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Modern Recording Technology and the Music Student: How Formal and Informal Recording Facilitates Music Learning

Les nouvelles technologies d'enregistrement et l'étudiant en musique : comment l'enregistrement formel et informel facilite l'apprentissage de la musique

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Abstract: Modern recording technology is an increasingly significant resource in music education that informs our thinking, listening, analyzing, and performing. In this study, four music learners in their early twenties were interviewed to examine how recording technology informs music learning. Using a constructivist-interpretivist approach, data were analyzed by comparing the unique approaches to recording that musicians take to fit their individual needs. I explore the ways formal and informal recording technologies influence student learning, practice rituals, brainstorming, and musical ability, and how modern recording technology can aid the music learning process. Findings show that recording technology can be a valuable tool in ear training, reflection, and songwriting, though it can also be distracting when used in excess. All participants agreed that in the ever-changing environment of music education, recording technology can be a substantial asset to music learning.

Résumé : Les nouvelles technologies d'enregistrement sont des ressources de plus en plus importantes en enseignement de la musique pour nourrir notre réflexion, notre écoute, notre analyse et notre interprétation. Dans cette étude, quatre apprenants en musique dans la jeune vingtaine ont été interviewés dans le but d'examiner comment les nouvelles technologies d'enregistrement alimentent l'apprentissage de la musique. En utilisant une approche constructiviste-interprétative, les données ont été analysées en comparant les modes d'utilisation de l'enregistrement que les musiciens ont choisis en fonction de leurs besoins individuels. J'explore de quelle manière les technologies de l'enregistrement, formelles et informelles, ont un impact sur l'apprentissage des élèves, les habitudes de pratique, le remue-méninges (brainstorming) et les habiletés musicales, puis, ainsi, peuvent faciliter le processus d'apprentissage musical. Les résultats démontrent que les technologies d'enregistrement sont des outils efficaces pour la formation auditive, la réflexion et l'écriture de chansons. Toutefois, elles con-

stituent également une source de distraction si elles sont surutilisées. Tous les participants s'entendent pour dire que les technologies d'enregistrement représentent un atout important pour l'apprentissage de la musique, surtout lorsqu'on considère que l'éducation musicale est un domaine en constante évolution.

Introduction

Taylor Swift has often said that the voice memos app on her phone has been a primary resource for her songwriting, even in the earliest stages. Modern recording technologies, like voice memos, are an important resource that enable Swift to brainstorm, craft, and demo ideas whenever a spark of creativity hits her (Pierce, 2016). Like never before in history, recording technology can now exist in the home, the classroom, and in the pockets of music learners and listeners around the world, ready for immediate use. Smartphones, laptops, and desktop computers bring accessible recording technology like *GarageBand*, *MIDI*, and voice memos into the possession of consumers in a way that was previously impossible. Recording technologies affect the way music learners and performers like Swift approach their craft, and can open a world of creative possibilities, but can sometimes be distracting and overwhelming with too much information to bear.

For this research study, I interviewed four unique learners who study music in a personal, private lesson, or post-secondary setting. Through our discussions, I explored the ways formal and informal recording technologies influence student learning, practice rituals, brainstorming, and musical ability, and how modern recording technology can aid the music learning process.

For the purposes of this paper, the process of recording is identified as being either *formal*, meaning that the recording is intended to be released to the public and will meet a standard level of quality, or *informal*, meaning the recording is for personal use only. Formal recording often requires production of a track where DAWs (Digital

Audio Workstations) like *GarageBand* or *Logic Pro* are used to mix and master layered sounds to polish and make them commercially listenable. Often these recordings use external technology such as studio microphones, cables, and an audio interface that receives waveform signals and sends them to a computer (Voss, 2016). Informal recording involves using technologies such as voice recorders on a cellphone, a computer's built-in microphone, or a camera to record raw audio that is used to instantly review a practice session, live performance, or a songwriting idea in order to make creative decisions, set goals, and identify good and bad habits (Gamso, 2011). Through this research, I aimed to learn more about the following questions: 1) How does modern recording technology impact music learning? 2) In what ways do music learners utilize formal and informal recording technology to facilitate and engage in their learning?

Methodology

For the purposes of this research, I interviewed four music learners in their early twenties on their experiences using recording technology for music learning and creative work. Interviews lasted between twenty-five and forty minutes, and were semi-structured in nature, consistently expanding into a conversation beyond the foundational questioning. Participants were given several prompting questions on their background, followed by their uses, educational implications, and potential positives and negatives of learning with recording technology. Data were analyzed using a constructivist-interpretivist approach, in which I identified and interpreted emergent themes, which included the positive assistance of recording technology in music making; the potential distractions and overwhelming nature of recording programs; the need for learners to have hands-on experience with the technology; and the distinct approach and capacity that each musician embraces when implementing recording technology into their own musicianship. Constructivist-interpretivist approaches to data analysis take social phenomena as being in a constant state of production and revision in which various perspectives and ideas are always seen as being in conversation with each other to provide a picture of the whole.

Findings and Discussion

Participant #1: Madison Kaye

Madison Kaye is an undergraduate jazz/pop vocal and concurrent education major. During high school, Madison began collaborating with her friend Abby in a duo called Flora, in which the two would experiment with recording technology to write songs, collaborate, and harmonize together. Madison feels that informal recording was an important tool for taking down ideas, brain-

storming, and mapping out demos that drove the direction of their music. Together they even completed an informal recording project - recording a homemade EP that was never formally released and only intended for themselves to hear.

Madison is a songwriter and, as such, having a convenient medium to inform how she crafts her ideas is crucial. When brainstorming, she wants to transcribe her ideas in a way that is "super convenient and accessible to [her]." She started using *GarageBand*, a software included with every Mac computer, and she purchased a separate audio interface. Together with Abby, Madison learned how to navigate the program and equipment *by doing*, and rarely used tutorials to solve problems. She felt a hunger to learn, and gained hands-on experience as quickly as possible. Now, she creates music with her boyfriend Dylan Taylor, who is also a study participant, and she feels her approach remains effective. When creativity strikes, Madison believes recording can capture the spark in a way that notating on paper cannot:

You can't really capture the texture aspect of it when you're writing notation ... the amount of time that it would take for me to notate an idea in my head, by the time I got halfway through the line I probably would have forgotten my idea. Having that voice memo app was definitely way more convenient than just a pen and paper.

In practice, Madison uses recording to create goals and improve based on her own feedback. To Madison, recording is the only way to listen back to yourself "in the moment", and is the best way to reflect: "you couldn't gain that information in any other way." In her school studies, recording technology also improved and changed the way she approaches practicing, particularly when a test is to be completed and handed in by submitting a recording:

If it were a live test ... I probably wouldn't have practiced as much. I would just be like, 'Oh, yeah, it'll be live so I'll just kind of get it over with.'

With the recording, you listen back and say, 'Ah! I can do better than that!'

The "again and again" nature of capturing "the perfect take" when recording can positively affect practice routines and reflection. Madison also notes that testing with recording can alleviate some performance anxiety: focusing solely on the music is the "best way to show what I've learned on the instrument—it's the best of what I can do." With music learning, Madison believes the most important thing is to allow "students to feel comfortable when they're showing you what they've learned", and that a good experience will excite them about learning more. Using recording to alleviate testing pressures can "encourage them to be lifelong music learners, more than something that's stressful and negative to them." Madison also believes in the importance of live performance and jury assessment, to prepare and make a student comfortable

performing in front of an audience; and advises that this approach is more applicable to classroom and private instructional techniques.

Overall, Madison believes in the effectiveness of using recording technology in schools to help kids learn music, practice their instrument, and grow their aural skills. For students who may not have prior recording experience in a classroom or private lesson setting, Madison feels that a basic foundation of technical application can be applied to a recording exercise's outline. This would provide students with a basic knowledge of how to navigate simple recording technology, while leaving the assignment open-ended for individual creativity. Madison thinks recording technology is a powerful tool for all music learning and is one that "gives students a sense of ownership that a lot of other things can't." This ownership is an integral component of recording, as it provides a platform to receive the artistic ambitions of users and create instant audio/visual productivity that stems from their independent freedom and creativity.

Participant #2: Jonathan Harrell

Jonathan Harrell is an undergraduate trumpet major. Jonathan uses the DAW software Logic Pro to map out ideas, create informal songwriting demos, and track his practice progress on his trumpet. In his dorm at school, Jonathan has created a makeshift home recording studio and uses a MIDI keyboard and trumpet to experiment and create. He also uses voice memos on his phone to record and reflect on his practicing. Jonathan believes in the importance of artists finding their ideal workflow to achieve comfortability and efficiency in a physical or digital environment. Interestingly, recording technology is not a strong facilitator in the foundation of that process for him. When songwriting and crafting ideas, Jonathan has a different approach:

Part of my philosophy, a little bit, is that it's really nice to do some of that organically—away from, like, a screen or interface really. Which is still maybe passively using voice memos to record, but just kind of improvising on piano, or trumpet, or singing something. Or if I have a rhythm stuck in my head, I have a notebook manuscript to write little ideas to expand upon later.

Unlike Madison, Jonathan turns to recording technology later in his stages of creativity, after his initial ideas have already been expanded upon. He never relies on recording to drive his output, and often finds that *Logic Pro's* vast library of sounds and seemingly endless options can be distracting. When asked about recording's ability to facilitate music learning, Jonathan stated, "I don't think it's the only facilitator; I really think that it's more about the practice of creativity. In some ways, the technology actually distracts me sometimes." Jonathan sees recording technology less as a *driver* of creativity, and instead more of a *capturer* of it. He analogizes that having too many options and variables in a recording software is

A producer mixing a track at their computer is comparable to a conductor blending the dynamics of their orchestra. They are all directors of sound, respectively.

"somewhat of a rabbit hole", and that it can distract from the main purpose of music making and practicing.

Jonathan's love of music stems from his connection to a community, like that of his high school jazz ensemble. He sees recording technology as a medium to capture musical collaboration among people, like a source of magic. He says, "My goal as an artist and producer is to find ways to ... produce stuff that incorporates elements of live production. If it's really good music, it's really good music and it doesn't need that much production."

Jonathan believes "[recording] is a con if you let it distract yourself from being a good musician." By this example, recording technology is painted as a final finish on what needs to be good musicianship from the source. Quality instrumental practice, tone, collaboration among peers, ear training, and listening skills are the most important factors to music learning, and recording technology is merely an element in the process of capturing, preserving, and presenting that musicianship in the highest quality way. Essentially, it is a tool of service in the building of a musical foundation.

Jonathan believes that recording and musicianship inform each other, and together make both sides better. Producers with knowledge of the instrumentation and a vision of the overall goal they are trying to achieve will know how to efficiently obtain that sound or idea. Likewise, a good musician will know how to achieve the highest quality product in a studio setting that is different from their personal practice or live performance situation. Essentially, both matters are greatly informed by experience. Jonathan's view presents a crucial look at the limitations of recording, and the necessity to not rely on it as a creative driver, but rather, as a medium to capture and foster good musicianship.

Participant #3: Dylan Taylor

Dylan Taylor is a self-taught multi-instrumentalist and singer-songwriter with experience in home recording and production. Like Jonathan, Dylan approaches musical creation from a non-technological approach. Recording, to him, is a luxury for a later point in musical development. For example, when Dylan is songwriting, he will craft a song's main elements using an instrument and notepad to articulate an arrangement before even consulting recording technology. Dylan began experimenting with recording

technology as an elementary school student when his father taught him the basics of GarageBand. By high school, Dylan was using Logic Pro, and now he primarily uses Pro Tools. His learning approach is based on trial and error, a DIY (do it yourself) style similar to the other three participants. This method of learning by doing echoes the constructivist philosophy of education where learners assume an active role in constructing meaning that is unique to their own way of thinking about and perceiving of experiences (Cipriani et al., 2015). Dylan taught himself to produce commercial tracks, utilizing software plugins such as compressors and limiters, and only rarely consulting tutorials online. As a producer, Dylan thinks that isolating individual tracks is crucial to training the ears. “There’s so much more going on in a song than you would expect upon the first listen,” Dylan states. When mixing as a concert sound technician, isolating and layering tracks helps to “put things in the right place, and definitely helps in the live setting too.” A producer mixing a track at their computer is comparable to a conductor blending the dynamics of their orchestra. They are all directors of sound, respectively. When mixing, having good ears is important for making subjective choices. There are always elements that a producer will want at the forefront of a mix, but a skill of knowing when and how much to use is required to ensure a track is listenable, commercially viable, and of the highest quality.

Dylan, like Jonathan, writes songs as completely as possible without taking them into the recording setting. He feels that taking half a song into the recording phase causes him to rush through the rest of its completion before giving it time to prosper. Dylan instead prefers to construct the chords, lyrics, and melody until he’s happy with the result. Then, he uses recording technology to create the elements that are *moveable*: drumbeats, guitar parts, and exchangeable sounds and tones. It provides a way to shift things around, without losing them permanently. The process can be likened to a collage; to find the right place for each element, creatively layering them and trying not to overlap.

Dylan has used voice memos in the past but lately prefers using a pen and paper to avoid unnecessary experimentation, instead translating the natural idea of the song that’s been predetermined in his head. Experimentation, he insists, can occur in a later stage where recording software allows fluidity in adding and changing colour, or altering tone. For music learners in a personal, private lesson, or classroom setting, Dylan believes recording gives students a way to deconstruct their work, studying its elements in real time:

Despite his preference for natural, unplugged creation, Dylan clearly views recording technology as a relevant tool for experimenting, visualizing, arranging, and breaking down the sonic elements of compositions and recorded works.

Participant #4: Felix Moore

Felix Moore is an undergraduate drum and percussion major, and a drummer and songwriter in the band Afternoon Subway. Felix has garnered self-taught experience in recording, mixing, engineering, and producing using Logic Pro, which he uses both formally and informally. Felix uses recording technology to multitrack, layering separate instrumental tracks and vocals to form an ensemble-shaped musical performance. Felix has experienced studio recording from his home setup, as well as at his school’s professional studio where he and participant Jonathan have both recorded. At home, he records small bands or individual projects, and has produced a full-length album with Afternoon Subway. At school, the setting is more collaborative, recording a large ensemble live off the floor, meaning everybody performs together and is captured at the same time with multitudes of microphones, comparable to how an orchestra records.

Felix uses informal recording as a tool to check up on his skills in the practice setting, often on his phone’s voice memos application. Reflecting on a performance afterward gives him “a third perspective; taking yourself out of the element of playing it and being in the listener’s perspective.” Felix believes that going back to a recording allows him to become a better listener. Listening back to a live performance or practice session that felt good at the time, can bring about issues of rushing or dragging, intonation, or dynamics. Similarly, a recording can also ease anxieties about a performance that was not as bad as initially perceived. Felix likens this reflecting to “a bird’s eye view of your playing, that you wouldn’t be able to do without recording yourself.” The third person view helps Felix identify good and bad musical habits, as well as stylistic tendencies, allowing him to make adjustments to his performance approach.

Felix, much like Madison, says informal recording plays heavily into his songwriting, even from the beginning stages. For melodic composition purposes, drums are not his ideal composing tool. Because of this, recording technology allows him to have an array of melodic in-

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struments within *Logic Pro* that he can use to shape and shift his ideas. The way that Jonathan and Dylan use their guitar, trumpet, or notepad as a receiver of musical ideas, Felix uses his recording software. The software then becomes a medium of translation for Felix to brainstorm and map out ideas in real time. This concept is known as using the *recording studio as an instrument* (Cogan & Clark, 2003). Because Felix is primarily a drummer/percussionist, much of his recording work with melodic instruments uses MIDI (Musical Instrument Digital Interface), allowing him to visualize, arrange, and compose melodies and chord progressions in an easy, convenient way (Airy & Parr, 2001).

Sometimes, this approach can piece one part of the song together and allow you to listen back, in order to make constructive decisions about where the song should go next. Felix often uses the phrase “in the moment”, a trait that likely stems from his jazz and improvisatory learning. Like Jonathan, the magic that can only be captured in recording, is expressed in the moment.

Conclusion

Oftentimes, styles like jazz and hip hop are performed in real time. Improvisation is therefore a key factor, where the songwriting process can begin and end in the formal recording stages. Take hip hop, for example: when a beat is established and looped, one or more artists will rap over it as the tape rolls, spontaneously capturing every idea. This concept is known as freestyle rap (Zielinski, 2012). Sometimes ideas are kept, reworked, and re-recorded, and other times, the original performance is stamped as the final composition. Felix is the only one of the four participants for whom recording is crucial to the entire process of composition. Along with Dylan, Felix also has more experience and knowledge in professional production and software navigation than Madison and Jonathan. It is possible to assert that Felix finds recording technology convenient and non-distracting because he has the experience to navigate it efficiently, but since Dylan has equal or greater experience and still prefers to leave recording out of initial stages, recording technology’s application seems to differ based on the preferences individual.

When applying recording technology to the classroom or private lesson setting, flexibility is of the utmost importance. As Madison stated, giving the student a basic foundation of navigating the technology gives them the necessary materials to allow them to make creative and individual decisions through informal recording practices. The student becomes the facilitator of their own learning when provided with the proper tools and knowledge from a source with more experience (Kleinspehn-Ammerlahn et al., 2011). In Dylan’s case, his father sparked his early interest by providing him with access to *GarageBand* and a basic knowledge of “how to hit the red [record] button”. Felix and Jonathan also received their early recording exposure by observing and learning from their respective fa-

thers. Whether from a favourite artist, a parent, an instructor, or an external resource like someone on the internet, a music learner can be inspired by a source of greater knowledge before venturing into their own creativity and personal expression. For teachers, equipping students with the basic technological foundation will encourage them to capture *in the moment* magic when expressing their musicality. Essentially, all four participants believe in the power of hands-on learning and problem-solving by doing and agree that modern recording technology is a highly beneficial tool in formal and informal music making, learning, and performing. What is perhaps most interesting is the unique approach, variation of use, and contrasting views of when and where recording is most appropriate among the four participants. It is made clear that recording technology’s use and effectiveness varies based on the needs of the musician, and through different processes can shape the positive potential of its application.

Modern recording technology is a powerful tool for music learners of all kinds. Whether engaging with informal recording—like using a voice memo app to brainstorm a melodic idea or a laptop to track practice rituals, or formal recording—like mixing and mastering an original composition with multitrack recording in *Pro Tools*, the possibilities of what determined learners can accomplish cannot easily be measured. Recording technology can be used flexibly to allow learners to brainstorm, reflect on, and develop their musicality; and can be implemented at any stage in the creative process, determined by the comfortability and preference of the user. For teachers, preparing students for recording technology use at the basic level will garner the most creative results, allowing the student to become their own facilitator. The only constant in music is that it is ever-changing, and like the historical developments of the phonograph, amplifier, or synthesizer, modern recording technology is another resource to help achieve the ultimate goal of being creative and expressive musicians.

Author’s Note

It is interesting to note, in hindsight, that the importance of recording technology has grown exponentially since this research was originally conducted. Having been conceived mere weeks before the world would enter quarantine due to the COVID-19 pandemic, musicians and artists alike suddenly had a sole reliance on recording technology to continue communicating, creating, and performing in socially distanced settings. More than ever before, musicians are bringing recording technology into their homes and shaping, shifting, and adapting it to meet their individual needs. Whether it is simulating and redefining the recording studio, concert stage, or music education classroom from the comfort of home, the necessity of continued music making during challenging times has driven artists to think outside the box and reimagine the possibilities of musicianship through mod-

ern recording technology. Together through combined efforts, creativity, and the utilization of these modern tools, musicians will be able to navigate and even thrive within this undeniably new era of music making.

Notes

¹ All names have been changed to pseudonyms

² Having the ability to perceive musical elements such as pitch, tone, or timbre

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