once, the resources found in the Dr TooNice channel speak on behalf of all three participating groups, since these resources were based on their input. As a result, multiple guided video lessons from lived experiences in the music production classroom were created. The industry professionals provided insights by explaining concepts as if they were teaching them to elementary students. They described in detail some concepts that they wished they had learned earlier in their careers, and how it would have been helpful if these concepts had been clearly explained to them. This information was transmitted to the participating teachers and developed as lesson ideas. Then, the information was applied by the students. As the teachers and students worked through these concepts in Soundtrap, they developed questions and encountered various issues. Together, the teachers and I troubleshot the matters in question, and then continued to explore new concepts. When it was clear that specific videos were required, I created them and then had them tested by teachers and students, and eventually
reviewed by the professionals. In the following section, I describe the roles of the participants while actively engaged in the classroom.

**Roles While Actively Engaged in the Classroom**

Up to this point, the majority of music production research had been conducted in secondary and post-secondary classrooms (Anthony, 2023; Stefanic, 2019; Tobias, 2010). To address the exclusion of children in music production research, the main objective of this study was to experiment with these concepts in elementary music classrooms. The students were tasked with creating songs in a similar fashion to an independent artist (McArton, 2023). Independent artists do most of their work by themselves. Therefore, as presented in Chapter 6, the students were asked to think of song ideas to record and explore the process of music production using Niknafs’ (2017) “bottom-up design” (p. 37). This design has a self-organizing system, which has unpredictable outcomes due to experimentation. This ambiguity comes from listening to music that one enjoys and becoming inspired and influenced to create new sounds. In this case, the students were given the option to work independently, or in a group size of their choice following the model prescribed by Green (2008). They had the option to write an original song, play a cover song, or create an arrangement, and then, learn and apply some recording techniques. The recording techniques involved recording digital or physical instruments, or a combination of the two. After recording their tracks, students were encouraged to apply mixing techniques, such as those found in the horizontal, vertical, and proximity planes (Hodgson, 2019). Finally, when they felt like their songs were finished, students uploaded them to their Google Classroom as a form of distribution. The students were also provided opportunities to share their music over the class speakers as a performance. Overall, the expectation was for students to develop skills to independently produce music while their teachers guided them.
towards this goal. The students demonstrated tacit knowledge since they learned through observing (Johannessen, 2022), and through personal experiences, as they engaged in continuous practice, applied new skills, and were placed within a specific social environment.

Teaching students to become independent was part of the process. To do so, the teachers in Chapter 5 provided their students “space” (Albert, 2020), by using a flipped classroom design (Keengwe & Onchwari, 2016; Mok, 2014), in a co-learning environment (Allsup, 2015), and “allow[ed] the role of the teacher to shift to more of a facilitator [by] guiding students toward resources to help them succeed” (Clauhs et al., 2019, p. 56). Moreover, the teachers encouraged the students to work with their musical interests by providing them the opportunity to “crossfade” (Tobias, 2015), or in other words, welcome their musical experiences from outside the classroom.

During the implementation of the music production curriculum, the professionals were not actively engaged in the classroom. To do so, the process of ethical approval would have been different because I would have had to ask for the professionals to work with minors, plus I would have had to ask the school board for permission to welcome guests in each of the teachers’ classrooms. Additionally, the professionals had already volunteered some of their limited time to help design the curriculum through interviews and email exchanges, therefore it was not reasonable to ask them to dedicate and donate more of their time to visiting classrooms.

While actively engaged in the classroom, the teachers introduced the project and provided students time to explore Soundtrap in a digital learner-centered classroom, similar to the process modeled by Stefanic (2019). They put extra time into watching the video content to become familiar with it, and troubleshoot issues as they arose in the classroom. They kept track of this information and shared it with me through interviews, observations, and text messages.
The students applied the music production concepts to their projects. Their opinions added to the partiality, as discussed by Haraway (1988) and Bradbury-Huang (2014), or in other words, partial bias of the teachers’ perspectives on music production, by adding additional viewpoints. The students shared what tasks were achievable, some of their interests, some of their aspirations, and reported any issues they encountered. Student pacing was also monitored, and most students spent much of their time exploring the tracking stage.

**Troubleshooting**

In the research sub-questions, I asked, “What would be some of the possible issues and constraints found in this design, and how would they be resolved?” Most of the issues that the teachers and I encountered related to computer literacy, time, and equipment functionality. In Chapter 5, I described detailed information on how the teachers and I helped guide the students in resolving these issues through procedural engagement (Nystrand & Gamoran, 1991), which was the process of logging into the computer, then logging into the software program, and finally using the basic navigation functions on the computer. In previous generations, professional studios separated the artists from the engineers and those working behind the scenes with a window (Brown, 2009). Those working behind the scenes dealt with all the studio equipment while the artists played or sang (Brown, 2006). In music education, only the artist side of the window was explored for many years (Thibeault, 2012). In most cases, students were forced to take on the role of the performing artist, using instruments that may not have interested them, and practiced music that may not have had any connections to their lives outside of school (Allsup, 2016; Byo, 2018; Finney & Philpott, 2010; Green, 2002; 2008; Randles, 2022; Tobias, 2010; Wright, 2016). It has only been in recent years that the option of working on the engineer side of the window became available to students. Research tells us this was the case since music
production was historically a specialized trade in the music industry (Spencer, 2013), but since “the DAW underwent an evolution from tape surrogate to an all-in-one space-less studio” (Bell, 2018, p. 29), its availability to everyday users increased due to affordability and accessibility (Rowsell et al., 2017). As this study revealed, students enjoyed having the option to be an engineer, to focus on developing performance skills on instruments, or tackle both options at the same time. The more options students had in their music classes, the more opportunities they had to develop specialized skills that interested them, as advocated by Williams (2012).

In the music production classroom, space was not an issue. The students had an option to work silently with their headphones and were able to bring their computers with them anywhere in the school to record their music. Just like in the industry, there is no need for a specific space to build a recording studio (Bell, 2014). Students can work in any provided space. Recording spaces can be in the comfort of your own home (Figure 17), or it can be in a school classroom (Figure 18). Furthermore, this study demonstrated how teachers without dedicated music rooms were creative when providing space for their students as they travelled from classroom to classroom. Bradley turned his office into a studio, while Aimee redesigned the library, and Rachel expanded her class into the hallway.
Figure 17

*Example of a Bedroom Turned into a Studio*

![Image of a bedroom turned into a studio]

*Note.* This image was sourced from Kammerer, J. (n.d.). Mastering in a home studio: 5 tips for professional sound. [https://www.abletonprivatelessons.com/music-production-tips-and-tricks/mastering-in-a-home-studio-5-tips-for-professional-sound](https://www.abletonprivatelessons.com/music-production-tips-and-tricks/mastering-in-a-home-studio-5-tips-for-professional-sound)

Figure 18

*Example of Students Working Together in Class*

![Image of students working together in class]

*Note.* Students sharing equipment in the classroom.

Studio equipment has never been easier for students and teachers to access, especially for those who carry cell phones. Cell phones have built-in microphones and speakers, plus they can
store DAW apps, and headphones can be directly plugged into them. A DAW holds all the tools and equipment required to produce a mastered three-dimensional sonic picture. The functionality of a full-size studio of the past can be stored in one’s pocket. However, as the professionals mentioned in Chapter 4, knowing how to connect all the wires and equipment together, and understand their functionality will benefit the students’ music education. Additionally, as students gain foundational experience, it would be helpful for them to explore different quality equipment in order to hear and discern their different sound qualities.

The students experimented with many of the functions available in Soundtrap, however, the biggest issues they encountered related to computer literacy. Collectively, the teachers, the students, and I faced computer literacy issues such as: (a) selecting the “allow button” when the computer prompted the use of the microphone, and students clicked on “do not allow,” (b) activating, de-activating, and adjusting the length of the loop bar in Soundtrap, and (c) aligning audio and MIDI tracks together. As described in Chapter 6, Jennie became frustrated when her song “only played the starting.” Her loop bar had been minimized and activated to repeat a short section of her song. Without Bradley showing her how to activate and deactivate the loop bar, and how to increase and decrease the loop length, Jennie was unable to troubleshoot this issue on her own. Also, as described in Chapter 6, the students needed guidance when it came to understanding the differences between MIDI and audio tracks. One of the students could not import one of their MIDI tracks into an audio track. This relates to what audio professional Kevin had suggested, which I described in Chapter 4. He suggested to teach the differences between both concepts by clearly describing to students how physical sounds are converted into digital sounds when using an interface. That information led to the creation of the Dr TooNice video titled, How to Get a Home Recording Studio Started?
As students encountered MIDI/audio issues, they were referred to the aforementioned video. The method of producing music has generally remained the same from the analog era (Figure 19) to the digital era (Figure 20), however the process became more efficient as new technology was developed (Bell, 2018). In the past, space was required to store each piece of equipment, such as a mixing console, signal processors (e.g., compressors and EQs), microphones, monitors, and so on. Now, many of the functions of these technologies can be performed with software, yet the process to use them remains largely the same (Hodgson, 2019; Olteten, 2018).

**Figure 19**

*Example of Past Studio Equipment*

*Note.* Each plugin in a DAW represents a physical piece of studio equipment.
Example of Our Classroom Recording Studio

Note. The entire studio is in the computer at a fraction of the cost of physical gear.

What was once a specialized industry, may now be an accessible trade to more people (Spencer, 2013). Many students may be producing music regardless of it being in schools or not. However, Bell (2015) questioned the democratization of the recording studio as he uncovered “parallels between the dominance of whiteness and masculinity as they relate to the practice of playing the studio and that the crux of this imbalance on both fronts is the hegemony of white male recording studio culture” (p. 336). Furthermore, Armstrong (2008) advocates to be “mindful of technologically determinist discourses currently prevalent in music education that reinforce existing gender-technology relations that blind us to gender bias and difference” (p. 384), and this is especially important because diversity remains stagnant in the music production milieu (Brooks et al., 2021; Smith et al., 2019). Even though I did not record much student data regarding gender, race, and other identities and experiences while engaging with the music production curriculum, it is important to note that the students in this study represented a diverse range of backgrounds, and their engagement extended beyond the conventional boundaries of underrepresentation typically found in the music industry, where certain demographic groups are
marginalized. For example, some students worked in all female groups, while others referenced audio from hip hop producers to create their own music. The students showed interest in both digital and physical instruments. However, the recording process enhanced their music class experiences. Rather than learning and performing unfamiliar music, each student produced their own song. The music production experience provided each child an opportunity to develop a voice and uniquely express themselves. For example, most of the students created songs within the genres they enjoyed, some students wrote lyrics expressing different thoughts and feelings, while others displayed a passion for sound effects as they added many of them to their recorded sounds.

The music teachers often had a limited amount of class time to work with students. Furthermore, they did not always have the desired work conditions to run their programs. All the teachers in this study were traveling teachers, which means they had to push a cart containing their music equipment from classroom to classroom. Due to set-up and traveling time with a cart, a 40-minute instructional period often translated to 30 minutes of class time. When a music period was missed by a student or interrupted by a school event, as I shared in each of the teachers’ cases in Chapter 5, the disruptions led to weeks without any music class time. This study provided solutions to this problem by providing a design that helps students develop independent skills to access resources without the aid of a teacher. Moreover, it was apparent in conversation, and through listening to their final products, that many students had worked on their projects outside of regular class time.
Adapting the Music Production Curriculum to Current Provincial Standards

This study expanded on the informal methods of teaching and learning music (Green, 2008), by following a do-it-yourself (DIY) ethos (Smith et al., 2017) in music production. In the learner-centered DIY environment, students were able to engage with music that met their interests. Teachers provided their students with guidance, and due to the students’ freedom of choice, teachers were also exposed to new music. In comparison to previous generations, popular artists in the 2020s have evolved their instrumentation, especially when considering the added live digital effects to their stage sound. In the 2020s, many bands openly used computers whereas in the past “allowing the machine to invade the integrity of the musical moment was unacceptable” (Zak, 2001, p. 7). Furthermore, without any recognition, it was studio musicians and production teams that shaped most of the sounds heard on famous recordings (Ansen, 2002; Hartman, 2012; Reali, 2022). However, most of the music recorded and performed today relies on music production (Canfer, 2023). These current modes of creating and performing music can and should be taught in the music classroom.

As I argued throughout this thesis, changes in music production require adaptations from music educators. Teachers should try to stay up to date with current music and support modern methods of performing music (Green, 2008; Tobias, 2013; Wright, 2016). This requires them to understand what they are hearing and the process of creating and re-creating these sounds.

For reasons such as understanding what one is hearing (Hodgson, 2019), and how to create or recreate a produced sound using purposive listening (Green, 2014), I aligned my study with other academics arguing the need to develop technical ear training (Corey, 2012; Hodgson, 2019). If teachers are using recordings in their classrooms to model specific instrumental performance techniques, the production elements in the recordings may misrepresent what the
instrumentalists can physically produce, hence, exposing students to abstract representations of what they can physically play. Students may never understand why they were not able to reproduce the sounds as heard on recordings without any music production knowledge (Manzo, 2016). During my research study, I examined how music production knowledge can be incorporated into the provincial curriculum.

The Ontario provincial curriculum expectations are rather broad, therefore interpreting it with a music production lens was possible. The performance terms that the teachers had more familiarity with were translated into production terms. For example, tracking required some skills associated with timbre (recording desired tones), rhythms (aligning various tracks with one another), notes (aligning the pitches of each track), and tempo (setting the speed of your recording). Mixing requires knowledge about blending and balancing sounds (volume faders), seating arrangements (pan), pitches (EQ), dynamics (compressor), and effects related to proximity (reverb, delay). Each of these terms were presented in the Dr TooNice video resources (see Appendix P for details of each Dr TooNice video).

**Adding to Music Education’s Understanding of Music Production in Elementary Schools**

My research provides insights into the process of integrating a music production curriculum in elementary schools. The professionals profiled in Chapter 4 were ecstatic to inform the design of the project; the teachers featured in Chapter 5 were intrigued with the professionals’ ideas; and, the students spotlighted in Chapter 6 were focused on their production projects facilitated by the teachers. Even though music production has been explored in secondary and post-secondary schools (Anthony, 2023; Kuhn & Hein, 2021; Tobias, 2010), research and practice at the elementary school level has received little to no attention in the
research literature, especially with those in the younger grades (Evans, 2019; Ruthmann, 2007). This study was designed to begin to fill this gap in knowledge.

During this study, one of my teacher participants, Bradley, was initially hesitant to explore production with his primary students, but as he and I discovered, the primary students were capable of building a strong foundation in music production and produced many songs, outcomes similar to what has been documented about the music production processes of secondary and post-secondary students from other studies (Clauhs et al., 2019; Herbst, 2016; Tobias, 2015). Additional benefits of music production work at the elementary school level are possible. If a music production foundation can be built in elementary schools, and young students can produce music using the same approaches as their favorite artist, it follows that secondary and post-secondary music production programs ought to flourish.

**New Understandings Stemming from this Research**

Due to the imbalance between the amount of secondary and post-secondary research studies mentioned previously (Anthony, 2023; Tobias, 2010), compared to those investigating elementary school music production, more research is needed to understand what elementary-aged students achieve while producing music. Given the opportunity, the students in Chapter 6 showed that they can come up with ideas beyond original song writing and created various recordings such as cover songs, remixes, and a variety of arrangements in numerous genres. Most of the students demonstrated a knowledge base in various popular, and not-so-popular musics. This generation of students have constant access to music online and were clearly exposed to many different types of songs. They did not use the same terminology as their teachers, but their ideas often reflected similar concepts. For example, Hendrick said, “I made a remake,” and what he meant is that he was working on a cover song. Generation Alpha’s abilities
to operate and adapt to technology-based learning succeeds those of previous generations (Bannerman & O’Leary, 2021; Prensky, 2001). They have access to the information they want on a regular basis and navigate this material on their devices at will (Bark, 2020; Little & Etkin, 2019). It is worth noting that their abilities to independently explore music production in the classroom may reflect their everyday life of navigating information online (White, 2022).

**Unanticipated Findings**

Even though I anticipated that there would be a disconnect between the music industry, the teachers, and the students, I did not realize that the gap was so wide. The professionals informed this study with many concepts pertaining to music production that most of the participants listened to daily. Even though the teachers and students listened to these recordings, with a few exceptions, none of them knew how to produce this music beyond the initial stage of tracking. Furthermore, few of them were aware of the production elements that shaped what they heard, which confirmed the arguments raised by Corey (2012) and Hodgson (2019). The students had more experience than their teachers in utilizing a DAW, however, with guided video resources, the participants all became comfortable navigating the software. It cannot be assumed that students will understand the concepts beyond tracking if given the opportunity to explore a DAW, which was a model of learning used in previous studies on computer-based composition (Gall & Breeze, 2005; Mellor, 2007; Seddon & O’Neill, 2001). Therefore, in this study, the learner-centered classroom consisted of a teacher guiding students through further stages of the process and providing tips on next steps.

When it comes to the video resources, my study expands previous research in relation to learning from videos (Kruse & Veblen, 2012; Waldron, 2013), especially when working with younger students. My participating students enjoyed animations more than non-animated videos.
Their attention spans to watch these videos differed from one another, but any video over ten minutes was too long for them. They voiced expressions of dislike when longer videos were presented to them.

**Summary of My Findings**

The main question in this research study was, “How can music industry professionals, music teachers, and students collaborate, share ideas and their experiences, to inform a curricular design for public elementary school music education that has music production as its core?” In short, the answer is not to place music production as the core but to include music production opportunities for students in each divisional grade in elementary school.

In total, there were four music teachers that were involved in this study. Two of the teachers had previous experience in music production, whereas the two others had none. The central hub of resource videos created a common ground for the teachers to explore the new curriculum with their students. Even though the experienced teachers were able to rely on personal skills to help guide their students through the concepts, the non-experienced teachers showed no disadvantages when it came to producing music at a similar pace with their classes, demonstrating that “anyone can-do-it,” as described by Bestley (2017). This also challenges previous research stating that only “highly qualified” music teachers should teach specialized subjects to students (Allsup, 2008).

As for the experienced and non-experienced students, both groups were able to achieve similar goals. All the students were able to create songs by importing tracks and organizing them into verses and choruses. However, due to time constraints and my previous experiences in audio production, only my students explored the mixing stage in depth. In the other schools, the students that had previous practice with DAWs were not as familiar with the mixing process.
This led me to believe that the mixing stage should be introduced early to provide an overview of the possibilities. Music production should be discussed in all music classes, formal or informal, especially when students are engaging with recordings through listening, imitating, or creating them.

In this study, students were able to work with others that did not share their physical space (Cremata & Powell, 2017). Reinforcing this observation, Clauhs et al. (2019) stated: “while music-making and music-sharing once were limited to physical spaces, these processes can now nimbly, elegantly, and fluidly be mediated through deterritorialization” (p. 58), indicating the potential enabled by technology for making music in various spaces. To align my study with “deterritorialization,” the students had created social spaces to produce music with their classmates synchronously, and with their friends in other classes, schools, or in the community asynchronously.

With an awareness of production techniques used in professional recordings, the students were able to create songs with the intention to shape a three-dimensional sound. Therefore, elementary students, as young as those in the primary grades, could in fact apply the skills which those in the secondary grades were learning, according to the literature (Clauhs et al., 2019; Herbst, 2016; Kuhn & Hein, 2021; Tobias, 2010; 2013; 2015). In future research, it would be valuable to examine how other teachers explore music production with primary grades only. These fundamental experiences could lead to the possibility of applying advanced skills by the time students reach the secondary school level. Regardless of previous experience, after only a few months, most of the students in this study had created a variety of songs, across multiple genres of music. At this point, one could only imagine what these students would produce if music production remained a part of their education.
In summary, my findings were:

- Teacher participants and some student participants revealed that their experiences of live music performances were often accompanied by music production. The participants noted that at the concerts they attended, most performers were accompanied by recordings, backing tracks, or virtual instruments such as drum pads.

- The student participants expressed that not all of them were interested in performance and therefore alternatives should be provided to foster a more inclusive learning environment. Alternatives can include non-performance roles such as producing or beat making. Students can obtain skills relating to computers, sound equipment, virtual instruments, and/or a DAW. In the classroom, performers and non-performers can collaborate, mirroring performing artists and industry professionals.

- Some student participants preferred sharing recordings only, whereas others preferred performing with backing tracks. These options should be extended to all students participating in a music production classroom.

  Some students expressed that performing live without the aid of technology heightened their anxiety levels. In response to these concerns, they found comfort in sharing recordings or performing with backing tracks they had created. Teachers should give students the option to perform live with a recording and/or share their recordings with whomever they choose.

- Teachers might not look beyond their school board for resources. School boards need to keep up with current and progressing music production practices by interacting with researchers.

  In my school board, the new teachers used the training and resources that were given to them for free. Researchers must make efforts to share their findings with stakeholders. Suggestions
include personally approaching school boards with their research findings, personally contacting policymakers, presenting findings at practitioner conferences, or promoting findings online.

- Some school boards restrict access to certain software programs that are needed to implement a music production curriculum. School boards need to approve more music production software.

By sharing research findings and using resources like Dr TooNice, the participants and I demonstrated the significance of integrating music production perspectives into the curriculum. This could help school boards recognize the benefits of supplying schools with DAWs to promote music production programs. Teachers must amplify the voices of students to policymakers.

- Students preferred learning from animated instructional videos compared to non-animated videos in elementary schools. More learning video options should be made available in this format.

The resource Dr TooNice is an animated series offering free music production instructional videos to students via YouTube. Research findings indicated that students were more attentive to animated videos as opposed to non-animated instructional content.

- Music production can be taught without a designated space, with a low budget, and limited equipment. Music educators can pursue a music production program despite not having the ideal start-up equipment and space.

In Chapter 5, the teachers expanded their learning spaces to incorporate music making opportunities. They utilized unconventional spaces such as the library, hallways, and even transformed a personal office into a recording studio. Despite having only limited equipment like Chromebooks and a DAW, many students successfully produced recordings in these spaces.
While a music production program could benefit from additional equipment, this study demonstrated that it is possible to create music with limited resources.

- Primary, junior, and intermediate students can produce music that matches the quality of professional recordings. Teachers should support students to obtain results according to their respective levels of experience.

It is important to note that sound quality is subjective, and students must consider various factors when striving for their results. For instance, certain genres such as hip-hop might thrive with LoFi recordings, whereas students wanting to record jazz or classical pieces may aim to make HiFi recordings. By adapting recording techniques and equipment choices to suit each musical context, these young producers can ensure that the quality of their recordings align with their intended artistic visions. Furthermore, students may face constraints in a classroom setting as they may not always have access to professional-grade equipment, therefore they need to be aware that there are alternate options for achieving certain qualities and must make the best use of available resources.

- There is a lack of interaction between industry professionals, teachers, and students. To minimize this gap, and crossfade music experiences, industry professionals, teachers, and students should be in communication with one another.

In this study, only the researcher had direct contact with the industry professionals. However, regular interaction with professionals enables teachers to remain up to date with industry standards, which they can consistently share with students. Teachers can easily identify production teams by searching album or song credits and reaching out to them via their websites.

As popular music trends continuously evolve, students’ interests will vary throughout the school year, and across different grade levels. Through regular conversations with students,
teachers can identify commonalities, explore contemporary music, and adjust their approach to match student interests. Continuous dialogue among professionals, teachers, and students allows educators to align their instructions with modern production techniques that resonate with student interests.

- The DIY learner-centered classroom is effective in the music production classroom. Teachers should encourage students to engage in self- and peer-directed learning.

  Students come with a wide range of experiences, from those with little to no experience to those with lots of experience. Offering opportunities for independent work allows for educational challenges, individual growth, and skill enhancement, as students can progress at their own pace. These skills are crucial for students to acquire independently, especially for when they are producing outside the classroom.

- Students can independently access resources in a flipped classroom format. Videos relating to the topics discussed in class can be made available as a database to support independent student learning.

  Completed tasks in a prescribed order is not required in a classroom where students have varying levels of experience. The videos in this study were organized in a flipped classroom format, allowing students to select videos that best reflected their specific needs, at time of need. Additionally, these videos were accessible from home, enabling students to work outside school hours if they chose to.

- Students can and will produce music on their own. Students engaging in independent music production should be supported, however, they should also be exposed to new experiences such as musical collaborations.
As reported in Chapter 6, several students accessed DAWs and worked independently at home. While they were able to produce music on their own, they would benefit from acquiring interdependent skills in the classroom, learning from both the teacher and their peers.

- Music production concepts can meet curricular expectations. The curricula should be interpreted to support music production programs that meet the needs and goals of teachers and their students.

After reviewing the specific expectations of the Ontario Arts Curriculum, I discovered that it does not explicitly identify a formal or informal music production program, leaving the expectations open to interpretation. This flexibility allows for the application of a music production curriculum. As a result, I proposed that teachers could teach the concepts outlined in the curriculum but modernize them through the lens of music production. For example, I related how a compressor or volume fader can teach students dynamics, blending and balancing, how an equalizer can relate to pitch, how panning is similar to seating arrangements and can relate to positioning specific sounds, how timbre is recording desired tones, how rhythms relate to aligning various tracks with one another, and notes are aligning the pitches of each track, tempo is setting the speed of your recording, and effects can relate to proximity and room size. Despite these modern interpretations, all the curricular expectations remain the same, it is simply a matter of interpreting the terms differently to incorporate music production concepts.

- Students prefer having choices when it comes to working in a performance and/or production paradigm. Teachers should encourage students to engage with different roles in a music production program.

During discussions with students, teachers can inquire about their students’ musical interests to identify areas for growth. While introducing new concepts is important, modifying lessons to
align with student interests enhances their educational opportunities. Offering a variety of choices allow for students to explore roles within the music industry that resonates with their interests.

Implications for Practice

On page 42, I mentioned that in this study I would be exploring how teachers may need to choose between music production or music performance. However, after conducting the study, I realized that the students were showing interest in both ways of engaging with music, but the teachers mainly focused on performance. This led me to wonder how educators can include both opportunities for students and jointly incorporate production and performance in the classroom. Furthermore, this study was meant to stimulate ideas towards the inclusion of music industry related concepts in elementary schools. Therefore, as an expansion to my previous statement, I would like to retract my initial argument of placing “music production as the core of elementary school music programs.” I would like to rephrase it by saying, “music production opportunities should be made available to each child during their music education in elementary school.” By placing music production as the core of a program, this would remove the opportunities to those who are interested in other areas such as performance. While music reflects performance and production, I now believe students should be equally exposed to both practices, especially since they can work alongside one another in the classroom and work within their interests, similar to how musicians would work outside of school.

In my literature review, I came across multiple studies asking students to compose original music using a DAW (Clauhs et al., 2019; Ruthmann, 2007; Tobias, 2013). However, the students in this study demonstrated interest in producing numerous projects beyond composing original
songs. Furthermore, the process of recording was more important than the end results. The students recorded music in conventional and non-conventional ways, manipulated sounds using various techniques, and distributed their final products. When the students explained how they recorded their songs and why they chose to manipulate them in certain ways, they provided their teachers with the required evidence to report on student learning.

During my observations, I discovered that each child had an interest in recording their music and a passion to play instruments. However, none of them showed any interest in forming a band. Most of the students preferred recording independently or with friends. They wanted their final product to be a recording rather than a performance, except for one group of boys that expressed an interest in performing as a duo with the help of backing tracks. Therefore, to promote production and performance in the classroom, students learned how to play an instrument, physical or digital, during the tracking stage. Then, during the manipulation stage, the students added plugins to create sounds with the intent to match the qualities of professional recordings. In the final stage, they shared their music either in class or online.

Music education should revolve around student interests and provide opportunities for students to explore their passions. If not, Price (2013) warns, “we should see it for what it really is: a shocking waste of young potential” (p. 95). As to including music production in elementary schools, I would issue the same warning if teachers were deliberately choosing not to include it into their programs. However, if educators have no experience with music production, or do not understand the role of music production in modern music, they should not be blamed for this “waste of time.” What is needed is awareness and professional development, and policy makers can play an important role in this regard. This is especially the case in Ontario where the curriculum has not been updated for nearly 15 years. During this time there have been many
advancements in music, especially in production technologies. I would suggest that policy makers include the process of producing music in the curriculum. Perhaps additional production examples can be included alongside the specific expectations found in each grade level in the curriculum (Ministry of Education, 2009). Furthermore, music production aligns with the provincial government of Ontario’s STEM education (Government of Ontario, 2023) focus since their website states the desirability of “transferable skills [such as] computational thinking, coding, design thinking, and engineering design skills in high demand in today’s globally connected world” (para. 4). Each of these skills can be associated with music production. By including more music production-based concepts into the curriculum, it may trigger school boards to provide their teachers with training and resources reflecting this need, similar to calls made by Emo (2022). Even though the curriculum is rather broad, perhaps this awareness could push teachers to include such concepts. Regardless, there is not one simple answer. Campbell (2010) suggests, “children, every one of them musical, deserve to be taken as far as their many ‘talents’ can carry them. We teachers and parents are key players in this challenge” (p. 219). Being key players, teachers should find ways to reach the potential of every child, and the learner-centered DIY classroom may provide such opportunities.

As previously stated, most academic studies in music production were conducted in secondary and post-secondary schools (Anthony, 2023; Clauhs et al., 2019; Herbst, 2016; Tobias, 2010; 2013; 2015). However, the foundational skills can, and should be, taught in elementary schools. The primary students in this study were able to record audio and create short compositions that consisted of AB form. As time allowed, some students even applied advanced concepts that involved mixing and distribution. Even though Clauhs et al. (2019) affirm that “little to no pre-requisite knowledge is required of the student to complete many of these
activities” (p. 56), I found that some guidance was required throughout the process of implementing music production. The students and the teachers in this study relied on the aid of Dr TooNice, and other YouTube resources. The animated videos captured the students’ attention and provided them with verbal instructions to complete certain tasks. The students were able to complete these tasks by using pause and play to work at their own pace. For the teachers, the curriculum expectations were available in the description box of each video. The descriptions included the relation between music production and performance terms. The YouTube animation proved to retain focus and provide meaningful tasks.

**The Implications from the Industry Professionals, Teachers, and Students**

**Industry Professionals**

The gap between what is taught in elementary school music classes in comparison to the content that the music industry produces is large. However, outside of school most students listen to the recordings produced by the industry and those independently uploaded (Beyt, 2022). According to the professionals in this study, music industry specialists tend to follow a different post-secondary path than those enrolled in music education. Music education mainly focuses on pedagogy and developing performance skills on physical instruments. Therefore, teachers teach within these concepts once they are in the field. However, in public schools, there are students like Alex who feel like they are outsiders in these performance contexts because they have developed an interest in the production side of music. Having music production in schools can serve the interests of students who are interested in music roles that are not associated with performing on stage. In Chapter 4, the professionals illuminated many of the possible roles associated with the music industry, and the specialized skills that are required to perform them. The information they provided was easily integrated into the current curricular goals, but without
teacher training and free resources, teachers may never engage with music production in class. Through conversations, the professionals were able to inform the design of a curriculum that met the needs and interests of those interested in recording. Furthermore, even the students that were previously unaware of or uninterested in music production developed a passion for it. Including industry professionals in curricular planning would benefit most music education programs. Moreover, inviting professionals to speak to students in class could provide additional learning opportunities and can facilitate professional development for teachers.

**Teachers**

Provided the opportunity, the teachers in Chapter 5 were more than willing to include music production in their classrooms. The teachers in this study had not included music production in their classes previously because they did not have any background experience in production. Rather than obtaining music production skills prior to teaching them to their students, the teachers learned these skills alongside their students. This immersive and wholistic approach differs from other suggested approaches when incorporating music technology in music classes (Emo, 2022), and even goes against the recommendations of the professionals detailed in Chapter 4. It is true that primary students require clear instructions in any subject matter, however the resource videos made it possible for teachers to learn with their students in real-time and still provide clear instructions. Even though Bradley had some experience with podcasting, due to the training provided by the school board he was under the impression that he had to follow a typical paradigm in his music classes consisting of developing instrumental skills and preparing for a concert. The other two teachers were under the same impression as Bradley. I shared with them that I had been teaching music production in elementary school for at least five years, if not more, and it sparked their interest. I was curious to know why teachers were not
already including music production in their programs. The participating teachers expressed never having the opportunity to do so, and that they were excited to begin the process.

Music production requires more independent time to analyze songs and make them sound the way one wants to. I suggested to the teachers that they introduce the production concepts to their students by using a flipped classroom design (Keengwe & Onchwari, 2016; Mok, 2014). In this way, the students choose their own project ideas and work at their own pace. At first, the teachers had difficulty moving from a teacher-centered classroom to a learner-centered classroom, but with time, they became more flexible in their approach to teaching. In this more flexible learner-centered environment, students created numerous songs, and were ecstatic to share their recordings. Each student was proud of their work because they were able to pursue their passions relating to their interests outside of school.

**Students**

Many of the students from Chapter 6 pursued their interests relating to music production outside of school. They accessed DAWs, filmed videos, and shared music online. However, while recording, most students only engaged with the tracking stage. But, with the help of Dr TooNice, the students were able to explore and apply additional features available in Soundtrap. Both the teachers and the students showed progress in tracking, yet their knowledge in mixing was limited. In future research, a balance of time spent on each step (tracking, mixing, and distribution) would benefit students in developing a more complete understanding of music production.

The students demonstrated that space was not an issue in the music production classroom. With a set of headphones, the students created music anywhere without bothering anyone beside them. Based on their own interests and motivations, the students accessed the flipped classroom
at home and continued working on their projects. Furthermore, when additional time was allocated at school, the students produced music during their spare time, such as during lunch and recess.

As presented in my findings, the students initially expressed their interests in instrumental music, however, when music production became part of their music programs, most of the students voiced a heightened love for their music classes. As research indicates that technology-based music classes enhance student enrolment (Dammers, 2009; Manzo, 2016; Williams, 2012), additional options for students to engage with music production roles in the classroom have potential to increase these numbers. There are no enrolment choices in elementary schools, however, if music production is introduced at an early age, I believe that students would seek high school programs that included music production. Furthermore, students showed comfort in recording music and distributing it for others to hear, whereas performing in front of their peers heightened their anxieties. This may help explain why they may be avoiding high school performance programs later on. When a student plays their recording more than once, it always sounds the same, and just the way they want it to sound. This reflects how people experience music daily. As Bennett (2019) explains, when listening to recorded music, listeners are not only immersed with “the same song that millions of individuals share, but the same experience of sound, from the same recording take, with the same amendments, deletions, augmentations, and effects” (p. 116). Similarly, while performing live with backing tracks, there is less room for error since the tracks always sound the same. The students in Chapter 6 expressed that each one of them listens to recordings on a regular basis, therefore “the vast majority of music they hear is produced, polished, and virtually perfect from a technical standpoint (Stefanic, 2019, p. 172). Furthermore, most of these students have never attended a
concert, consequently, they need to know why live instruments do not sound like those heard on recordings, especially during the learning stages. With this understanding, students may distinguish some of the challenges between learning physical and digital instruments.

Limitations

Throughout this chapter, I highlighted important concepts that surfaced in this study. Specifically, I collected information from music industry professionals, elementary school teachers, and their students pertaining to implementing a music production curriculum in elementary schools. The teachers shared contextual information with students in a learner-centered environment using a flipped classroom design. The students independently accessed resources to guide them through a recording project. As the teachers and students adjusted to a DIY environment, they explored content relating to the roles associated with those who work behind the scenes. Typically, in music education, classroom instruction predominately focuses on performance. Students play an instrument, learn multiple songs, and perform in concerts. Outside of school, music making and sharing is dominated by recorded and manipulated sounds. The present findings indicate that all three participating groups would like to include these recording concepts at an early age of schooling.

Students have largely been ignored when decisions regarding their education is discussed by policy makers and teachers (Halliday et al., 2019; Mantie et al., 2021; Rudduck & Flutter, 2004). To improve this study, more time communicating with each participant individually would have added to the findings, as more discoveries and stories could have been told. However, it was clear that the first stages of production could be achieved in a short amount of time. Given more time, I would explore more concepts relating to the mixing stage. Even though this study served its purpose, which was to examine the foundational stages of implementing
music production in elementary schools, in future research, studies in music production need to be longitudinal since I would like to know what the implementation of a years-long music production program would do. In my study, I found that students as young as grade two could record, manipulate, and distribute songs, but there are still questions that remain. Will other teachers be willing to implement music production in their primary classes? Will the participating teachers continue to provide their students with the option to work within music production in future years? How do teachers start a music production program without a researcher? Will policy makers include music production in the curriculum? Are the Dr TooNice videos helpful for others that were not in this study, especially those working with different DAWs? How would ten years of music production in elementary schools impact secondary school and post-secondary school music education?

**Suggestions for Future Research**

If other academics were to extend or improve upon this study, I recommend starting in September and finishing in June. I would also extend the study for an additional year, from September to June, and compare the results of each year. During this time, I suggest engaging with each participating group more often, and specifically, with the student group. I would have preferred conducting in-person observations as they would have increased the amount of recorded dialogue between the teachers and their students. I could have also observed body language and more of the process of producing rather than having the students and teachers be limited to explaining their actions to me.

Now that the study has concluded, other researchers could further experiment with the tracking and mixing stages. Questions to explore might be: does one person require more time than another? My findings indicated that teachers and students enjoyed tracking, yet there is a
limited amount of data regarding their thoughts on the mixing stage. Furthermore, it would be helpful to know if the students chose to share their music publicly. If so, how did the sound of their old recordings compare to the new recordings? Did any of their followers engage with or comment on their recordings? Finally, it would be interesting to know if the participants listened to recordings differently. I do not listen to music the same as I did before I engaged in music production. Personally, I do not hear a few instruments and a singer, I now analyze everything I listen to, and wonder what is creating the sounds I am hearing and how this is accomplished. Are there multiple guitars, amps, and effects imitating that one guitar sound? Are there multiple tracks creating the main vocal line? Is sidechaining creating a seamless rhythm section? In further research, it would be interesting to learn whether music production knowledge makes others listen to music differently once this information is obtained. Ultimately, I wonder if these types of questions that I pose as a result of my engagement with music production will also be asked by students who engage with a music production curriculum in the elementary school years. As an experienced musician, I think that learners should be engaging with these ideas and asking these questions early on in their music education.

Conclusions

The three participating groups in this study demonstrated that music production can and should be included in the elementary classroom. Even at a young age, students applied the fundamental concepts of music production and distributed professional-sounding songs. Without the need for space, expensive equipment, a production team, or a teacher, the students could potentially create a hit song before reaching high school. However, the information from the professionals and the guidance from the teachers is what made this project possible. The students developed advanced music production skills at an early age. The students pursued their interests
and worked independently at home and in the classroom. Collaborating with others provided students with new possibilities in recording and mixing techniques.

I believe the music production curriculum was most impactful in a DIY environment such as those described by Kahn-Egan (1998) and Smith et al. (2017). Students were able to choose or create the songs they wanted to record. Many students had chosen song formats that the other teachers and I would have never thought of. When students were working within their element, they remained focused throughout the music period, and continued working on their own outside regular class hours. In my view, the students seemed happier producing their own songs independently, or with the partners they chose, rather than learning music that was not relevant to them in a large group. Furthermore, each song was completed and presented at different times since students worked at their own paces. I would argue that creativity does not have a due date and does not have a specific method of presentation, especially since the students are reflecting the roles, work habits, and choices made by independent artists and industry professionals. Presentations can consist of concerts, recordings, and videos, among other formats.

In a learner-centered environment, teachers have more time to explore the music production concepts on their own or alongside their students. The teachers have more time to work with students individually and have more meaningful discussions with them. Since there are many music production resources online, the teachers can direct their students towards videos that directly address the issues students encounter.

Even though computer technologies have evolved, and the physical equipment has changed to digital plugins, most production concepts and techniques have existed for decades in the studio yet have rarely been implemented in school classrooms. In this study, the participants
not only applied music production concepts in the classroom but developed and built on them by applying numerous concepts to their projects over time. The teachers provided guidance and supported students in developing these skills while they were developing skills of their own. The professionals revealed that recording a song with a DAW and to match a professional-sounding recording requires a special skill set, however it can be developed in the elementary music classroom. If more options like these were made available in the music classroom, students could pursue their passions for music in the directions they wish to follow, may it be in performance, production, or both.
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Appendix A

Email Script

Dear Colleagues,

Music Production in Public Elementary School Music Education

My name is Johnny Touchette, and I am an elementary school music teacher for the SCDSB. I am currently undergoing my PhD studies at Western University and wish to conduct an action research project with some of you and your music classes. I will be running the same study simultaneously in a participatory action research project at my school.

The study consists of designing and implementing a music production curriculum. I am looking for three teacher volunteers. The selected teachers will need to agree to be part of the study by taking journal notes, take part in short monthly interviews (no longer than 60 minutes), and agree to monthly observations of the classes you are implementing the exploratory curriculum with. I am looking to implement the curriculum in grades 3, 6 and 8. Furthermore, zoom calls, emails and texts at random points during the study may be received for additional questions and check-ins. The program will require you to have access to Soundtrap, headphones, and microphones for students to access individually or in groups. If you do not have access, I can provide you with some materials. Please note that some of your students will need to agree to be part of the research as well.

This curriculum is intended to introduce music production in elementary music education. The content consists of how to get started with music production and to guide students through production techniques as found in the music industry.

If you would like any additional information, or if you are interested in taking part in this research, please respond to this email.

Thank you for your time, John Touchette

Here is my principal investigator’s information Ruth Wright, PhD
University of Western Ontario,
Don Wright Faculty of Music

Email and Phone number
Appendix B

Semi-Structured Interview Guide

Industry Professionals

All participants will be given a pseudonym.

The questions will be guided to answer my research questions which are:

1. Do you think music production can be implemented in the current music education curriculum in public elementary schools?

2. Do you think it should be applied to the music education curriculum in public elementary schools?

3. What are some of the logistical requirements to implement music production in schools?

4. What would be the role of the teacher?

5. What baseline knowledge would a teacher require?

6. What are some of the problems one would face in such a design and how can these problems be addressed?

7. What are some of the strengths of this design?

8. Why would one choose, or not choose, music production as the core over instrumental based performance in elementary school music programs?

Background Information

1. What type of music do you like?

2. Where do you listen to music?

3. Where do you hear music?

4. When do you listen to music?

Background knowledge

1. What type of music do you mix?

2. Describe similarities and differences between mixing various genres.
3. How many times have you seen your favourite band live?

4. How many times have you listened to their recording?

**Study Process**

1. How would you begin teaching someone music production?

2. What would be the crucial items to know in one year?

**The music production curriculum**

1. How can music production become part of schooling?

2. What are some things you would like to see in the curriculum

3. How can music production in schools benefit the music industry?
Appendix C

Semi-Structured Interview Guide

Teachers

All participants will be given a pseudonym.

The questions will be guided to answer my research questions which are

1. Do you think music production can be implemented in the current music education curriculum in public elementary schools?

2. Do you think it should be part of the music education curriculum in public elementary schools?

3. What are some of the logistical requirements to apply music production in schools?

4. What would be the role of the teacher?

5. What baseline knowledge would a teacher require?

6. What are some of the problems one would face in such a design and how can these problems be addressed?

7. What are some of the strengths of this design?

8. Why would one choose, or not choose, music production over instrumental based performance in elementary school music programs?

Background information

1. What type of music do you like?

2. Where do you listen to music?

3. Where do you hear music?

4. When do you listen to music?

Background knowledge

1. Do you play any instruments?

2. Do you use any computer software to play or create music?

3. Do you listen to acoustic instruments, amplified instruments, computer instruments?
4. Could you identify the differences between these sounds and recorded sounds?

5. How many times have you seen your favourite band live?

6. How many times have you listened to their recording?

7. What experiences have you had with music production?

8. What is your specialty?

**Study process**

1. When designing your curriculum, do you mostly focus on instrumental performance concepts or music production concepts, or a mixture of the two? Can you describe some examples.

2. Do you use recordings as a model? If so, how? Do you model live instruments as well?

3. How do you see your role as a teacher when involved in music production in comparison to instrumental performance?

**The music production curriculum**

1. How is this curriculum similar or different than your previous curriculum

2. How can students benefit from this curriculum?

3. Do you see value in placing music production as the core of your curriculum? Why or why not?

4. How would your teaching approaches be affected if music production became the core of music education?

5. What are some strengths of this curriculum?

6. What problems have you encountered with this curriculum?

7. What do you think a performance should look like?

8. Why would you choose, or not choose music production as the core of your program?

9. How can you interpret the music production curriculum to teach the provincial music curriculum?
Appendix D

Semi-Structured Interview Guide

Students

All participants will be given a pseudonym.

The questions will be guided to answer my research questions which are

1. Do you think music production activities like the ones we are doing should be part of school music?

2. Why do you think this?

3. What do you think some of the difficulties would be of doing this type of school music?

4. What would be the teacher’s job in this type of music class?

5. What do you think a teacher would need to know to do this?

6. What type of equipment do you think we would need to do this in all music classes?

7. What were the best bits of this class?

8. Do you think you would choose to do this sort of school music? Why or why not?

Background information

1. What type of music do you like?

2. Where do you listen to music?

3. Where do you hear music?

4. When do you listen to music?

5. Who is your favourite musician?

Background knowledge

1. Do you play any instruments?

2. Do you use any computer software to play or create music?
3. Do you listen to acoustic instruments, amplified instruments, computer instruments?

Acoustic instruments are physical instruments that do not require any electricity, amplifier or computer processor to make a sound. An amplified instrument requires electricity or an amplifier to make a sound. Computer instruments are virtually played on computers.

4. Do you know the differences between live instrument sounds and recorded sounds?

5. How many times have you seen your favourite band live?

6. How many times have you listened to their recording?

7. Have you had any experience before with doing music production?

**Study process**

1. What do you want to learn in school music class and why?

2. Do you prefer music production or instruments, or both? Why?

**The music production curriculum**

1. How are the music classes different than previous years?

2. Describe some of your musical experiences in this class

3. Would you prefer working towards a recording, a live performance with computers to help, or a live concert with instruments only? Why?

4. If music production was part of school every year, would it help with the music you do outside of school? How so? Or how not?
Appendix E

Participant Observation Guide: Studio

Setting

1. Where is the studio located?
2. Is it a private home studio, or a studio in a commercial space?
3. Are there multiple rooms? If so why? What is the purpose for each room?
4. Is there only one room? How does this differ from a studio with multiple rooms?
5. What is the size of each room?
6. Are there any specific structural designs?
7. Are there any specific wall coverings such as acoustic panels, soundproof panels etc?
8. What else do I see physically, why do I see this and how does it affect the sound?

Content

1. What type of equipment is being used?
2. How is this equipment being used?
3. Why is this equipment being used?

Process

1. What should the musician prepare before entering the studio?
2. What should the people in the studio prepare before the musician enters the studio?
3. How does the recording process begin?
4. What happens during the recording process?
5. What happens after the recording process?
6. How does the process of my production curriculum align with the process in the studio?
7. Is it possible for my curriculum to be taught in schools as opposed to inside a studio?
8. Additional observations
Appendix F

Participant Observation Guide: Schools

Setting

1. Is the school located in a rural or urban area?
2. What is the average socio-economic status of the school?
3. Do teachers travel from room to room for music classes, or is there a music classroom?
4. Do all students have access to the necessary music production tools (A device with Soundtrap, a microphone and headphones)?
5. What else do I see physically? Describe the workstations.

Content

6. How are teachers introducing the concepts in the curriculum.
7. Does the content reflect what the industry professionals hope to see.
8. Are students engaged? Why? Why not?
9. Is the material inclusive to all needs and interests?
10. Are there any opportunities for roles beyond performance, and instrumental performance?
11. Does the program support diversity?

Process

12. Are teachers guiding the students or facilitating?
13. Are students sharing ideas with the teachers?
14. Are there any missing elements in the curriculum that need to be addressed?
15. Are students using instrumental based production? (Recording live instruments or using virtual options?)
16. What type of content are the students interested in?
17. What roles are students interested in?
Appendix G

Recruitment Email

Industry Professionals

Music Production in Public Elementary School Music Education

Recruitment email/Letter for industry professionals

To whom it may concern,

I am conducting a research study on music production in elementary music education, and seeking design and content input from music industry professionals. Participation will be for the entire winter semester and spring semester (February 2023 - June 2023). If you are interested in taking part in this study, you will be asked to engage in four interviews with me, either in person, zoom, through text, email or telephone. I would also like to observe some of the work you do for a 60 minute session in order to gain a perspective of the your field work, and bring some of these concepts into the classroom. I would like you to provide information about how independent artists learn, create, produce, and distribute music with exceptional sonic qualities. Seeing as you may be an independent artist, live engineers, recording engineer, or anyone involved in the music industry, your input is very valuable to music education. Your role in the study is to inform the researcher and teachers of the fundamental concepts and strategies found in the music industry specifically when working with music production. Furthermore, you can help troubleshoot issues that may arise while students are working on their recording projects. Through discussions, the music industry professionals can provide the teachers and the researcher additional goals for students that may be interested in music making and sharing beyond live performance. If you are interested, further detailed instructions will be given to you. There are no known risks involved in this research.

If you have any questions, please let me know.

Johnny Touchette
Appendix H

Recruitment Letter

Teachers

Music Production in Public Elementary School Music Education

Recruitment Email/Letter to teacher

Dear SCDSB music teachers:

I am conducting a research study on music production in elementary music education. Participation will be for the winter and spring semester of 2023 (February to June). If you are interested in taking part in this study, you will help design and implement a music production curriculum that meets the current curricular expectations. You will be asked to engage in four interviews with me lasting no longer than 60 minutes, either in person, zoom, through text, email or telephone. You will implement and discuss the curriculum with your students and collect field notes through observations, class discussions, and with Google classroom. I would like to interview interested students and personally observe five classes. If you are interested, further detailed instructions will be given to you. There are no known risks involved in this research.

In phase one of the research, I will begin by finding industry professionals who are willing to inform this study and remain engaged during the application and reflection stages of the study. These professionals can provide information about how independent artists learn, create, produce, and distribute music with exceptional sonic qualities. The professionals may be independent artists, live engineers, recording engineers, or anyone involved in the music industry that is available and willing to help with this research. The role of the industry professionals is to inform the researcher and teachers of the fundamental concepts and strategies found in the music industry specifically when working with music production. Furthermore, the industry professionals can troubleshoot issues that may arise while students are working on their recording projects. These professionals can provide the teachers and the researcher additional goals for students that may be interested in music making and sharing beyond live performance.

In phase two of this research, I will apply the music production concepts suggested by the industry professionals with my students at school, alongside three other teachers and their students. Students will explore how to create and recreate sounds as found in recordings. They will engage in listening activities, composing activities, and distribution activities all within the music production paradigm. The concepts will be applied in a flipped classroom format where students can access videos explaining and guiding them through music production concepts while they create music. They can skip to the lessons appropriate to their needs. I can send you some examples of what these videos may look like. The creation of the videos in the study will gradually be made based on the process of participatory action research. Together, the participants and I will plan, apply, observe, and reflect on the music production concepts applied in the classroom and continuously determine next steps and revise the videos. The process is meant to be open-ended to troubleshoot and explore concepts, eventually creating a final resource in phase three. The role of the teachers is to use the information provided by the industry professionals to create lessons.

Saturday, January 28, 23
Appendix I

Recruitment Letter

Students

Music Production in Public Elementary School Music Education

Recruitment Email/Letter for students

Hello,

You are being invited to participate in a study that Mr Touchette [other teacher’s name] is conducting. The purpose of this study is to use music production as opposed to music performance during music classes. This study involves participation in three semi-structured interviews conducted during recess, no longer than 15 minutes at a time, the involvement in group discussions, and to provide private comments in Google classroom. You will be analyzing what you hear in recordings, create music on computers or other technological devices, and distribute music to various platforms. Your role in the study is to provide your teacher with feedback based on your musical interests and needs. No compensation will be provided for your participation in this research. If you would like to participate in this study, please have your parents read the attached letter of information and respond to this email indicating your interest.

If you have any additional questions, please let me know.

Johnny Touchette
Appendix J

Recruitment Letter

Parents

Music Production in Public Elementary School Music Education

Recruitment Email/Letter for parents

Hello,

Your child is being invited to participate in a study that Mr Touchette [other teacher’s name] is conducting. The purpose of this study is to use music production as opposed to music performance during music classes. This study involves your child to participate in three semi-structured interviews with the researcher which will be conducted during recess, no longer than 15 minutes at a time, the involvement in group discussions, and to provide private comments in Google classroom. Your child will be analyzing what they hear in recordings, create music on computers or other technological devices, and distribute music to various platforms. Their role in the study is to provide the teacher with feedback based on their musical interests and needs. No compensation will be provided for their participation in this research. If you are interested in them participating in this study, please respond to this email indicating your interest and a letter of information that describes the study in detail will be sent to you along with a consent form.

If you have any additional questions, please let me know.

Johnny Touchette
LETTER OF INFORMATION AND CONSENT

Industry Professional

Music Production in Public Elementary School Music Education

**Researcher:** Johnny Touchette, email

**Principal Investigator:** Dr. Ruth Wright, Professor, Don Wright Faculty of Music, email

INVITATION AND PURPOSE OF THE STUDY

You are being invited to participate in a study investigating music production in public elementary school music. The study consists of designing and implementing a music production curriculum. In a collaborative action research project and multiple case study, students and teachers will plan, implement and problem solve a music production curriculum, while distinguishing strengths and needs through participant feedback during the process. You are being invited to participate in this research since you have been identified as someone whose experiences and work outside of the school setting may lend insight into developing a music production curriculum that meets the requirements of the existing instrumental performance-based curriculum in elementary schools.

TIMELINE OF THE RESEARCH

Four schools will take part in data collection for the study. The teacher researcher Johnny Touchette, will spend the winter and spring semester engaging in a participatory action research project in his own school and collect data with and from collaborating teachers from other
schools, collecting data from grades 3, 6, and 8 between February 2023 and June 2023. Results of the research aim to be published in 2024.

**DATA COLLECTION**

If you consent to participate after reading this Letter of Information you will be asked to take part in four face-to-face or zoom interviews with me which will be recorded subject to consent, lasting no more than sixty minutes each, and a one-hour observation of your work at a mutually convenient time. The observations are meant to see live work in action as an additional component to verbal explanations. The researcher will ask for your consent to use de-identified quotations of interview responses in future publications and/or presentations. You may continue to take part in the research if you choose not to give your consent for the researcher to do so. It is the intention of the researcher to facilitate interviews and observations face-to-face, or via zoom at your choice and document collection via email. Additionally, digitized versions of documents may be sent to the researcher’s password protected, university affiliated OneDrive account. Photographs will be needed to ensure accurate transcription of observation data, and for publishing works. Photographs of consented participants will be taken to recall certain information that seems important at the time of observation.

**VIDEO AND AUDIO RECORDINGS**

You will be asked for consent to audio or video record the interviews, which is optional and will not be shared beyond the research team. Video interviews will be recorded by using the researcher’s laptop, which also collects audio. Audio interviews will be recorded by using a microphone connected to Soundtrap which is a program in the researcher’s laptop. Consent to use de-identified quotations within future publications and presentations will also be sought. After the interview and observations, I will send you a copy of the transcript for you to check and amend if you wish to make corrections. A link to a password protected copy of the transcript will be emailed to you to access on the document sharing service One Drive. The password required to access the document will be emailed to you in a separate message. This is the link to Microsoft’s OneDrive privacy policy https://support.microsoft.com/en-us/office/how-onedrive-safeguards-your-data-in-the-cloud-2 3c6ea94-3608-48d7-8bf0-80e142ed1e1 and this link takes you to Microsoft’s privacy policy https://privacy.microsoft.com/en-gb/privacy. While I make every effort to guarantee the privacy of your data, it should be noted that no internet-based service can be 100% secure. You may still participate if you do not wish for the interviews to be recorded or transcribed and notes will be taken by hand. If you don’t wish for any notes to be taken, the interview will not take place. Similarly, if you do not wish quotations to be used this will be noted and none of the responses will be quoted. Like online shopping, technology has privacy and security risks. It is possible that information could be intercepted by unauthorized people or otherwise shared by accident. This risk can not be completely eliminated. We want to make you aware of this. Here is the privacy information for the use of zoom https://explore.zoom.us/en/trust/privacy/#:~:text=Protecting%20Your%20Privacy&text=End%20Dto%20End%20encryption%20for%20the%20devices%20of%20those%20participants. Note that Zoom collects both, audio and video recordings.
BENEFITS OF THE STUDY

You may not directly benefit from participating in this study, but information gathered may provide benefits to society as a whole which include insight and direction into the development and implementation of music production in public elementary school music education. Your insight may aid in the development of resources and policies which support teachers who aim to implement an alternate curriculum within their future practice.

VOLUNTARY PARTICIPATION AND RIGHT TO WITHDRAW

You will not be compensated for the participation in this research. The participation in this study is voluntary. You may decide not to take part in this study. Even if you consent to participate, you have the right to not answer individual questions, withdraw consent from specific data collection methods or withdraw from the study as a whole at any time. If you decide to withdraw from the study, you have the right to request withdrawal of information collected about you. There will be no personal, professional, or financial repercussions placed on you if you decide to withdraw your consent to participate in the study.

DATA CONFIDENTIALITY AND PRIVACY

Your privacy will be respected. All participants will self-select pseudonyms. Quotes and references to others will be attributed to these pseudonyms. Email addresses and telephone numbers will be stored electronically with a numerical identifier only. Studio name, location, and logo will also be de-identified, with a pseudonym chosen by the researcher. Only Johnny Touchette will have access to the data. However, data information will be shared with you through discussion to address needs, create content, and set goals. None of this data will include participants’ personal information. Representatives of Western University’s Non-Medical Research Ethics Board may require access to your study-related records to monitor the conduct of the research. The data collected in this study will be kept for 7 years in a secure Western-approved location, after which time it will be destroyed through digital removal in accordance with Western’s Disposal Guidelines and Best Practices. You do not waive any legal right by consenting to this study. There are no risks associated with this curriculum, and the production curriculum will occur during class time. The data collected is for research purposes only, and regardless of participating in the data collection, no one will be impacted. It is important to note that a record of your participation must remain with the study, and as such, the researchers may not be able to destroy your signed letter of information and consent, or your name on the master list.

ANY FURTHER QUESTIONS

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Human Research Ethics.

If you have questions about this research study please contact Johnny Touchette, email.

This letter is yours to keep for future reference.

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CONSENT AND SIGNATURE PAGE

Please sign and return to the researcher

Written consent to participate in the research

Do you confirm that you have read this Letter of Information and that you have had all questions answered to your satisfaction?

YES NO

Do you agree to participate in this research?

YES NO

Written consent to participate to interviews

Do you agree to your interview being video recorded?

YES NO

Do you agree to your interview being audio recorded?

YES NO

Do you consent to the use of unidentified quotes obtained during the study in the dissemination of this and future research?

YES NO

Do you consent to the analysis of past and present materials

YES NO

Do you consent to the observation of studio work selected by the researcher

YES NO

Date: ____________________  Signature of Participant: ____________________

My signature means that I have explained the study to the participant named above. I have answered all questions.

Date: ____________________  Signature of researcher: ____________________

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Appendix L

Letter of Information

Teachers

LETTER OF INFORMATION AND CONSENT

Teacher

Music Production in Public Elementary School Music Education Researcher: Johnny Touchette, email

Principal Investigator: Dr. Ruth Wright, Professor, Don Wright Faculty of Music. Email.

INVITATION AND PURPOSE OF THE STUDY

You are being invited to participate in a study investigating music production in public elementary school music. The study consists of designing and implementing a music production curriculum. In a collaborative participatory action research project, students and teachers will plan, implement and problem solve a music production curriculum, while distinguishing strengths and needs through participant feedback during the process. You are being invited to participate in this research since you have been identified as someone whose experiences may lend insight into developing a music production curriculum that meets the requirements of the existing instrumental performance-based curriculum in elementary schools. Your role in the study will be to help determine how, and if a music production curriculum can complement the current music expectations found in the Ontario Arts Curriculum

TIMELINE OF THE RESEARCH

Four schools will take part in data collection for the study. The teacher researcher Johnny Touchette, will spend the winter and spring semester engaging in a participatory action research project in his own school and collect data with and from collaborating teachers from other
schools, collecting data from grades 3, 6, and 8 between February 2023 and June 2023. Results of the research aim to be published in 2024.

DATA COLLECTION

If you consent to participate after reading this Letter of Information you will be asked to take part in classroom observations and four interviews for the purpose of data collection. Data collection consists of four interviews, lasting no more than sixty minutes each, and the observation of five classes, via zoom, also to be recorded with consent. The researcher will observe how teachers and students reach curricular expectations using technology and if students remain engaged throughout the music period. Additionally, teaching strategies and lesson delivery will be observed. The classes will be recorded for the researcher to re-examine these classes by observing different students during each playback. This can determine the level of participation, engagement, and goals. The observations will consist of tracking time, and if curriculum expectations are being met in the amount of time available. The music production curriculum will reflect the current music expectations as found in the Ontario Arts Curriculum. However, the document will be interpreted by following music production standards as found in the music industry. Students may engage with the researcher during the observational process. Data from such classroom discussions will be collected in the form of field notes and audio/video recordings and only from consented students. The teacher and students may still participate in the study if you do not wish for any or all of these documents to be analysed. The researcher will ask for your consent to use de-identified quotations of interview responses in future publications and/or presentations. It is the intention of the researcher to facilitate interviews, observations (face-to-face or zoom) and document collection in a manner of face-to-face, zoom or via email. Additionally, digitized versions of documents may be sent to the researcher’s password protected, university affiliated OneDrive account. Photographs will be needed to ensure accurate transcription of observation data, and for publishing works. Photographs of consented participants will be taken to recall certain information that seems important at the time of observation.

VIDEO AND AUDIO RECORDINGS

The teacher and students will be asked for consent to audio or video record interviews, which is optional and will not be shared beyond the research team. Video interviews will be recorded by using the researcher’s laptop, which also collects audio. Audio interviews will be recorded by using a microphone connected to Soundtrap which is a program in the researcher’s laptop. Consent to use de-identified quotations within future publications and presentations will also be sought. After the interview, I will send you a copy of the transcript for you to check and amend if you wish to make corrections. A link to a password protected copy of the transcript will be emailed to you to access on the document sharing service One Drive. The password required to access the document will be emailed to you in a separate message. This is the link to Microsoft’s OneDrive privacy policy https://support.microsoft.com/en-us/office/how-onedrive-safeguards-your-data-in-the-cloud-23c6ea94-3608-48d7-8bf0-80e142edd1e1 and this link takes you to Microsoft’s privacy policy https://privacy.microsoft.com/en-gb/privacy. While I make every effort to guarantee the privacy of your data, it should be noted that no internet-based service can
be 100% secure. You may still participate if you do not wish for the interviews to be recorded or transcribed and notes will be taken by hand. If you don’t wish for any notes to be taken, the interview will not take place. Similarly, if you do not wish quotations to be used this will be noted and none of your responses will be quoted. Like online shopping, technology has privacy and security risks. It is possible that information could be intercepted by unauthorized people or otherwise shared by accident. This risk cannot be completely eliminated. We want to make you aware of this. Here is the privacy information for the use of zoom
https://explore.zoom.us/en/trust/privacy/
#:~:text=Protecting%20Your%20Privacy&text=End%2Dto%2Dend%20encryption%20for,
the%20devices%20of%20those%20participants. Note that Zoom collects both, audio and video recordings.

BENEFITS OF THE STUDY

You may not directly benefit from participating in this study, but information gathered may provide benefits to society as a whole which include insight and direction into the development and implementation of music production in public elementary school music education. There are no risks associated with this study. Your insight may aid in the development of resources and policies which support teachers who aim to implement an alternate curriculum within their future practice.

VOLUNTARY PARTICIPATION AND RIGHT TO WITHDRAW

No one will be compensated for the participation in this research. The participation in this study is voluntary. Students may decide not to take part in this study. Even if any students or the teacher consent to participate they have the right to not answer individual questions, withdraw consent from specific data collection methods or withdraw from the study as a whole at any time. If they decide to withdraw from the study, they have the right to request withdrawal of information collected about themselves. There will be no personal, professional, or financial repercussions placed on you or the school in which they work if they decide to withdraw their consent to participate in the study. There are no risks associated with this curriculum, and the production curriculum will occur during class time. The data collected is for research purposes only, and regardless of participating in the data collection, no one will be impacted. It is important to note that a record of your participation must remain with the study, and as such, the researchers may not be able to destroy your signed letter of information and consent, or your name on the master list. However, any data may be withdrawn upon your request. You do not waive any legal right by consenting to this study.

DATA CONFIDENTIALITY AND PRIVACY

Your privacy will be respected. All participants will self-select pseudonyms. Quotes and references to others will be attributed to these pseudonyms. Your email address and telephone number will be stored electronically with a numerical identifier only. School name, location, and logo will also be de-identified, with a school pseudonym chosen by the researcher. Only Johnny Touchette will have access to the data. However, data information will be shared with industry professionals through discussion to address needs, create content, and set goals. None of this data
will include participants’ personal information. Representatives of Western University’s Non-Medical Research Ethics Board may require access to your study-related records to monitor the conduct of the research. The data collected in this study will be kept for 7 years in a secure Western-approved location, after which time it will be destroyed through digital removal in accordance with Western’s Disposal Guidelines and Best Practices.

ANY FURTHER QUESTIONS

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Human Research Ethics.

If you have questions about this research study please contact Johnny Touchette, email.

This letter is yours to keep for future reference.
CONSENT AND SIGNATURE PAGE

Please sign and return to the researcher

Written consent to participate in the research

Do you confirm that you have read this Letter of Information and that you have had all questions answered to your satisfaction?

YES NO

Do you agree to participate in this research?

YES NO

Written consent to participate to interviews

Do you agree to the interviews being video recorded?

YES NO

Do you agree to the interviews being audio recorded?

YES NO

Do you consent to the use of unidentified quotes obtained during the study in the dissemination of this and future research?

YES NO

Do you consent to the analysis of past and present teaching materials (including lesson plans, assessment criteria and curricular documents)

YES NO

Do you consent to the observation of classes selected by the researcher

YES NO

Date: _______________________ Signature of participant: ____________________

My signature means that I have explained the study to the participant named above. I have answered all questions.

Date: _______________________ Signature of researcher: ____________________
Appendix M
Letter of Information

Students / Parents

Letter of Information and Consent

Parent / Guardian / Student

Music Production in Public Elementary School Music Education

Researcher: Johnny Touchette. Email.

Principal Investigator: Dr. Ruth Wright, Professor, Don Wright Faculty of Music. Email.

INVITATION AND PURPOSE OF THE STUDY

Your child is being invited to participate in a study investigating music production in public elementary school music. All students in the class will be studying this production curriculum as it is a pedagogical choice by the teacher. It is not a replacement but an alternative pedagogical approach. This approach has been approved by the school board since the music production curriculum meets all the requirements of the existing instrumental performance-based curriculum currently found in elementary schools. Consent will not influence whether or not this pedagogy is implemented. During this study, students will be learning how to produce, record, and manipulate sounds as opposed to preparing for a live performance. In a collaborative participatory action research project, students and teachers will plan, implement and problem solve a music production curriculum, while distinguishing strengths and needs through participant feedback during the process. Your child has been invited to participate in this research as they are in a class where the teacher has indicated their willingness to take part in this research into the spring semester of 2023.
TIMELINE OF THE RESEARCH

Four schools will take part in data collection for the study. The teacher researcher Johnny Touchette, will spend the winter and spring semester engaging in a participatory action research project in his own school and collect data with and from collaborating teachers from other schools, collecting data from grades 3, 6, and 8 between February 2023 and June 2023. Results of the research aim to be published in 2024.

DATA COLLECTION

Data collection during the observational process consists of classroom discussions, three informal semi-structured interviews, that will be 15 minutes or less at a time which occurs during recess, and classroom work. The teachers will observe how students interact with technology and if they remain engaged throughout the music period. Teaching strategies and lesson delivery are also being observed. The classes will be recorded for the researcher to re-examine these classes by observing different students during each playback. This can determine the level of participation. The observations will consist of tracking time, and if curriculum expectations are being met in the amount of time available. The researcher will ask for your consent to use de-identified quotations of interview responses in future publications and/or presentations. You may continue to take part in the research if you choose not to give your consent for the researcher to do so. It is the intention of the researcher to facilitate interviews, observations and document collection in a manner of face-to-face, zoom or via email. Additionally, digitized versions of documents may be sent to the researcher’s password protected, university affiliated OneDrive account. Photographs will be needed to ensure accurate transcription of observation data, and for publishing works. Photographs of consented participants will be taken to recall certain information that seems important at the time of observation.

VIDEO AND AUDIO RECORDINGS

You will be asked for consent to audio or video record the interviews with your child, which is optional and will not be shared beyond the research team. Video interviews will be recorded by using the researcher’s laptop, which also collects audio. Audio interviews will be recorded by using a microphone connected to Soundtrap which is a program in the researcher’s laptop. Consent to use de-identified quotations within future publications and presentations will also be sought. Audio and video recording of interviews are optional. After the interview and observations, I will send you a copy of the transcript for you to check and amend if you wish to make corrections. A link to a password protected copy of the transcript will be emailed to you to access on the document sharing service One Drive. The password required to access the document will be emailed to you in a separate message. This is the link to Microsoft’s OneDrive privacy policy https://support.microsoft.com/en-us/office/how-onedrive-safeguards-your-data-in-the-cloud-2 3c6ea94-3608-48d7-8bf0-80e142ed1e1 and this link takes you to Microsoft’s privacy policy https://privacy.microsoft.com/en-gb/privacy. While I make every effort to guarantee the privacy of your data, it should be noted that no internet-based service can be 100% secure. Your child may still participate if you do not wish for the interviews to be recorded or transcribed. Alternatively, notes will be taken by hand. If you don’t wish for any notes to be
taken, the interview will not take place. Similarly, if you do not wish quotations to be used this will be noted and none of the responses will be quoted. Like online shopping, technology has privacy and security risks. It is possible that information could be intercepted by unauthorized people or otherwise shared by accident. This risk cannot be completely eliminated. We want to make you aware of this.

Here is the privacy information for the use of zoom https://explore.zoom.us/en/trust/privacy/#:~:text=Protecting%20Your%20Privacy&text=End%2Dto%2Dend%20encryption%20for,the%20devices%20of%20those%20participants. Note that Zoom collects both, audio and video recordings.

**BENEFITS OF THE STUDY**

Your child may not directly benefit from participating in this study, but information gathered may provide benefits to society as a whole which include insight and direction into the development and implementation of a music production curriculum in public elementary school music education. Their insight may aid in the development of resources and policies which support teachers who aim to implement an alternate curriculum within their future practice. No risks are associated with this study.

**VOLUNTARY PARTICIPATION AND RIGHT TO WITHDRAW**

You will not be compensated for the participation in this research. The participation in this study is voluntary. You may decide for your child not to take part in this study. Even if you consent to participate, they have the right to not answer individual questions, withdraw consent from specific data collection methods or withdraw from the study as a whole at any time. If you decide to withdraw from the study, you have the right to request withdrawal of information collected about your child. There will be no personal, professional, or financial repercussions placed on you or the school if you decide to withdraw your child’s consent to participate in the study. If you choose not to participate or to leave the study at any time it will have no effect on your child’s academic standing. You do not waive any legal right by consenting to this study. In the event that your child’s teacher withdraws from the study, your child will no longer be able to participate in the study.

**DATA CONFIDENTIALITY AND PRIVACY**

Your child’s privacy will be respected. All participants will self-select pseudonyms. Quotes and references to others will be attributed to these pseudonyms. Email addresses and telephone numbers will be stored electronically with a numerical identifier only. School name, location, and logo will also be de-identified, with a school pseudonym chosen by the researcher. There are no risks associated with this curriculum, and the production curriculum will occur during class time. The data collected is for research purposes only, and regardless of participating in the data collection, no one will be impacted. It is important to note that a record of your participation must remain with the study, and as such, the researchers may not be able to destroy your signed letter of information and consent, or your name on the master list. However, any data may be withdrawn upon your request. Only Johnny Touchette will have access to the data. However, data information will be shared with industry professionals through discussion to address needs,
create content, and set goals. None of this data will include participants’ personal information. Representatives of Western University’s Non-Medical Research Ethics Board may require access to your study-related records to monitor the conduct of the research. The data collected in this study will be kept for 7 years in a secure Western-approved location, after which time it will be destroyed through digital removal in accordance with Western’s Disposal Guidelines and Best Practices.

ANY FURTHER QUESTIONS

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Human Research Ethics.

If you have questions about this research study please contact Johnny Touchette, email. This letter is yours to keep for future reference.
CONSENT AND SIGNATURE PAGE

*Please sign and return to the researcher*

**Written consent to participate in the research**

Do you confirm that you have read this Letter of Information and that you have had all questions answered to your satisfaction?

YES NO

Do you agree to participate in this research?

YES NO

**Written consent to participate to interviews**

Do you agree to your interview being video recorded?

YES NO

Do you agree to your interview being audio recorded?

YES NO

Do you consent to the use of unidentified quotes obtained during the study in the dissemination of this and future research?

YES NO

Do you consent to the analysis of past and present materials such as student’s work

YES NO

Do you consent to the observation of classes selected by the researcher

YES NO

Date: _______________ Signature of Parent or Guardian: ________________

Date: _______________ Signature of participant: ________________

My signature means that I have explained the study to the participant named above. I have answered all questions.

Date: _______________ Signature of researcher: ________________
Appendix N
WREM Approval Letter

Date: 1 February 2023
To: Dr. Ruth Wight
Project ID: 12/43

Study Title: Social Manipulation: Music Production in the Core of Public Elementary School Music Education
Short Title: MP and Elementary Education
Application Type: NNIER Initial Application
Review Type: Full Board

Meeting Dates: 05 Aug 2022 12:30 13 Jan 2023 12:30
Date Approval Issued: 01 Feb 2023 10:15
RER Approval Expiry Date: 01 Feb 2024

Dear Dr. Ruth Wight,

The Western University Non-Medical Research Ethics Board (NNIER) has reviewed and approved the WREM application form for the above-mentioned study, as of the date noted above. NNIER approval for this study remains valid until the expiry date noted above, conditional to timely submission and acceptance of NNIER Continuing Ethics Review.

This research study is to be conducted by the investigator noted above. All other required institutional approvals and mandated training must also be obtained prior to the conduct of the study.

Documents Approved:

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The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario. Members of the NMREB who are named as investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00009941.

Please do not hesitate to contact us if you have any questions.

Sincerely,

Note: This correspondence includes an electronic signature (validation and approval via an online system that is compliant with all regulations).
Appendix O

School Board Approval Letter

![Study: Sound Manipulation: Music Production as the Core of Public Elementary School Music Education (Touchette, John, PI)]

Approval Period: March 9, 2023 to March 9, 2024

Memo

To: John Touchette
From: Research Manager, Research and Decision Support Services,
Date: March 9, 2023
Re: Ethics Approval from External Research Review Committee (ERRC)
Study Name: Sound Manipulation: Music Production as the Core of Public Elementary School Music Education

I am writing to inform you that the [School Board Name] External Research Review Committee (ERRC) has reviewed and approved the above-named project. Please note that approval is granted subject to you seeking formal review by our department of any further changes to the study procedures or methodology. You are also required to report any unanticipated problems involving risks to the participants or others to our department.

This approval is valid for one year (see Approval Period above). For projects which extend beyond this approval period, please request a continuing review form from our department at least two weeks before your approval expires. Each year or at the end of your project (whichever comes first), you must provide a summary of results or final report in accordance with the details stated within your Application to Conduct Research in the [School Board name]. See below for procedures to ensure ongoing project compliance.

The administrators of the school(s), that you propose to include in your project, will receive a copy of this memo as notification that they will be invited to participate in your study. PLEASE NOTE: Approval to conduct research as according to this memo no way obligates principals, staff, students or their families to take part in any research. This memo will serve to inform potential participants, including school administration, that your research project has met all required ethic protocols. School administrators may choose to not participate in this research project at their own professional discretion. The decision for non-participation by a school administrator will be supported and upheld by our office, Research and Decision Support Services.

Informed consent must be obtained from all participants and strict confidentiality must be assured. The [School board name] does not share or approve of student’s personal identifiers being used for external research projects. The [School Board name] considers the anonymity and confidentiality of participants of utmost importance. Should you have any questions, please contact the Research Manager at ...
Yours sincerely,

             Research Manager, Research and Decision Support Services

cc            Superintendent of Alternate School//Lifelong Learning

**Procedures to Ensure Ongoing Compliance**

Upon receipt of an ethics approval, researchers are reminded that they are required to ensure that the following measures have been taken so as to ensure on-going compliance with TCPS Guidelines ([Tri Council Policy Statement](#)).

1. **RENEWALS:** Approvals are subject to annual renewal.
   a. Researchers will be reminded by the [School Board name] in advance of expiry that they are approaching the end of their approval period.
      i. Failure to renew an ethics approval certificate will render projects non-compliant. Non-compliant project activities will be promptly suspended.

2. **AMENDMENTS:** Any amendments to approved project materials must be reviewed and approved PRIOR to undertaking/making the proposed amendments.

3. **END OF PROJECT:** [School Board name] Research and Decision Support Services must be notified when a project is complete. Report submissions are to adhere to the details within their *Application to Conduct Research with the School Board*.

4. **ADVERSE EVENTS:** Adverse events must be reported to the Research and Decision Support Services as soon as possible (within 24h).

5. **AUDIT:**
   a. More than minimal risk research may be subject to an audit as per TCPS guidelines;
   b. A spot sample of minimal risk research may be subject to an audit as per TCPS guidelines.
Appendix P

Dr TooNice Videos

Figure P1

The Fundamentals of a DAW

In this video, Dr TooNice guides users on the basic functions of a DAW. In this case, he specifically focuses on Soundtrap. The main task consists of users importing five tracks into a project and save it.

Note. https://www.youtube.com/watch?v=uC2w6Vz4zL0&t=5s

Figure P2

Creating a Hook and Recording It!

In this video, Dr TooNice provides listeners with ideas on creating a hook. A hook is either a catchy melody, catchy lyrics, or a combination of the two. It can either be instrumental, vocal, or a combination of the two. Furthermore, Dr TooNice provides users with tips on how to record this hook in Soundtrap.
Figure P3

*How to Get a Home Recording Studio Started*

In this video, Dr TooNice provides listeners with gear suggestions when creating your first recording studio. The studio does not require a specific space; however, some equipment will help users with an understanding of how one can record professionally sounding audio. Dr TooNice provides listeners with a step-by-step guide in connecting all the equipment, how to use it, and its purpose.

*Note. [https://www.youtube.com/watch?v=6n0DQAh0fUU](https://www.youtube.com/watch?v=6n0DQAh0fUU)*

*Note. [https://www.youtube.com/watch?v=D_i4ahw9VuM&t=521s](https://www.youtube.com/watch?v=D_i4ahw9VuM&t=521s)*
Verse and Chorus

In this video, Dr TooNice describes how musicians can create a song using AB form. When describing AB form, Dr TooNice explains A as verse, and B as Chorus. In this video, Dr TooNice creates a song using ABA form, and shows users how to use the cut and paste options to maximize tracking time.

Note. [https://www.youtube.com/watch?v=liKHmryemG0](https://www.youtube.com/watch?v=liKHmryemG0)

Tips on Recording Your Voice in Soundtrap (Video 1)

In this video, Dr TooNice provides listeners with different techniques when it comes to recording your voice. Once the voice tracks are recorded, some additional tips on mixing the tracks are provided.
Panning

In this video, Dr TooNice explains how to move sounds on the horizontal plane. Panning consists of moving sounds into the left and right speakers. Some tips are provided regarding anchor points. Anchor points consist of common techniques used in the music industry whereas specific sounds are centered, and other sounds are moved to the right and left speakers.

Note. https://www.youtube.com/watch?v=iC7-S0mZMs0&t=7s
**Figure P7**

*EQ - The Vertical Plane*

In this video, Dr TooNice explains how to move sounds on the vertical plane. Using the equalizer (EQ) to move sounds up and down in a sonic picture is one of the common methods of achieving this task. When multiple tracks are recorded, often they are placed one in front of another. The EQ helps to separate these sounds and achieve a clearer sound. When the sound is muddy, often the EQ is the first plugin to adjust when trying to rectify this sound.

*Note.* [https://www.youtube.com/watch?v=I1e4wOTJn68&t=3s](https://www.youtube.com/watch?v=I1e4wOTJn68&t=3s)

**Figure P8**

*Proximity Plane (Reverb, Delay, Volume)*

In this video, Dr TooNice explains how to move sounds on the proximity plane. This plane provides the illusion of hearing sounds closer and further away. Three of the most common techniques to achieve this goal consist of adjusting the volume faders, or adding reverb, or delay to specific tracks.
Let’s Create a Remix

In this video, Dr TooNice provides listeners with some ideas on creating a remix. He creates a remix during this video as a step-by-step guide for others to follow and to adapt their own ideas. During the video, users will encounter tracking and mixing ideas.
CURRICULUM VITAE

JOHN TOUCHE"ETTE

EDUCATION

Doctor of Philosophy, Music Education
The University of Western Ontario
London, Ontario, Canada
2020-present

Masters of Music Education
The University of Western Ontario
London, Ontario, Canada
2018-2020

Bachelor of Arts & Bachelor of Education
Brandon University
Brandon, MB
2003-2007

Music Performance Diploma
Cambrian College
Sudbury, ON
1999-2003

RELATED WORK EXPERIENCE

Independent Artist
2007-present

-Engaging in song writing, managing bookings, overseeing social media presence, distribution, touring locally and internationally.

-Notable performances include supporting acts such as The English Beat (x3), Shaggy, Af"roman, The Wailers, K-OS, Fishbone, Everlast, Honeymoon Suite, and ill Scarlett.

Elementary School Music Teacher
Simcoe County District School Board
2007-present

-Providing instruction in general music education, overseeing music production and popular music programs, and integrating music technology into the curriculum.
Resident Assistant
The University of Toronto
2023-present

- Conducting participant interviews, contributing to journal publications, and delivering presentations at conferences.

Guest Presenter in Undergraduate Classes
The University of Western Ontario
2022 to 2024

- Instructing undergraduate students in remix creation, song recording, mixing techniques, and delivering informal educational sessions in the Progressive Music Course.

Recording Artist
2010 - present

- Serving as a recording engineer, mix engineer, and mastering engineer.

CONFERENCES

Association of Popular Music Education
Presenter
2021 and 2022.

International Society of Music Education
Presenter
2022

Simcoe County District School Board
Workshop presenter
2018-present

ACHIEVEMENTS

- Involvement with the proposal, creation, and continuation of implementing a music program in each elementary school for SCDSB in 2018.

PUBLICATIONS

Forthcoming.