

**Technology Use in Instrumental Practicing:
A Mixed Methods Study of Middle School Band Students**

by

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A dissertation submitted to the Graduate Faculty of

Auburn University

in partial fulfillment of the

requirements for the Degree of Doctor of Philosophy

Auburn, Alabama

May 7, 2022

Keywords: deliberate practice, flow, middle school band, self-regulation, technology

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Abstract

Deliberate, thoughtful, and structured practice is critical to developing proper skills on an instrument (Barry & McArthur, 1994; Byo & Cassidy, 2008; Duke et al., 2009; Hallam, 2001a; Lehmann & Ericsson, 1996; Miksza, 2007; Oare, 2012; Prichard, 2017; Ramsey, 2001; Rohwer & Polk, 2006). Yet, many young music students have difficulty maintaining focus while practicing, especially if that student has unclear goals, a practice environment that is not conducive to effective and deliberate practice, and low self-efficacy (Rojas & Spring, 2004). High-achieving music students are more likely to incorporate structured and focused goals in their practicing (Ericsson et al., 1993; Miksza, 2011). Structure, goals, patterns, challenges, feedback, and a sense of control over an activity or experience are also characteristics of flow theory (Csikszentmihalyi, 1975). Metronomes, tuners, drones, recordings, etc. on personal devices allow students to expand their connections in music education beyond the classroom. Many American children grow up surrounded by the overstimulation of technology and the resultant multitasking which may hinder their ability to be productive and develop self-efficacy for self-regulated learning (Alghamdi et al., 2020; Strom, 2014). Research exists on practice strategies, self-regulation, flow theory, and technology within and outside of the music classroom. However, there is little research on how young musicians engage with their technology while they practice.

The purpose of the study was to determine how middle school band students in grades seventh and eighth use and interact with technology while practicing their instruments, and in broader terms, to understand middle school students' abilities to self-regulate their practice and learning specifically through the lens of technology use. I chose seventh and eighth grades due to the emerging nature of musicianship in the students. This research relied on self-reported data

from middle school band students. I employed a convergent mixed methods design in which I collected quantitative and qualitative data concurrently, analyzed the data separately, then compared the findings. I used a survey to collect quantitative data and conducted student focus group interviews to gather qualitative data. The desired sample population was middle school band students in grades seventh and eighth in multiple middle schools in East-Central Alabama.

I organized the findings into the following themes: (a) student use of music technology in practice sessions; (b) use of personal devices during practice, specifically music applications and attitudes toward music technology; (c) student use of self-regulation strategies; and (d) student motivation. The participants felt encouraged by teachers to use music technology when they practiced and viewed technology as a valuable tool for practicing. Participants regularly incorporated technology into practice, yet technology did not increase students' overall enjoyment of practice. Students used music technology in combination with practice records to set performance goals when they practiced. The participants shared self-regulation techniques such as using headphones and regulating responses to device notifications. The concept of flow was present in the participant testimonials regarding self-regulation and enjoyment of practice. Further, the participants valued technology for its ability to help improve their overall musicianship which in turn improved their ensemble.

The results of this study show that students are motivated to improve on their instruments and understand that individual musical growth enhances their ensemble. Participants did not feel anxious about missing notifications on their personal devices and preferred to respond to notifications after their practice was complete. Practice records contributed to a regimented practice schedule and led students to value performance goals over time-based goals. The results

of this study could inform music teachers of the ways students respond to practice records, goal-setting, and technology as a tool for effective practice.

Acknowledgements

“An education is something that no one can ever take away from you.”

These words from my Granddaddy inspired me to pursue a career in education, and to learn, listen, and be proud of the work I do. I have many people to thank for helping me in those endeavors. First, I would not be as driven without the strong support system that has encouraged me from my very first steps. To my parents, Al and Carol Haynes, thank you for supporting and loving me through every phase of my life. Your example of a strong work ethic provided me with the tools and strong foundation I needed to set goals and work toward them daily. I am grateful for my late grandparents, Bob and Kate Perry and Nell Haynes, who attended every band concert they could in order to be an active part of my life. My entire family and church family encouraged me with kind words and love, and I am lucky to have grown up with a sister who has always been my biggest cheerleader. Thank you, Ellen.

I feel fortunate to have so many strong mentors throughout my career. Thank you to Dr. Jane Kuehne for sharing your wisdom, advice, and for listening and caring about me as a person first and student second. Thank you to Dr. Richard Good for providing so many opportunities for me to grow as an educator and musician throughout every phase of my career. Thank you to Dr. Nancy Barry and Dr. Jill Salisbury-Glennon for your expertise and guidance through the doctoral program and the dissertation process. Every teacher from Kindergarten to the present day has shaped me into the person I am today, and I am very grateful to each one. Last but certainly not least is my husband, Darcy. Your selflessness, love, patience and encouragement have kept me going on the toughest days. I can never thank you enough for sacrificing so much to help me achieve my goals.

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Chapter One

Introduction

“The act of *practicing* – learning through systematic experience or exercise – has long been viewed as essential to knowledge/skill acquisition and development in a range of disciplines, including music” (Austin & Berg, 2006, p. 535). Practicing is critical to skill development; however, many variables may affect whether the time spent practicing is effective in accomplishing goals or tasks. For many young music students, maintaining focus while practicing is often difficult, especially if a student has unclear goals, a practice environment that is not conducive to effective and deliberate practice, and low self-efficacy (Byo & Cassidy, 2008).

Clear practice procedures help students distinguish between efficient and inefficient practice (Miksza, 2007). Ericsson, Krampe, and Tesch-Romer (1993) outlined the role that deliberate practice served in a student’s ability to achieve expert performance and found that focused students achieve more than students who do not have structured goals for their practice. McPherson and McCormick (1999) conducted a study on the relationship between cognitive practice strategies, self-regulation, motivational components, and the quantity of music practice, and found that students who complete structured, thoughtful practice are more intrinsically motivated and “tend to be more cognitively engaged during their learning and therefore more likely to succeed” (p. 101). Csikszentmihalyi (1990) studied chess masters, musicians, athletes, and experts in other fields of study and found that the experience of “flow” occurs when an experience is so enjoyable that individuals will do that activity for the enjoyment of the activity itself. Structure, patterns, goals, challenges, feedback, and a sense of control over the activity are

similarities between Csikszentmihalyi's flow theory and John Dewey's description of a completed experience (Csikszentmihalyi, 1975).

The World Health Organization released a statement on March 11, 2020 officially classifying COVID-19 as a pandemic due to the rapid rise in confirmed cases worldwide (Ghebreyesus, 2020). Since then, many students have shifted to blended or fully online instruction, and laptops are essential for all students (Dontre, 2020). Many school systems from elementary, secondary, to post-secondary, are encouraging and even requiring students to interact with technology to complete school-assigned tasks (Almaghaslah & Alsayari, 2020). Technology is a beneficial tool for learning in instrumental music education, but technology may also pose a distraction in the learning process, especially for young students who do not yet possess a deep breadth of knowledge of their instrument. Rosen, Carrier, and Cheever (2013) found that technology, specifically social media and television-watching, distracts students as they attempt to complete tasks.

Need for the Study

There is much research on the importance of practice and the plethora of practice strategies that lead to successful music performance. Technology is more accessible, convenient and is increasingly used in music instruction and individual practice. Musicians of all ages can quickly reference a metronome, tuner, recording device, and more from the palm of their hand within their personal device. However, there is little research on the amount of focused time young music students give toward their practicing while the presence of a cell phone, tablet, or other personal device is near. Further, many students do not ask for help with practice strategies because they are not yet aware of practice improvement, or they do not realize they have inefficient practice skills.

Due to COVID-19, social isolation, and an often hybrid instructional mode that blends classroom and at-home instruction, many middle school students use technology as their connection to each other and the world around them. Therefore, keeping students engaged and on task is more important and increasingly difficult (Schmidt, 2020). My research benefits music education by providing insight into how middle school band students use and interact with their technology while practicing their instruments. The choice to use young music students in grades seventh and eighth is due to the emerging nature of music performance and cognitive skills with decision-making processes in this age group. Further, the school systems used in this study begin band in seventh grade. By studying young music students and the way they allocate their practice time and utilize technology, I aimed to create a starting point to explore better ways to build technology use and instruction into teaching and practicing.

Statement of Purpose

The purpose of the study was to determine how middle school band students in grades seven and eight use and interact with technology while practicing their instruments. I surveyed and interviewed students in grades seven and eight in multiple middle schools in East Central Alabama and employed a mixed methods approach using both quantitative and qualitative research methods.

Assumptions

This study was based upon the following assumptions: that the participants are all members of their middle school band programs and have played their instrument for at least one month to three years, and thus are emerging young musicians; that the participants have fully read and indicated their responses accurately to the survey questionnaire items to the best of their ability; that the selected participants responded truthfully in focus group sessions; and that the

students in this research have a personal device and/or a school-issued piece of technology that they use for completing homework (including being used as an aid in practicing their instrument). The participants verified their ownership of a device before completing the survey.

Positionality

Creswell and Poth described positionality as a two-part concept on reflexivity: relaying past experiences with the explored phenomenon; and a discussion of how these experiences “shape the researcher’s interpretation of the phenomenon” (2018, p. 229). I spent six years teaching middle school band at two schools in separate states before returning to Auburn University to pursue a Ph.D. full time. While teaching grades six through eight, I observed a variety of ability and skill levels in the students I taught. I was fortunate to teach in schools that had multiple ensembles divided by both age and ability level, and as such I witnessed students’ growth from their first interaction with an instrument to their refinement of skills as emerging young musicians. I also observed behaviors typical of adolescent individuals such as mismanagement of time, low self-efficacy, inability to identify and/or establish clear goals, and poor communication skills. A behavior I observed frequently was one of distraction from the task at hand, often due to another classmate, a wandering mind, or technology and/or devices the student possessed.

I consider myself a blend of a digital immigrant who willingly uses technology and believes it can be beneficial on some tasks, and a digital native who uses technology for numerous tasks and has grown up around technology. I find technology helpful, but often find myself distracted by the temptation to check for a text message, notification, or new email. I work to exercise self-control in managing my technology use while also working to complete focused tasks such as reading, writing, or practicing my instrument. As an adult, I find it

challenging to separate myself fully from my technology, especially when using it to complete those tasks (i.e. using a metronome and tuner on my cell phone while practicing). My interest in this topic developed from my own observations of young musicians attempting to focus their time, manage their use of personal devices (including notifications from friends and family, social media notifications, and their loss of time when checking their device) while balancing technology as a supplemental tool for learning.

Delimitations

This study is delimited to only the students who participated in middle school band at the selected schools chosen for this research study. The band directors at each school assisted in recruiting participants for the study. Only the students who assented and whose legal guardians gave permission were able to participate. I chose to delimit the target population to middle school band students due to the lack of research on this specific age group and their emerging interactions with technology in music practice. The results are not generalizable to any other age or area because the participants in this study were in seventh and eighth grade.

Limitations

A full discussion of the limitations of this study and their implications on the data collected and overall findings is included in Chapter Five. Several limitations emerged while conducting this research. I was limited to only participants who returned fully completed and signed consent and assent forms to their band directors. Dillman et al. (2014) stated that coverage error occurs when the sample surveyed does not represent the entire population. There is an obvious concern for coverage error in this research as the small sample of participants does not represent the entire population of seventh and eighth grade band students from these schools. The survey contained largely factual questions measuring characteristics, behaviors, and/or

circumstances of the participants. I asked young participants factual questions to seek information on self-regulation and practicing, however it is difficult to verify these responses especially without follow-up questioning of the participants (Gonyea, 2005). I conducted this research during the global COVID-19 pandemic which limited my availability and outreach to the potential participants. It was difficult to hear the first interview due to the face masks the participants wore and their proximity to the ongoing band rehearsal. Communication with the participants in the first interview was difficult and though I recorded the interview, inaudible sections in the recording made transcribing parts of the interview impossible. Had the interview taken place in a face-to-face setting, there may have been fewer communication barriers with the participants.

Research Questions

The following research questions guided my study:

1. Do students use music-related technology in their practice?
2. In what ways do students interact with their personal device during their practice time?
 - 2.1. Is there a relationship between the way(s) that students interact with their personal device and their perceived success on their instrument; their enjoyment of practicing their instrument; and/or their perceived focus while practicing?
3. In what ways do students employ self-regulation strategies to remain focused in their practice while using technology?
 - 3.1. In what other ways is technology used in practice sessions?
4. How do students feel about their levels of motivation while practicing?
 - 4.1. Is there a relationship between how much the students enjoy practicing and the number of times they feel unmotivated while practicing?

Definition of Terms

- Deliberate practice: practice activities that involve specific goals and strategies (Ericsson et al., 1993)
- Flow: the state of being in which an individual becomes consumed by the enjoyment of working towards a task, skill, or goal in such a manner that sense of time and external surroundings do not detract from the pursuit of the skill. (Csikszentmihalyi, 1990)
- Music-related technology: any application, contained on a computer or personal device such as laptop, cell phone, or tablet, or functioning as its own independent tool (such as a tuner or a metronome) that enhances the performance, practice, and/or development of music technique and understanding. Music-related technology may be tuners, metronomes, drones, recording devices, video players, or software and/or applications that aid in rhythm accounting and note naming.
- Self-regulated learner: an individual who uses goal-monitoring and self-reflection to monitor their effectiveness at a task (Zimmerman, 2002).

Chapter Two

Review of Related Literature

Practice Strategies

Multiple pathways lead to productive practice. Coffman (1990) examined the effects of physical practice alone, mental practice alone, a combination of mental and physical practice, and motivational control. The participants read an article on sight-reading to motivate them to engage fully with a sight-reading exercise. After a pretest and a posttest, the results revealed that physical practice and a combination of physical and mental practice yielded shorter performance times which showed that these were the most productive practice methods. Though mental practice is a proven method of practice, Barry and McArthur (1994) found that many music teachers did not emphasize the importance of mental practice to their students as an option. While discussions occurred in classrooms stressing the importance of practicing, many teachers were not explicit in their methods of teaching or instructing students to practice effectively. Teaching young students how to practice effectively is a critical and often overlooked aspect in the beginning band classroom (Ramsey, 2001).

Educators affect students' abilities to methodically structure practice time. Barry (1990) found that when students were divided into three practice groups (instructor-designed practice group, student-designed practice group, free practice group) that students in the instructor-guided and student-designed practice groups had the most success in using established practice strategies that enabled them to "correct more performance errors than those subjects not using a specific method (free practice)" (p. 6). Prichard (2012) proposed that large-ensemble directors teach practice strategies and goal setting during rehearsals to show students how to do this in their own practicing. Similarly, Prichard (2017) found that middle school students were able to

identify more practice techniques and strategies as well as establish clearer goals and methods in their practice time after a series of instructional methods and interventions were introduced in their daily band class. Students' practice times were more thoughtful, more deliberate, and more beneficial when they received structure and intervention.

Comprehensive knowledge and understanding of practice strategies is key to determining practice success among middle school students. Rohwer and Polk (2006) observed 65 eighth-grade instrumental students in a pre and posttest measurement of learned practice strategies. The students verbally described their practice techniques before sight-reading an exercise, then practiced the exercise and played it again. The researchers found a positive correlation between the number of verbalized practice strategies and performance improvement. In a similar study, Hallam (2001a) observed 55 string players as they spent 10 minutes practicing a short etude and then performing the etude. Hallam conducted interviews with each student after the performance of the etude to determine what practice methods the students employed, such as memorization, interpretation, and practice. The results showed that through the varying levels of expertise among the participants, the students who had more experience on their instrument had more advanced practice strategies. Hallam observed a difference between cognitive strategies and aural strategies implemented among the students. There may be reason to believe that how students interpret and perceive a piece of music depends on their base understanding of musical knowledge and skills. Perhaps the way students learn music may also determine the type of technological assistance they need in their practice sessions.

Musicianship is a lifelong venture that develops through acquisition and implementation of knowledge, skill, and structured practice. McPherson (1997) conducted a longitudinal examination of cognitive changes in high school wind instrumentalists and found that as students

mature, they develop the ability to play by ear as well as internalize and visualize music taking shape. This discovery reveals cognitive growth that develops significantly during the intermediate stages of learning an instrument. Mental rehearsal (specifically aural and creative activities) away from the instrument was also important in skill development (McPherson, 1997). Miksza (2006) studied college brass players and found that the students who incorporated strategic planning used music technology in the form of recordings, metronomes, and tuners to remain on task as they practiced. Further, Miksza (2007) explored the relationship between observed practice behaviors, a student's self-reported practice habits, and the performance achievement of high school wind instrumentalists, and found that students structure their practice time differently. Performance achievement did not correlate with the amount of time practiced, rather the quality of a student's practice time determined the performance ability of the student.

Students may assign their practice goals to correspond with a time goal (usually in minutes) for their practicing. Traditionally, time-based goals are commonly assigned to younger students by music teachers, associating practice goals with time-based goals. Duke et al. (2009) studied the practice behaviors of undergraduate and graduate level piano majors and concluded that attaching a specific amount of time to a practice goal was not as effective as employing error-correcting strategies such as labeling errors made while practicing, modifying the tempi within the music, and repeating specific passages in the music. The researchers remarked that "if there is broad agreement that providing good models is an effective strategy for learning, then why are there so few available models of effective practice?" (p. 319).

Deliberate Practice and Engagement

Many variables affect the way a student practices, including ability level, age of the student, and the intent behind the practicing. Byo and Cassidy (2008) described formal and

deliberate practice as “planned, structured, and goal oriented” (p. 33). Lehmann and Ericsson (1996) further clarified the terms, stating that “the theoretical concept of deliberate practice is restricted to learning activities with specific goals and activities. A student who engages in drill while thinking about something else may experience only minor, if any, benefits for improvement in music performance” (p. 47). Ericsson et al. (1993) examined the many factors that create effective and deliberate practice and found that environmental support in the form of immediate feedback and instruction is critical in developing deliberate practice. The amount of time a student spends practicing is impactful to their results, therefore a highly motivated student who focuses their time during each practice session will achieve better results than a student who spends more time practicing mindlessly, as deliberate practice is a structured activity designed to improve performance. Expert performers have no specific characteristics over non-expert performers, rather, it is the culmination of environmental factors, a supportive teacher and/or parent figure, motivation, and deliberate thoughtful practice.

Deliberate practice is observable in a variety of fields. Macnamara et al. (2014) conducted a meta-analysis of deliberate practice in sports, music, games, and education and concluded that deliberate practice explained 21% of the variance in performance. Performance achievement and deliberate, thoughtful practice are linked. Miksza (2011) observed practice behaviors of 55 university brass and woodwind players for approximately 45 minutes in which the students were instructed to sight-read an etude, practice, then perform the etude once more in its entirety. Following the completion of the practice requirement, the participants completed a questionnaire in which they self-reported average daily practice time, time spent in formal practice, informal practice, and the average number of times they practice each day. Miksza (2011) found a significant relationship between the observed practice behaviors and performance

achievement, which suggests that the students who practiced in a more strategic and goal-oriented manner also had higher performance achievement.

Many students complete homework assigned by teachers (rather than self-assigning) therefore volitional control plays an important role in implementing strategies that keep students on task and goal-oriented (Xu & Wu, 2013). McCann and Turner (2004) compiled a list of tactics that teachers can use for teaching volitional strategies to help students understand their own learning styles. Students make meaningful experiences when they are motivated, therefore the ability to understand and utilize strategies to plan, organize, learn, and manage distractions is critical in successfully completing tasks. McCann and Turner (2004) suggested that teachers encourage self-reflection by having students describe their work plan for assignments, declare and establish strategies to stay focused, and reflect on any difficulties they had that may lead to frustration. Modeling and feedback are important in helping students develop these strategies. Students who achieve their learning goals have “effective strategies for learning” and “take control of their learning. Effective work habits displayed by self-regulated learners include planning, organizing, self-instructing, and self-monitoring during the course of completing their assignments” (McCann & Turner, 2004, p. 1696).

Occasional off-task behavior may be beneficial in long-term musical success because it allows brief moments of rest within concentrated practice time. Lehmann and Ericsson (1996) further reiterated the sentiment that “although not all behaviors that a student displays during a practice session meet the requirements of deliberate practice, they may serve a multitude of different functions, such as maintaining interest and motivation through play and relaxation” (p. 47). A young musician’s schedule and ability to practice regularly is also important in the development of deliberate practice. Rojas and Spring (2004) found that internal challenges such

as fatigue, amount of schoolwork, illness, anger, and hunger were the biggest distractors and hinderances in the participants' self-efficacy to maintain practice schedules. Predictive factors of practice self-efficacy to sustain schedules were days of the week, hours per week of practice, and age (Rojas & Spring, 2004). The challenge to maintain focused practice time is not isolated strictly to young music students. Byo and Cassidy (2008) surveyed 39 instrumental music education majors at a southern university on their practice habits and practice time use. Seventeen out of the 39 participants cited better self-discipline as the one aspect that would improve their practice efficiency. More established practice techniques followed, such as clear goals, personal attributes, and practice environment.

Oare (2012) examined the decision-making processes of middle school band students in grades seven through nine as they practiced. The researcher observed each student for 20 minutes of individual practice then immediately interviewed the students to discuss their practice. The results showed that students were able to achieve more focused practice when they concentrated on meeting a performance goal rather than a time goal. Clear goal setting is more beneficial to students' success than vague goal setting and often students have difficulty determining what practice strategies to use. Four themes emerged in Oare's findings: motivation, goals, strategies, and assessment. Motivation differed between the students in that some students practiced parts of the music that were enjoyable to fulfill a time quota. Other students practiced certain pieces they knew needed work, yet often the students were not able to describe why the pieces needed work, or what exactly to do to improve certain areas of the music. All students in the study expressed high self-efficacy for goal accomplishment, though some admitted it could take a long time to reach those goals. Each student spent varying amounts of time on the difficult passages before transitioning to other exercises, and some students took a break from the

challenging passage to work on music they could perform better before returning to the difficult passage. The researchers observed that in the 20-minute practice session, the time between eighth and twelve minutes is when students began to lose focus on the practice and the researchers observed a noticeable decrease in persistence.

Often the goals students set were reactive instead of proactive, which led to many poorly planned practice sessions. Students demonstrated knowledge of practice strategies but often not the understanding of when to use the strategies to help them improve. Frequently, the students knew the practice strategies that may help them (such as repetition) but did not execute them during practice. Self-assessment for these students took the form of: “clarity with which they could define the criteria for successful achievement of goals” and the students’ ability to recognize mistakes (Oare, 2012, p. 68). Implications from this research point to the importance of enforcing clear, achievable, performance goal setting in practice sessions and providing students with strategies to help them achieve success in their practice.

Flow Theory

Mihaly Csikszentmihalyi (1990) observed musicians, chess masters, athletes, and experts in other fields of study and developed the concept of flow which is “the state in which people are so involved in an activity that nothing else seems to matter; the experience itself is so enjoyable that people will do it even at great cost for the sheer sake of doing it” (p. 4). Flow exists on a spectrum that varies in complexity (Csikszentmihalyi, 1975). There are similarities between the idea of flow and John Dewey’s description of a completed experience: structure, patterns, goals, challenges, feedback, and a sense of control over the activity or experience (Csikszentmihalyi, 1975). Csikszentmihalyi, in an interview on flow theory in practice in the field of education, stated:

I agree that, deep concentration, which becomes action and awareness merging, those two, actually deep concentration is the origin of all the others. It's the origin of becoming one with the activity. It's the origin of forgetting time. All of these depend on the fact that you are focused on what you're doing. I think that is the essential one from which all others come (Beard, 2014, p. 358).

Disengagement from an activity or skill can occur when individuals retract from an activity to put energy towards a different flow-related activity (Tse et al., 2018). Disengagement may take the form of pursuing another activity that is better suited for the achievement of flow. "When people experience developmental losses and consequently challenge-skill imbalances, they can respond by either engaging more in the affected domains and resolving the challenge-skill imbalances...or by disengaging from the imbalanced domains and pursuing flow experience from other sources" (Tse et al., 2018, p. 176). Young students who find challenges in their music are faced with two options: turn away from the practice on their instrument for flow achievement in another area or keep modifying their approach to the difficult passage to achieve flow in their practice. "A high initial value of the original goal increases the likelihood of sustained engagement and reduces the likelihood of disengagement" (Tse et al., 2018, p. 178) which reveals that young students who hold music performance achievement in high regard are more likely to remain engaged with the activity.

Flow is experienced at the intersection of proper skill acquisition, steady progress through challenges, and enjoyment of an activity. Hopkins (2013) examined wind band programming through the frameworks of Csikszentmihalyi's flow theory and Vygotsky's zone of proximal development. Vygotsky conceptualized the zone of proximal development which shows distance between what the independent learner believes they can learn and the level of

potential development possible as perceived by a more able person. Using these frameworks, Hopkins (2013) envisioned a rehearsal environment that encourages students to develop mastery of technical skills and musical concepts while also exploring potential for new musical learning. Personality type (whether a person is extraverted or introverted) can be a factor in how and when individuals achieve flow. Lui and Csikszentmihalyi (2020) found that flow commonly occurred in solitary scenarios as opposed to social engagements. The researchers also found that while introverts had difficulty achieving flow in social scenarios, extraverts were able to achieve intense flow both socially and alone. Achievement goal theory offers a perspective on motivation that relies on the type of achievement a student aims to possess. Achievement goal theory suggests that goals can be divided into one of two categories: performance or mastery. Performance goals are characterized by normative standards and reflect a desire to demonstrate competence by outperforming peers. Mastery goals involve a desire to develop competence by improving and learning all you can, and focus on task-based standards (Senko, 2016).

Results of a survey of achievement goals of 130 first-year instrumental music students in Norwegian music academies revealed that students generally tended to be oriented towards task goals, followed by ability-approach goals, but not ability-avoidance goals (Nielson, 2008). The researcher measured achievement goals using prompts such as “I want to do better than other students on my principal instrument” and “an important reason I practice my principal instrument is so that I don’t embarrass myself” (Nielson, 2008, p. 241). Further, Nielson divided measured learning strategies into either cognitive, metacognitive, or social learning strategies. Results from this study also revealed that students who reported higher use of learning strategies are more often oriented towards a task goal, which implies that the students who are focused on “learning, self-improvement, and the mastery of challenging music also were more likely to be

cognitively, metacognitively, and socially involved in trying to learn music” (Nielson, 2008, p. 244).

Self-Regulation and Practice Motivation

Self-regulated learners set goals, select appropriate learning strategies, maintain motivation, monitor progress, and evaluate their outcomes (Bembenutty, 2011). Zimmerman (1990) placed students’ use of self-regulated learning strategies, responsiveness to self-oriented feedback about learning effectiveness and students interdependent motivational process in his definition of self-regulated learning. John Dewey, E. L. Thorndike, and Maria Montessori formed a new era of psychology study in the 20th century and developed ideas for a new curriculum that would be adaptable to students’ various learning needs and styles (Zimmerman, 2002). Teachers should attempt to understand their students’ strengths and abilities in the learning context. Teachers should also help students discover these strengths for students to become autonomous and self-regulated learners. Self-regulated learners use goal-monitoring and self-reflection to monitor their effectiveness at a task. According to Zimmerman (2002), the following three characteristics are critical in a self-regulated learner:

1. A deep knowledge of a skill, self-awareness, self-motivation and behavioral skills are critical in the ability to put knowledge into practice.
2. All individuals can develop self-regulation. These self-awareness strategies are needed to develop this skill: goals; strategies in place to achieve the goals; the ability to monitor one’s performance; the ability to modify their learning environment; time management; recognizing that results are caused by the effort put in; and being malleable with future methods.

3. A person's perceived self-efficacy and intrinsic interest in a task directly correlates to their self-motivation to work towards that task.

Three cyclic phases occur in self-regulation (Zimmerman, 2002). The forethought phase is the development of goal setting and strategic planning, and one's self-efficacy, outcome expectations, intrinsic interest and learning goal orientation(s) are what make up this phase. The second phase is the performance phase which requires self-control and self-observation and may take the form of self-instruction, attention focusing, and self-experimentation. The third phase is self-reflection, in which a person exhibits self-evaluation and self-reaction (Zimmerman, 2002). Teachers must give students choices to create self-regulated learners, which is difficult to do within a classroom setting. Often teachers assign goals rather than let students establish their own goals. Students need a certain amount of knowledge to self-regulate their learning; however this can be especially challenging at the middle school age. A student's ability to self-regulate is evident in their social interactions as well as their solitary moments. It is important to focus on each child's ability to self-regulate their time and learning both at school and at-home-learning settings. Epistemic beliefs also relate to a student's perceived abilities, as individuals with a more sophisticated and less naïve perspective on knowledge acquisition are more likely to use metacognitive and effort regulation strategies in their practicing (Nielson, 2010).

Three key components of motivation are autonomy, mastery, and purpose (Pink, 2009). Students manage their own motivation in a variety of ways, and teachers may be able to help students learn to self-motivate through guidance and instruction (Miele & Scholer, 2016). McPherson and McCormick (1999) studied the likeliness of a relationship between cognitive practice strategies and self-regulation, motivational components such as intrinsic value, and the quantity and content of musical practice on college pianists. A series of regression analyses

revealed that “subjects who reported greater practice in informal/creative activities, repertoire and technical work tended to be more cognitively engaged while practicing. These subjects also tended to express more intrinsic interest in learning their musical instrument” (McPherson & McCormick, 1999, p. 101). Researchers will continue to explore the effects of the COVID-19 pandemic on student learning, but one noticeable issue is the lack of motivation that students have towards completing assignments through online learning as opposed to face-to-face instruction which can be particularly difficult in courses where abstract concepts and thinking are part of the content (Tang et al., 2020).

Self-regulated learning includes self-control as well as academic self-efficacy and learning strategies such as asking for feedback from teachers (Duckworth et al., 2019). Pintrich and de Groot (1990) studied seventh grade students’ self-regulation, motivation, and classroom academic performance in English and science classes and found that high levels of self-reported self-efficacy and intrinsic value had higher levels of cognitive strategy use and also correlated with high levels of self-regulation. Prior achievement predicted self-regulation, but cognitive skill use was not dependent on prior achievement. Students who had higher grades were more likely to report the use of self-regulatory strategies. Students who reported high achievement also had higher levels of intrinsic value and self-efficacy across various tasks. This is consistent with Xu and Wu’s (2013) conclusion that students with higher self-reported grades were more likely to use homework strategies. Leon-Guerrero (2008) studied methods of self-regulation employed during practice by 16 middle school students and found repetition to be the most frequently used self-regulation strategy. If young students need explicit and clear instruction to better organize their practice time, it extends into students’ use of technology as well.

Evans (2015) examined music learning through the framework of self-determination theory. Self-determination theory features two components: (a) self-growth, found through both the fulfillment of competence (efficacy), relatedness (connectedness), and autonomy (choice); and (b) personal wellbeing, fostered when motivation is internalized and aligned within (Evans, 2015). In music education, Evans claimed that many teachers use external sources of motivation (such as gold stars or an upcoming performance or assessment) which results in decreasing a student's ability to become internally motivated and fulfilled.

Schatt (2018) examined factors that motivated middle school band students to practice their instruments using self-determination theory as a theoretical lens. Four hundred and forty-four band students in fifth grade and 352 eighth grade band students in several school districts in Ohio completed a questionnaire. The survey was an adaptation of a sports motivation survey initially created and used in 1995. Schatt modified the questionnaire for music, with 28 Likert-type scale items pertaining to music practice motivation and a section that collected demographic information. Seven subscales corresponded to components of self-determination theory and intrinsic motivational processes: (a) Intrinsic Motivation-To Know, (b) Intrinsic Motivation-To Accomplish, (c) Intrinsic Motivation-To Experience Stimulation, (d) Extrinsic Motivation-Introjected, (e) Extrinsic Motivation-Identified, (f) Extrinsic Motivation-Introjected, and (g) Amotivation. Results showed the three Intrinsic Motivation subscales to be rated higher than the Extrinsic and Amotivation scales, which revealed that middle school students wanted to learn more about their instrument, successfully accomplish tasks, and experience positive stimulation of music. Students rated extrinsic motivation lower than intrinsic motivation, meaning students preferred to practice their instrument for intrinsic benefits over extrinsic rewards. Schatt

suggested that “teachers and parents could create autonomous learning environments that encourage students to learn more about their instrument and the language of music” (p. 219).

Goal direction, focused attention and the use of self-regulation and deliberate practice strategies are included in the measurement and explanation of formal practice. Bonneville-Roussy and Bouffard (2015) established a framework that illustrated the relationship between self-regulation, deliberate practice strategies, and practice time and how these variables contributed to overall musical achievement prediction. Two hundred and thirty-five university music students completed a survey in which they responded to prompts on their motivational profile, self-perceptions of musical competence, formal practice, goal direction, focused attention, self-regulation strategies, deliberate practice strategies, practice time, weekly practice, weekly work-play, and musical achievement. Results showed a positive indirect relationship between self-perceptions of musical competence and musical achievement. Moreover, if a student believed themselves to be a good musician, they were also likely to practice more frequently than those who did not believe themselves to be a good musician.

Metacognition is “the awareness of and knowledge about one’s own thinking” (Zimmerman, 2002, p. 65). Hallam (2001b) studied the development of metacognition and performance planning strategies in musicians and stated that “the musician must have well-developed metacognitive skills including knowledge of and how to utilize skills for supporting practice, for example managing time appropriately to be able to meet deadlines, maintaining concentration, maintaining motivation and understanding what preparations are needed to ensure high performance standards” (p. 28). Hallam interviewed 22 professional musicians and 55 novice musicians and reported that “neither the novices nor the advanced students reported lack of concentration in practice. Perhaps young people are generally less aware of their internal

states” (p. 37). Students who are unaware of their learning style and who lack metacognitive abilities have a difficult time regulating their learning (Zimmerman, 2002). Evans and McPherson (2015) found that self-identity played a role in the way a student views themselves and their musical accomplishment. Evans and McPherson’s longitudinal study of children’s musical identity found that young musicians may need to contextualize goals and self-regulatory strategies within their sense of identity to establish a long-term predictor of what musical accomplishment can be for them.

A person’s perception of their self-efficacy for practicing determines both the goals that are set and influences the likeliness of accomplishing those practice goals. Bandura and Cervone (1982) sought to determine whether self-efficacy mechanisms regulated the effects of goal setting on performance motivation. Forty-five men and 45 women were placed in one of four treatment conditions (goals and feedback, goals, feedback, and a control group) as they performed on a Schwinn ergometer in 5-minute increments. Certain groups received information regarding their next performance, such as increasing their performance goal by 40% or to simply increase the goal with no specific amount attached to it. The groups measured their self-evaluative reactions with a questionnaire and described goals they set for themselves. The group that was not told to increase their effort by a specific amount increased their effort by 42% while the group that was told to increase by 40% increased by 84%. The participants feedback group outperformed those in the other conditions. Bandura and Cervone found that perceived self-efficacy predicted changes in performance with the participants who received goals and feedback. The participants who were most dissatisfied with their performance but who also rated themselves as highly efficacious earned the most performance gains. “Participants who set no goals were outperformed by those who set themselves the goal of sustaining their performance

gain, who in turn, were outperformed by those who sought to better their past attainment” (p. 1025).

Austin and Berg’s (2006) mixed methods study described the practice motivation and regulation of sixth grade (11–12-year-old) band and orchestra students. Using both a questionnaire (the Music Practice Inventory, or MPI) and two narrative discussion prompts, the researchers investigated distinct motivational and self-regulatory aspects of music practice and whether a self-report inventory would be successful in the assessment of motivation and self-regulation. Austin and Berg also examined how practice motivation and regulation are related to instrument experience, practice environment, practice frequency, and amount of practice. Quantitative analysis showed that regulation and motivation function as distinct dimensions of music practice, and that a student’s home practice environment significantly impacted their practice motivation and regulation. Qualitative data analysis revealed that students demonstrated aspects of self-regulation by planning their music and practice sessions before they began, finding a good learning environment such as a quiet room to practice in, and utilizing tools such as metronomes, aural models and dictionaries to help with their practice. Many of the students were able to identify practice strategies that would help them in practice such as repetition, decreasing the tempo, simplification, mental practice and additive practice strategies.

Effective Use of Technology

Okojie et al. (2006) defined technology in the educational setting as “a technical device or tool used to enhance instruction” (p. 66). Musicians have used technology to improve practice and performance for hundreds of years. The modern metronome was invented in 1812 by Dietrich Nikolaus Winkel and was first utilized by a composer in 1817 by Beethoven who used it to indicate tempo markings on his scores (Apel, 1972). The 1967 Tanglewood Symposium

declared that schools and colleges should fully incorporate technology into music programs, specifically the use of recordings of live performances for young students (Choate, 1968). Music technology has evolved into hardware with programs such as GarageBand and Audacity, to digitized music library storage, to easily accessible music applications downloadable to personal devices and tablets (Knight & Lagasse, 2012). Now with the convenience of cloud and online storage, there is little need for real storage space for music purchased or downloaded, for saved and/or recorded files, and options are limitless for the consumption of music and the plethora of ways to engage with music digitally.

A new generation of autonomous learners define their learning differently than most adults due to increased digital literacy (Merrick, 2018). Music educators are responsible for aligning their curricula with new digital technologies so students can bring their digital literacy into the classroom without fear that it will not be valued (Merrick, 2018). Metronomes, tuners, drones and recordings can be downloaded into personal devices to further help musicians in their practicing. The convenience of technology allows many students to improve upon music learning virtually anywhere and increases student involvement in school music programs. The modern 21st-century student must be adequately skilled in the use of technology. The authors of the Vision 2020: Housewright Symposium on the Future of Music Education, stated “music educators need to be proficient and knowledgeable concerning technological changes and advancements and be prepared to use all appropriate tools in advancing music study while recognizing the importance of people coming together to make and share music” (National Association for Music Education, 2000).

Music educators use many ways to incorporate technology into rehearsals to align with current music education standards. Music technology applications can be used to compose to

foster creativity; teachers can prompt students with listening journals, online discussions, or share recordings of themselves playing to promote critical thinking skills; teachers can design a group composition project to encourage communication and collaboration; and music teachers can encourage the use of *YouTube* to learn about music from different cultures to promote cross-cultural skills (Yoo, 2020).

Modern music technology includes more than singular at-home practice aides. It also takes the form of music learning applications teachers may incorporate within the classroom to better assist with music learning and comprehension. Gorgoretti (2019) studied student music teachers and found positive opinions towards the incorporation of music technology in the classroom. The participants stated that they could better motivate their students and create more engaging lessons with technology. Teachers can properly integrate technology and pedagogy for all students in their classrooms as they learn what works best in their instructional practices (Okojie et al., 2006). Dammers (2012) surveyed principals and teachers of technology-based music classes and sought to determine the “extent to which comprehensive public high schools in the United States offer music classes that are technology-based, and to describe the nature of these classes” (p. 73). Dammers (2009; 2012) found that teachers who used technology-based music valued the music technology because it was favorable to nontraditional music students. Additionally, teachers and principals both advocated for better support and integration of technology into all classrooms schoolwide including the music classroom (Dammers 2009; 2012). Congress requested a national survey in 2018 of teachers in 2,000 public schools across 50 states and the District of Columbia and sought to determine to what extent teachers assigned technology-based school and homework assignments to their students. The results showed that 77 percent of teachers assigned technology-based homework and that according to teachers 86

percent of their students had little to no difficulty completing technology-based assignments (Gray & Lewis, 2020).

Efforts are made worldwide to train current and future teachers on the ways technology can be incorporated into the classroom. Lemon and Garvis (2016) surveyed Australian pre-service teachers and found many did not feel competent incorporating technology in classrooms and may not have the skills necessary to best serve all students in their classrooms through technology. Teachers should feel competent and self-efficacious in their ability to integrate technology into the music classroom. This integration is easier through professional development that focuses explicitly on technology integration in the classroom. A study of k-12 music teachers showed that teacher knowledge, teacher comfort, and frequency of technology use by teachers can increase with training and workshops (Bauer et al., 2003). Teachers who are proficient in technology use are more likely to incorporate technology into the classroom and teach their students how to integrate technology into their own learning.

Research into the incorporation of technology within elementary classrooms showed that high levels of technology use within the fifth-grade classroom equates to higher student academic achievement (Middleton & Murray, 1999). Early music technology research also found that technology is beneficial in music students' abilities to model their playing after that of professional musicians who make a characteristic sound on their respective instrument. In a one-factor, posttest-only design, Linklater (1997) found that fifth- and sixth-grade clarinetists who received a videocassette with aural and visual models did better on the final etude in the posttest than did students who only had an audiocassette model. Similarly, Hewitt (2001) found that self-evaluation was not an effective tool for improving junior high band students' music performance, but that self-evaluation in combination with recordings and aural models could help young

musicians develop independent performance skills. The number of resources available to students now far extends past videocassette tapes; however the point remains clear that technology has a wide variety of benefits for young musicians who are eager to learn.

The COVID-19 pandemic provided ample opportunities for teachers to maximize the use of technology in their curricula. Biasutti, Philippe, and Schiavio (2021) found that during the pandemic, music teachers reorganized their curricula to incorporate technology specifically to share information and keep records. Teachers also used videos for teaching and modeling, as did the students. Kocoglu and Tekdal (2020) interviewed teachers on their opinions of distance learning during the pandemic and found that many teachers aimed to put the student at the center of the education system to improve learning in all formats, whether at school or via distance learning, thus taking the emphasis away from teacher-centric instruction. Hash (2020) surveyed 474 band directors in Illinois who were teaching during the pandemic to examine their practices, experiences and perspectives of remote teaching during COVID-19. Hash found many teachers opted to let students choose their assignments while learning from home, which resulted in many students using technology for performing, listening, and music theory and less for composition of music history. More experienced teachers were able to provide opportunities for students to complete independent learning and playing activities which increased individual musicianship. Presently there are few studies on the topic of COVID-19 and its effect on instrumental teaching, however it can be expected that as we continue to navigate the post-pandemic world, research will become available that dissects the many ways music educators evolved to meet the needs of students and blend online and in-person learning.

Technology-Induced Distraction

Children in grades K-12 are generally designated as digital natives, a term referring to someone who “chooses to use technology for numerous tasks; adapts as the tools change; may have grown up with technology or adopted it as an adult” (Herther, 2009, p. 16). As of June 2019, 96% of American adults owned a cell phone, with 81% of those devices classified as smartphones (Mobile Fact Sheet, 2019). According to a 2019 study of media use by tweens (children 8-12 years old) and teenagers, tweens spent an average of just under five hours (4:44) on their entertainment screen media while teenagers spent approximately seven and a half hours (7:22) not including time spent using screens for school or homework (Rideout & Robb, 2019). Only 15% of tweens and 12% of teens who have their own mobile device use an app to monitor their screen time (Rideout & Robb, 2019). Many children in America grow up surrounded by technology and are accustomed to the stimulation awarded by computers and cell phones (Richtel, 2010). The more connected children are to their devices, the more likely they may be to develop a dependence upon technology.

Many young people value technology for its ability to connect them with their peers, often through social media use. Technology users are constantly rewarded for their digital interactions in the form of social-media push notifications. Duckworth et al. (2019) noted that when students are on screens they are often multitasking with academic work. Neuroscientists found that multitasking may increase the levels of stress-producing hormones (adrenaline and cortisol) that can fatigue adaptive systems, which runs contrary to the popular notion that multitasking can help an individual become more productive (Medina, 2009, as cited in Strom, 2014). Multitasking is common among Generation Z who have grown up surrounded by technology and the belief they can and should be involved in as many activities as possible, from

social groups to extracurricular activities (Strom & Strom, 2014). Further, multitasking behaviors are associated with low self-efficacy for self-regulated learning (Alghamdi et al., 2020). Madsen and Geringer (1981) measured the effects of a distraction index on undergraduate music majors practice attentiveness. The researchers used a pretest posttest design and divided students into one of two groups: a control group in which students indicated how many minutes they practiced daily and rated their level of effectiveness on a scale of 1-10; and an experimental group that used the same measurements as the control group with the addition of a distraction index that students marked each time they felt distracted during their practice. At the end of the eight-week period, students in both groups indicated they practiced approximately the same amount of time and rated themselves as highly productive. Students in the experimental group who completed the distraction index felt their attentiveness increased which led to better performance.

A significant amount of self-control is needed to monitor use of devices and stay focused on a task. Self-control is “the self-initiated regulation of thoughts, feelings, and actions when enduringly valued goals conflict with momentarily more gratifying goals” (Duckworth et al., 2019, p. 374). Many students understand that multitasking while completing homework may lead to diminished self-control, but do not realize the enormity of its effects (Calderwood et al., 2015). Multitasking has a significant effect on college GPA, as students who reported elevated levels of multitasking, specifically texting, tend to spend more time studying outside of class and also report having a lower GPA (Bellur et al., 2020). A study of college students’ distraction and multitasking behaviors while studying revealed that in the three-hour study period, the students averaged 35 distractions that lasted six seconds or longer, with an aggregated mean of a duration of 25 minutes (Calderwood et al., 2014). The results also revealed a strong positive relationship

between homework task motivation and self-efficacy, high levels of positive affect associated with lower fatigue, and higher homework satisfaction (Calderwood et al., 2014).

Environmental factors affect a student's ability to exercise self-regulation and self-control. Xu and Corno (2003) found a relationship between family involvement in homework and students' abilities to monitor their homework environment and control emotions and distractions when homework became difficult. Xu (2015) investigated whether media technology is a unique type of distraction for students during homework (as opposed to conventional distraction such as daydreaming and starting conversations unrelated to the work) and whether media technology is more enticing and distracting by way of visuals, blending of work and play, and social interaction. Xu surveyed 1799 Chinese high school students and found that "conventional and tech-related distractions could not be collapsed into one factor with significant loss of information" therefore this study "provided empirical support for the construct validity of the distinction between conventional and tech-related distractions" (p. 311). Conventional and tech-related distraction were negatively related to homework effort, homework environment, learning-oriented reasons, and value belief, and positively related to time on videogames, time on homework, and peer-oriented reasons (Xu, 2015). In a follow-up study, Xu et al. (2016) confirmed the homework distraction scale may be applicable to middle school students in that their homework attitudes may determine how students approach or interpret homework distraction.

Addiction to personal devices such as cell phones and laptops causes anxiety for many individuals, including school-age children (Rosen, 2017). Rosen stated that phone-related anxiety is not only a predictor of poor performance in school, but also in sleep deprivation which can negatively impact the absorption of information and the riddance of unwanted information in

the brain. Anxiety related to the fear of missing notifications and messages on a smartphone also relates to shallower learning (Rozgonjuk et al., 2019). Rosen et al. (2013) observed 263 middle, high, and college students for 15 minutes each while the students studied and found that during those 15 minutes the average time on task completing homework was approximately 5.61 minutes before switching to a different task. The majority of the distractions were due to checking additional technology such as accessing *Facebook* or watching television.

The over-stimulation of technology may negatively impact a child's ability to progress musically and cognitively. The mere presence of a cell phone is shown to negatively impact intrapersonal skills and conversations between strangers and acquaintances (Allred & Crowley, 2017). Thornton et al. (2014) conducted a two-study series to determine if the mere presence of a cell phone would distract undergraduate students enough to impact attentional processes and task performance. The results showed "considerable evidence of attention and performance deficits associated with the actual use of a cell phone while multitasking" whether the task was driving, walking, or learning (p. 485). The nature of mobile technology and the ability to connect with a wide social network "are what likely contribute to the cell phone's conditioned stimulus properties whereby its simple presence is capable of creating a distraction from the immediate task or situation at hand and elicit awareness of that wider social network that one is not part of at the moment" (p. 486).

Schools often give children time to use recreational technology and typically use technology as an incentive or reward for on-task behavior. Many schools now understand technology (personal devices) to be essential for all students. Early studies of cell phone use in schools found that when mobile phones were not present in schools, a significant improvement occurred in test scores, with the majority of the gain occurring in students who typically

underperform (Beland and Murphy, 2014). In another study on the mere presence affect, Ward et al. (2017) investigated whether “the mere presence of a smart phone may induce ‘brain drain’ by occupying limited capacity cognitive resources for the purposes of attentional control” (p. 141). This study involved the observation of three participant groups in a classroom setting. Group one had their smartphones nearby and in their line of vision, the second group had their smartphones nearby but out of sight, and the third group had their smartphones in a separate room entirely. The participants claimed that the location of their phones did not affect their performance. Results indicated that a face-down phone or a phone turned off did little to modify the sense of attachment to the phone and that separating the phone from the participant completely was the best way to keep the participant’s mind focused.

Billeuex et al. (2015) identified problematic mobile phone use (PMPU) as a behavioral addiction in their review of literature related to addictive behaviors and technology. Excessive mobile phone use has the following traits in common with addictive behaviors: loss of control, tolerance (a noticeable increase in mobile phone usage and the need to upgrade devices) and withdrawal. The researchers identified three pathways that problematic mobile phone use manifests itself in individuals: the excessive reassurance pathway that is connected with individuals who feel the need to stay connected and receive reassurance from others; the impulsive pathway which pertains to individuals whose lack of impulse control may result in urges and addictive behaviors that the individual cannot control; and the extraversion pathway which appears as “dependence-like symptoms and exaggerated use driven by a strong and constant desire to communicate with others and to establish new relationships” (p.160).

Cutino and Nees (2017) conducted a study on homework distraction that compared two groups of college students, one group with their cell phones and one group without, in their

ability to meet study goals. The students in each group declared their study goals, then proceeded to study for an hour. At the end of the hour. The researchers administered a survey to the students without their cell phones in which the participants rated their level of concentration, level of effort put into their work, and the quality of the work accomplished. The researchers asked the group with their cell phones questions regarding their phone usage during that hour. While there was no significant difference in anxiety between the restricted phone access group and the group with full phone access, the students without their phones met approximately 12% more of their study goals than did the group with cell phone access. The researchers determined that the “presence of a phone negatively impacted attainment of study goals, perhaps by virtue of its directly distracting qualities” (p. 76).

Coyne et al. (2019) studied 385 participants ranging in age from 17-19 years old across a three-year period. Each year the researchers surveyed the participants on their use of cell phones, anxiety, depression, and self-regulation. This study was the first to concentrate on individuals for a period longer than one year to observe these behaviors as students transition from adolescence to adulthood. Problematic cell phone use remained consistent for the participants over the three-year period, indicating that cell phone use is deep-rooted within habits established over time (Coyne et al., 2019). Depression levels increased as the survey progressed, indicating that the individuals may have experienced depression because of cell-phone use and not as a predictor of cell-phone use. Gazzaley and Rosen (2018) suggested that technology distractions be managed by becoming aware of the time spent on devices and better managing that time; reducing accessibility by minimizing outside distractions such as email and other communication platforms while working or studying; managing boredom by taking mental breaks; and managing

anxiety that is caused by constant communication by practicing mindfulness, engaging in physical exercise, or establishing blocks of time that are designated work times.

Self-awareness of technology use is critical in practicing moderation with technology. Cell phones and personal devices may be disruptive to the process of learning, but there is also unmistakable evidence that technology as a supplemental tool for learning is beneficial. Young music students rely on technology to connect ideas and put into practice the strategies they use in rehearsals for tuning, keeping a steady beat, and listening critically. I wanted to learn specifically what young music students do with their technology while they practice; if students apply technology to practice strategies; and if the students find it distracting to use technology, especially if they also use their device for social media and engaging with friends and family members. The aim of this research was to determine the extent to which middle school students self-regulate their time, specifically with technology, while practicing their instruments.

Chapter Three

Methodology

The purpose of the present study was to determine how middle school band students in grades seven and eight use and interact with technology while practicing their instruments. I surveyed and interviewed students in grades seventh and eighth in multiple middle schools in East Central Alabama and used a mixed methods approach using both quantitative and qualitative research methods.

Research Design

This study employed a mixed methods research approach. It is important to understand the nature of the mixed methods approach. I will provide a brief description of the basis for mixed methods research and further define the approach as it pertains to this research. Mixed methods is the third of the three large research approaches, in company with quantitative and qualitative research. Mixed methods research is rooted in the philosophy of pragmatism which approaches knowledge in a way that considers varying viewpoints, perspectives, positions, as well as qualitative and quantitative standpoints (Johnson et al., 2007). Johnson et al. completed an analysis of 19 definitions of mixed methods research and identified five main themes that appeared. The first theme is the consensus that the word “mixing” is in reference to the combination of both qualitative and quantitative methods; the second theme pertains to when the mixing of the data occurs, either during the data collection, data analysis, or all stages of the research; the third theme is the breadth of the research; the fourth is why there is a need for mixing during the research; and the final theme is the orientation of the research, and whether the research question drives the method choice, or if the researcher’s interests are driving the

approach (2007). After collecting the 19 definitions of mixed methods research from leading researchers in the field, Johnson, et al. define mixed methods research as:

...an intellectual and practical synthesis based on qualitative and quantitative research; it is the third methodological or research paradigm (along with qualitative and quantitative research). It recognizes the importance of traditional quantitative and qualitative research but also offers a powerful third paradigm choice that often will provide the most informative, complete, balanced, and useful research results. (2007, p. 129).

Further, Greene et al. (1989) identify five purposes for combining quantitative and qualitative research: triangulation, for validity of constructs and inquiry results regarding method and inquirer bias; complementarity, in order to promote interpretability, meaningfulness and validity of constructs; development, to benefit from inherent method strengths; initiation, to expand the breadth and depth of inquiry results; and expansion, to increase the scope by choosing the methods that are most appropriate.

Researcher's Role

Pragmatism is the philosophical approach that is most appropriate for mixed methods research in that it is an outcome-oriented approach that focuses on the actions, situations, and consequences of inquiry. This description aligns with the desire of the researcher to feel guided by the research question(s) to use this approach. According to Creswell and Poth (2018), the researcher using the pragmatist worldview will “use multiple methods of data collection to best answer the research question, will employ multiple sources of data collection, will focus on the practical implications of the research, and will emphasize the importance of conducting research

that best addresses the research problem” (p. 27). The characteristics of the pragmatist researcher are:

1. There is no commitment to any one system of philosophy and reality.
2. The researcher has freedom of choice regarding methods, techniques, and procedures.
3. There are multiple approaches to collecting and analyzing data, as pragmatists do not see one absolute unity.
4. Truth is what works at the time.
5. Researchers ask “what” and “how” of their research and look to the intended consequences.
6. Pragmatist researchers believe that research occurs in social, historical, political, and other contexts.

Part of my role as the researcher was to take an iterative and cyclical approach to the research (Tashakkori & Teddlie, 2010). There was an element of criticality in my research which allowed me as the researcher to “see, engage, contextualize, and make meaning of the complexity of people’s lives, society, and the social, political, institutional, and economic forces that shape them” (Ravitch and Carl, 2016, p. 14).

Procedures

This mixed methods study used a convergent mixed methods design in which I collected the qualitative and quantitative data during a similar timeframe to analyze data separately then compare it at the end of the analysis (Fetters et al., 2013). This approach was most appropriate because the data collection occurred simultaneously, first with the qualitative data through focus groups, followed by the quantitative data in a large sample. My original design changed due to

time constraints in individual directors' schedules. I collected qualitative data (focus groups) before quantitative data (surveys).

Integration of the quantitative and qualitative data occurred through the merging of the two types of data for analysis and comparison (Fetters et al., 2013). I used a narrative approach to present the findings. Narrative integration involves the reporting of both qualitative and quantitative findings in a single or series of reports (Fetters, et al., 2013). I used a weaving approach to the integration which involved presentation of the findings based on themes or concepts (Fetters et al., 2013). See the Table 1 at the end of this chapter for the full data analysis plan.

Quantitative Data Collection

Prior to receiving IRB approval, I requested permission to work with individual schools in East Central Alabama. I wrote letters to the central office at two school systems asking for permission to work with middle school(s) in their systems as a part of my research. In the first school system I contacted the secretary to the school system's assistant superintendents, who directed me to complete an application to conduct the research. I completed the application and sent it to local administrators and band directors at the middle school and junior high schools. After a meeting with one of the band directors, I received permission to conduct my research in both schools. I requested permission to conduct the research in the second school system by completing a research request form and turning it in to the secondary curriculum coordinator for the school system. The form was approved by local administration and the band director at the middle school and I received permission from the superintendent to conduct the research. I included these letters of approval in the IRB.

The first phase of this research was the acquisition of participants at each of the three schools. I printed copies of the informational letter which explained the intent and purpose of the research, the audio and video release forms, parental permission forms, and minor assent forms. I corresponded with the directors to determine the timeline of the research, including the dates the permission forms would be distributed and collected. I delivered the permission forms to each school's front office and collected them within the time frame set by each director and myself. One school had a delay in the distribution and collection of permission forms, which pushed their data collection back approximately two weeks.

The band directors distributed the informational letters and consent/assent forms to their band classes and gave their students a deadline to have the forms returned. Each guardian had the option to give permission for their child to participate in the research survey and focus group interview, and each child had the option of consenting to the study. Participants and their parents/guardians were encouraged to email me and ask questions pertaining to the study during this process. I received no emails from guardians. Once the band directors gathered the forms, I collected them and listed the students who consented to participate in the study, separated by the students who consented to both the survey and focus group interviews and the students who only consented to the survey. I emailed a survey link to the band directors and determined when to complete the focus group interviews based on student availability and who consented to participate. I intended to collect survey responses before the focus group interviews took place, but due to scheduling allowances, the two schools that participated in both the survey and the focus groups completed the interviews before the survey was distributed.

The band directors emailed the survey link to the consenting students from the lists they obtained from me. Prior to beginning the survey, the students were prompted with a page that

asked them to identify themselves by their school and first and last name and to denote that they consented to participate in the survey. Upon completion of the consent page, the students began the survey by using their personal device or a school computer or tablet. Once the surveys were submitted digitally, the students were prompted to delete the survey email link. I used *SPSS (Statistical Packaging for Social Sciences)* to compile and analyze the data. I transferred the data to *SPSS* and omitted the students' names from the results which rendered the data anonymous. There were no known risks to the participants who took the survey.

Survey Instrument

I designed a survey through Qualtrics to align with the focus of the research and research questions. The survey is titled "Technology Use in Music Practice" and contained five sections: Demographics; Frequency of Music Technology Use; Types of Music Technology Used; Self-Regulation and Music Practice; and Goal Setting and Motivation. The survey was distributed to middle school band students in grades seventh and eighth. Due to the relatively young age of the students, I intentionally designed the survey to be easily comprehensible and kept to a minimum of 18 questions to maintain participant focus and avoid measurement error (Dillman et al., 2014).

The survey contained multiple-choice questions, Yes/No responses, and two types of Likert-type scales: 1 (*Yes*) to 4 (*No*) and 1 (*Always*) to 3 (*Never*). The Demographics section provided information on age, gender, ethnicity, grade level, primary instrument, amount of time (in months/years) spent on their primary instrument, and whether they have a personal device. Students who selected that they did not have a personal device were directed to the end of the survey, as the majority of the survey focused on self-regulation and technology use. The second part of the survey focused on whether the students kept a personal device with them when they practiced and if they used their personal device when they practiced. If the students responded

“No” to either of those questions, they were directed to the end of the survey. The third part of the survey pertained to the types of music-related technology used by the students and their attitudes toward the use of music technology as a practice aid. Next, I asked students questions regarding their ability to manage the distractions that can present themselves in cell phone or tablet. The final section of the survey pertained to performance goals and motivational interest regarding instrument practice.

Quantitative Data Analysis

I downloaded the survey responses from Qualtrics and imported them into the *Statistical Package for the Social Sciences (SPSS)* software for data analysis. I utilized descriptive statistics (primarily frequencies and percentages) to obtain a clear understanding of participant responses. I ran frequencies and percentages for responses to RQ1 (Do students use music-related technology in their practice?). I ran a Chi Square post-hoc test to determine if the use of any one device was independent from the use of another device. For RQ2 (In what ways do students interact with their personal device during their practice time?) and RQ2.1 (Is there a relationship between the way(s) students interact with their personal device and their perceived success on their instrument, the enjoyment of practicing their instrument, or their perceived focus while practicing?) I ran frequencies and percentages. I then ran a Spearman’s Rho correlation coefficient to look for a relationship between technology use and musicianship and practice time. I ran frequencies and percentages for RQ3 (In what ways do students employ self-regulation strategies to remain focused in their practice while using technology?) and RQ3.1 (In what other ways is technology used in practice sessions?). Frequencies, descriptives and a Spearman’s Rho correlation coefficient were used for RQ4.1 (Is there a relationship between how much the students enjoy practicing and the number of times they feel unmotivated while practicing?).

Qualitative Data Collection

The second phase of this study was the collection of qualitative data through focus group interviews. After I collected the permission forms, I identified the guardians and students who consented to the focus group interviews in addition to the survey. For this portion of the data collection, I only involved the participation of two of the middle schools. This was based on convenience and location of the schools. I separated the focus group interview participants by grade level. I sought an ideal number of two to three participants to provide a level of comfort when discussing practice habits with me. The possible risks to the participants in this portion of the study were breach of confidentiality, coercion, and potential feelings of discomfort when discussing their technology use and practice habits.

I communicated with the band directors to determine the best time to conduct the interviews and to let the director know which students in each class period consented to the focus group interviews. I used consent forms and the director's help to select students to be interviewed. The band directors purposely selected students for the focus groups based on character witness, schedule availability and with the intent of decreasing social discomfort among the students. The Audio and Video release forms included in the permission form packet allowed the interviews to be recorded for later transcription. With the help of a research assistant, I conducted the focus group interviews via Zoom online videoconferencing software. To complete the focus group virtually, I emailed a Zoom meeting invitation to each band director at the participating schools, and the band director used that link on their school computer. The director had the option to let the students log in separately from their own devices, or to have the students all log in from one device while meeting together in the band director's office. Each director opted to log on from their own computer in their offices and have the students all use

that same device. All focus group interviews lasted approximately 20-30 minutes each, and the identities of the students in the focus group will remain confidential. The recordings of the interviews were stored in a password-protected Box folder.

I asked the participants about their perceived level of productivity and use of time in practice sessions, as well as general attitudes towards the use and effectiveness of technology in accomplishing their musical goals. Due to the anonymity of the survey responses, I drew no connections between the quantitative data collected and the specific participants who elected to participate in the focus group. The names of the students, band directors, and schools that participated in the study were kept confidential in the reporting and discussion of the findings.

Interview Protocol

I used a script to begin and end each of the interviews, as was recommended by Jacob and Furgerson (2012) in order to not overlook important information and details about the study to relay to the participants. I began the questioning with easy to answer questions for the participants that allowed them to tell me about themselves, then I followed with open-ended questions and dialogue to allow the participants the ability to fully express their thoughts without being guided or influenced by myself or other participants (Jacob & Furgerson, 2012). I used transitional questioning to shift the conversation from one area to another as I maneuvered through the research questions in hopes to create and maintain a conversational style during the interviews (Levitt et al., 2016). Focus group questions centered around experience and behavior questions that focused on what the participants have done or will do; opinion and values questions that pertained to the participant's thoughts and beliefs about a topic; and feeling questions which sought to understand why the participants felt a particular way (Ravitch & Carl, 2016).

I transcribed the focus group interviews then analyzed them for themes in the data. I read the transcripts and discovered emergent themes through the process of memoing. To determine the major categories that emerged in the data, I used in Vivo coding. In Vivo coding is beneficial in sharing and understanding young and marginalized voices whose own words better define their experiences and deepen and enhances an adult's understanding of their worldviews (Saldana, 2016). I then used axial coding to determine the subcategories that support the major categories. The codes were identified and reduced to organized themes using *ATLAS.ti* qualitative data analysis software. I formed categories to classify the themes and develop a codebook. The data were compared to the emergent themes from the literature and to the quantitative data analysis. The goal of the focus group interviews was to gain qualitative data that would enrich the depth and quality of total data collected. Sample focus group questions are included in Appendix F.

Population and Sample

The target population for this study was middle school band members in grades seventh and eighth enrolled in band at their respective schools. I chose middle school as my target population because of the emerging nature of their knowledge and experience with musical instruments, practicing, practice techniques, self-regulation, and time management skills.

Validity and Reliability

I conducted an extensive literature review prior to the development of the survey to gain a better understanding of the existing body of research. Content validity was increased by incorporating all information collected from the review of literature into the development of the survey and interview questions (Taherdoost, 2016). I sought expert feedback on the questions used in the survey by using the Delphi method to further solidify content and face validity

(Eggers & Jones, 1998). During the Spring of 2021 I distributed the survey to current middle school band directors and graduate music education students at a large Southeastern university in the United States using purposeful sampling. I sought expert analysis regarding straightforwardness of terminology, clarity of language, and technological barriers or issues. Data and feedback from the survey were collected and used to modify and make changes to the survey, including changes to questions, wording, and phrasing for better understanding.

Validity in qualitative research often interchanges with the term “trustworthiness” and refers to the quality and rigor of a study (Ravitch & Carl, 2016). There are four pillars of validity criteria: credibility, transferability, dependability, and confirmability. Credibility was established through my experience as a former middle school band director and my understanding of the interactions and experiences of students in this environment. I established transferability through the comparison of the quantitative data collected through the survey and the qualitative data obtained in the interviews. This comparison shows the extent to which the qualitative data can be applicable to a broader context while maintaining integrity and context-specific richness, though none of these results will be generalizable (Ravitch & Carl, 2016). Dependability was achieved using the Delphi method, specifically thematic analysis, as was the use of a methods journal to assess each interview question for alignment with the research questions (Brady, 2015).

Bracketing is the process of setting aside “existential assumptions made in everyday life and in the sciences” (Schwandt, 2015, p. 22). I bracketed my own personal experiences in an attempt to maintain neutrality while acknowledging my biases and prejudices (Ravitch & Carl, 2016).

Table 1*Data Analysis Plan*

Research Question	Survey Items	Analysis	Interview Questions
1 Do students use music-related technology in their practice?	questions 8-11	Frequencies Descriptive Statistics Chi-Square post hoc	How often do you use music technology when you practice? What type do you use the most/least?
2 In what ways do students interact with their personal device during their practice time?	questions 12-13	Frequencies Descriptive Statistics	How do you incorporate music technology into your practicing?
2.1 Is there a relationship between the way(s) the students interact with their personal device and their perceived success on their instrument; their enjoyment of practicing their instrument; and/or their perceived focus while practicing?	question 14	Frequencies Descriptive Statistics Spearman's Rho	N/A
3 In what ways do students employ self-regulation strategies to remain focused in their practice while using technology?	questions 15-16	Frequencies Descriptive Statistics	How do you stay focused when you practice?
3.1 In what other ways is technology used in practice sessions?	question 17	Descriptive Statistics	How do you feel when you get a notification on your device while you are practicing? Do you feel anxious if you cannot answer a phone call or respond to a text?
4 How do students feel about their levels of motivation while practicing?	question 18	N/A	Do you have music goals? How do you determine your practice goals?
4.1 Is there a relationship between how much the students enjoy practicing and the number of times they feel unmotivated while practicing?	question 18	Descriptive Statistics Spearman's Rho post hoc	Can you describe your feelings and attitudes toward practicing your instrument?

Chapter Four

Results

I designed this study to learn how students use and interact with technology while practicing their instruments, and in much broader terms, to understand middle school students' abilities to self-regulate their practice and learning specifically regarding the use of technology. I implemented a convergent mixed methods design in the execution of this research. Quantitative data were collected via the use of an online survey. Qualitative data were collected through focus group interviews. All participants in this study were students in seventh and eighth grade enrolled in their respective band programs at three middle/ junior high schools in East Central Alabama at the time of this study. The band directors at each school disseminated information about the study to their band classes. Two of the three schools used were a part of the same school system. Teachers distributed a total of 380 permission forms to the band students (in the three schools). Eighty-two permission forms were returned, and of those, 75 were usable for the study. The results are in sections differentiated by data type, first with quantitative then qualitative data. An analysis and discussion of the quantitative and qualitative data will follow in Chapter Five. I used the following research questions to guide both the design of the survey and the structure of the interview protocol:

1. Do students use music-related technology in their practice?
2. In what ways do students interact with their personal device during their practice time?
 - 2.1. Is there a relationship between the way(s) the students interact with their personal device and their perceived success on their instrument; their enjoyment of practicing their instrument; and/or their perceived focus while practicing?

3. In what ways do students employ self-regulation strategies to remain focused in their practice while using technology?

3.1. In what other ways is technology used in practice sessions?

4. How do students feel about their levels of motivation while practicing?

4.1. Is there a relationship between how much the students enjoy practicing and the number of times they feel unmotivated while practicing?

Quantitative Survey Data

Eighty-two permission forms were collected from all three schools. After reviewing the forms, I found that 75 were completed in full with all information required to participate in the study, including minor assent and parental permission signatures. The usable response rate was 84% of the responses. I shared my list of completed permission forms with the directors at each school. Following are details pertaining to the schools that participated in the study and the breakdown of participant numbers by school.

School A

School A is located in East Central Alabama. Both School A and School B are included in the same school system which comprises 8,800 students in grades K-12. School A serves students in grades 8-9 and has 94 students in the 8th grade band. I only focused on students in seventh and eighth grades, I did not survey nor interview any students in the ninth grade. School A's director sent the survey to the 16 students who had permission to complete it. Fifteen students fully completed the survey for a completion rate of 94%.

School B

School A and School B are in the same school system. School B serves students in only seventh grade and has a total of 131 students in the seventh-grade band. After reviewing the 48

collected permission forms from School B, I found six to be incomplete. I shared the list of 42 completed permission forms with the director. The Qualtrics results showed that 47 surveys were returned from School B. I cross-referenced the identities of those who fully completed their permission forms. As a result, six students who did not have permission forms completed the survey; those were removed from data analysis so that the completion rate would not be skewed. Further, one student who had a permission form did not complete the survey, yielding a 98% ($n = 41$) completion rate. All 41 students who returned the surveys completed the survey in its entirety.

School C

School C is in a neighboring school system near both School A and School B. School C is in the same county as Schools A and B, however is in a different city and school system. The school system serves approximately 4,300 students in grades K-12. School C is comprised of seventh and eighth grades and has a total of 155 students in the seventh and eighth grade band. School C had 18 returned permission forms. One permission form was incomplete. The director at School C sent the survey to the 17 students who completed the permission and assent forms in full. Eight surveys were returned but one was a repeat (the same student completed it twice) rendering the second copy of the survey invalid. The seven remaining surveys were included in the data analysis. All received surveys were complete. Table 2 shows the respondent breakdown by school.

Table 2

Respondents by School

School	<i>n</i>	%
School B	41	65.1
School A	15	23.8
School C	7	11.1
Total	63	100.0

Survey Section 1: Student Demographics

I sent the survey to all students who consented to participate in the survey, a total of 75 students. For clarity and a clear idea of the total results, I combined all participants in the quantitative data analysis. The demographics are in Table 3. The highest percentage of responses (73%) came from seventh grade students. Because most of the student participants attended a seventh-grade school, this result is not surprising. Most of the students (57.1%) were 12 years of age. The majority of the respondents identified as White (63.5 %) with African/Black American as the second highest (17.5%). Primary instruments varied, with the majority being clarinet (23.8%) followed closely by trumpet (17.5%). Not surprising were the years spent on their instrument by each participant, with a majority (65.1 %) having spent less than one year on their instrument. In each school, band begins in seventh grade.

After the demographics section, I included a question that determined whether students would continue with the rest of the survey. The students responded to the question “Do you have a personal device?” A personal device was defined as a cell phone, tablet, iPad, school-issued Chromebook, or laptop. Participants that selected “no” to this prompt were taken to the end of

the survey. All participants ($n = 63$, $M = 1.00$, $Mode = 1.00$, $SD = .00$) responded “yes” to this question.

Table 3*Participant Demographics*

Characteristic	<i>n</i>	%
Grade		
7 th Grade	46	73.0
8 th Grade	17	27.0
Age (in years)		
12	36	57.1
13	20	31.7
14	6	9.5
Other	1	1.6
Ethnicity		
White	40	63.5
African/Black American	11	17.5
Asian American	9	14.3
I prefer not to answer	2	3.2
Other	1	1.6
Arab American	0	0.0
Indigenous	0	0.0
LatinX	0	0.0
More than one ethnicity	0	0.0
Instrument		
Clarinet	15	23.8
Percussion	12	19.0
Trumpet	11	17.5
Flute	9	14.3
Saxophone	6	9.5
Trombone	3	4.8
Euphonium/ Baritone	3	4.8
Bassoon	2	3.2
French Horn	1	1.6
Other	1	1.6
Oboe	0	0.0
Tuba	0	0.0
Years Playing Instrument		
Less than one year	41	65.1
2 years	13	20.6
1 year	7	11.1
3 years	2	3.2

Survey Section 2: Frequency of Music Technology Use

Section 2 of the survey determined how often students incorporated music technology in their practice. I eliminated the participants who did not use a personal device as they practiced by including the following survey question: “Do you keep a personal device (phone, tablet, iPad, Chromebook) with you when you practice?” Sixty-three responded “yes” and six (9.5%) answered “no” to keeping their device with them during practice sessions ($M = 2.11$, $Mode = 2.00$, $SD = .87$). Those students were sent to the end of the survey. I asked the remaining participants if they used music technology during their practice sessions. The survey defined music technology as a metronome, tuner, *SmartMusic*, a drone or sustained note, recordings of music or other musicians, or websites such as *YouTube*, *Sight Reading Factory* or *MusicTheory.net*. This question required a yes/no response. The majority of the students (77.8%) answered “yes” ($M = 1.56$, $Mode = 1.00$, $SD = .37$). The nine students who responded “no” were taken to the end of the survey. I asked the remaining students ($n = 48$) how often they incorporated music technology into their practicing. Half of the participants ($n = 24$, $M = 2.271$, $SD = .707$) said they incorporated music technology most of the time. Table 4 illustrates their responses.

Table 4

Frequency of Technology Use

Item	<i>n</i>	%	<i>M</i>	<i>Mode</i>	<i>SD</i>
How often do you use music technology when you practice?	-	-	2.271	2.00	.707
Most of the time	24	50.0	-	-	-
Sometimes	17	35.4	-	-	-
Always	6	12.5	-	-	-
Not very often	1	2.1	-	-	-

Survey Section 3: Types of Music Technology Used

I designed section 3 to learn what type of music technology young students utilize the most in their practice sessions. To determine the most used technology I wanted to know what type of device was being used most frequently by the students as they practiced. Cell phones were the most widely used device ($n = 25$) followed by tablets ($n = 17$). I also calculated mean, mode, and standard deviation for this question. Those results are in Table 5.

Table 5

Most Used Device During Practice

What type of device do you use the most when you practice?	<i>n</i>	%	<i>M</i>	<i>Mode</i>	<i>SD</i>
Cell phone	25	52.1	1.45	1.00	.50
Tablet (such as iPad)	17	35.4	1.60	2.00	.50
Laptop (such as a Chromebook or computer)	3	6.3	1.94	2.00	.25
Other	3	6.3	1.97	2.00	.15

I asked the participants to select all forms of music technology they incorporate in their practicing. The participants selected from the following options: metronome, tuner, *SmartMusic*, drone, video player, recording devices or applications, music reading websites, use of recordings for listening, none, and other. I coded the responses and used the Count Values Within Cases procedure in *SPSS* to determine the number of options the participants selected. The findings are in Table 6 below.

Table 6

Number of Music Applications Used

Number of music apps used	<i>n</i>	%
2	15	31.3
3	15	31.3
1	13	27.1
4	5	10.4
Total	48	100.0

I asked the students to identify the type of music technology they used the *most*. A vast majority (57.1%) used a metronome most frequently. The student that indicated “other” wrote in the response “timer.” Table 7 lists the participant responses and the corresponding mean, mode, and standard deviation for each response.

Table 7

Most Used Music Technology

What music technology do you use the most?	<i>n</i>	%	<i>M</i>	<i>Mode</i>	<i>SD</i>
Metronome	36	75.0	.98	1	.14
Video Players	6	12.5	.54	1	.50
Tuner	3	6.3	.33	0	.47
Recording Devices	1	2.1	.29	0	.46
Music Reading Websites	1	2.1	.06	0	.25
Other	1	2.1	.04	0	.20
<i>SmartMusic</i>	0	0.0	.00	0	.00
Drone	0	0.0	.00	0	.00

I designed the next section of the survey to learn the participants’ thoughts on how technology helped them in various ways in the development of their practice and musicianship. I asked the participants if they believed technology helped them improve on their instrument. The results were positive, as 36.5% ($n = 23$) answered “yes” and 36.5% ($n = 23$) answered “mostly yes.” Half of the participants ($n = 24$) answered “yes,” and half answered “mostly yes” to whether they felt music technology helped them improve their overall musicianship. Table 8 shows the full results for this section.

Table 8*Attitudes Toward Music Technology*

Prompt	<i>n</i>	%
Music technology helps me improve on my instrument.		
Yes	23	47.9
Mostly yes	23	47.9
Mostly no	1	2.1
No	1	2.1
Music technology helps me improve my overall musicianship.		
Yes	24	50.0
Mostly yes	24	50.0
Music technology helps me enjoy practice more.		
Yes	18	37.5
Mostly yes	15	31.3
Mostly no	13	27.1
No	2	4.2
Music technology helps me stay focused.		
Mostly yes	21	43.8
Yes	16	33.3
Mostly no	9	18.8
No	2	4.2

I also calculated descriptive statistics for opinions on technology improving instrument skills ($M = 1.58, SD = .65$), improving overall musicianship ($M = 1.50, SD = .50$), increasing enjoyment of practice ($M = 1.98, SD = .91$), and improving focus while practicing ($M = 1.94, SD = .84$). Interestingly, technology did not help the participants enjoy practice more. I ran a Spearman's rho correlation coefficient to examine the relationship between participants' opinions on how technology effects various aspects of their musicianship and practice time. I found a moderate correlation between participant feelings that technology helped them improve on their instrument and improve musicianship ($\rho(46) = .310, p < .05$) and enjoy practice more ($\rho(46) = .479, p < .001$). I found no strong correlations among the variables. Table 9 shows the full results.

Table 9*Spearman's ρ*

I feel that technology...	Improve on instrument	Improve musicianship	Enjoy practice more	Help stay focused
Improve on my instrument				
Correlation Coefficient	1.000	.310	.479	.091
Sig. (2-tailed)	.	.032	<.001	.540
Improve my musicianship				
Correlation Coefficient	.479	1.000	.043	.222
Sig. (2-tailed)	.032	.	.772	.129
Enjoy practice more				
Correlation Coefficient	.479	.043	1.000	.068
Sig. (2-tailed)	<.001	.772	.	.648
Helps me stay focused				
Correlation Coefficient	.091	.222	.068	1.000
Sig. (2-tailed)	.540	.129	.648	.

Survey Section 4: Self-Regulation and Music Practice

The questions in Section 4 pertained to self-regulation and student practice time specifically regarding music technology use. Most students (37.5%) answered “no” to placing their phone on “silent,” “do not disturb,” or “airplane mode” when practicing. The majority of the students (43.8%) answered “yes” to using their personal device to track their practice time ($M = 2.67, SD = 1.23$). Only 22.9% of participants ($n = 11$) responded “no” to using their device to track practice time ($M = 2.15, SD = 1.22$). The full responses are in Table 10 below.

Table 10*Self-regulation of Technology During Practice*

Prompt		<i>n</i>	%
I keep my device on “Do Not Disturb,” “Silent,” or “Airplane Mode” while I practice.	No	18	37.5
	Yes	12	25.0
	Mostly yes	10	20.8
	Mostly no	8	16.7
I use my personal device to track my practice time.	Yes	21	43.8
	No	11	22.9
	Mostly yes	10	20.8
	Mostly no	6	12.5

An overwhelming majority of students responded “no” to prompts that asked about using a personal device to check text messages and phone calls during practice ($n = 35$, 72.9%, $M = 1.73$, $SD = .45$); to using their device to check social media notifications ($n = 42$, 87.5%, $M = 1.88$, $SD = .33$); and to taking breaks to play games on their device ($n = 45$, 93.8%, $M = 1.94$, $SD = .244$). Table 11 shows the full responses.

Table 11*Incorporation of Breaks During Practice Using Technology*

Personal Device Use While Practicing		<i>n</i>	%
Check my text messages and phone calls on my device.	No	35	72.9
	Yes	13	27.1
Check my social media notifications on my device.	No	42	87.5
	Yes	6	12.5
Play games on my device	No	45	93.8
	Yes	3	6.3

I asked the participants specifically about their use of their personal devices during practicing to answer a phone call ($M = 2.29$, $SD = .65$), respond to a text ($M = 2.08$, $SD = .71$), use *Snapchat* ($M = 2.92$, $SD = .28$), use *TikTok* ($M = 2.85$, $SD = .36$), use *Instagram* ($M = 2.92$, $SD = .28$) or *Facebook* ($M = 3.00$, $SD = 0.00$). Table 12 shows the full responses to personal device use while practicing.

Table 12*Use of Personal Device While Practicing*

Device Activity	<i>n</i>	%
Answer a phone call		
Sometimes	24	50.0
Never	19	39.6
Always	5	10.4
Check and/or respond to a text		
Sometimes	24	50.0
Never	14	29.2
Always	10	20.8
Open <i>Snapchat</i>		
Never	44	91.7
Sometimes	4	8.3
Always	0	0.0
Open <i>TikTok</i>		
Never	41	85.4
Sometimes	7	14.6
Always	0	0.0
Open <i>Instagram</i>		
Never	44	91.7
Sometimes	4	8.3
Always	0	0.0
Open <i>Facebook</i>		
Never	48	100.0
Always	0	0.0
Sometimes	0	0.0

Survey Section 5: Goal Setting and Motivation

The final research question sought to determine if there was a relationship between how much the students enjoyed practicing and the number of times they felt unmotivated while practicing. The results of the survey indicate that out of the 48 students who responded to the questions pertaining to goal-setting and motivation, 100.0% of the participants responded that they either “always” or “sometimes” set goals for their practice ($M = 1.54$, $SD = .50$), 100.0% stated that they either “always” or “sometimes” enjoyed practicing their instrument ($M = 1.31$,

$SD = .49$) and only one participant (2.1%) expressed never feeling motivated to practice ($M = 1.58$, $SD = .54$). Table 13 shows the full responses.

Table 13

Goal Setting and Motivation

Statements	<i>n</i>	%
I set goals for myself when I practice.		
Always	26	54.2
Sometimes	22	45.8
Never	0	0.0
I enjoy practicing my instrument.		
Always	33	68.8
Sometimes	15	31.3
Never	0	0.0
I feel motivated to practice my instrument.		
Sometimes	26	54.2
Always	21	43.8
Never	1	2.1

I ran a post-hoc Spearman’s rho correlation on participants’ enjoyment of practice and their feelings on being motivated to practice. I found a moderate correlation between the two variables ($\rho(46) = .347$, $p < .05$). Table 14 shows the results from the Spearman’s rho.

Table 14

Spearman’s ρ

Items	I enjoy practicing.	I feel motivated to practice.
I enjoy practicing.		
Correlation Coefficient	1.000	.347
Sig. (2-tailed)	0.0	.016
I feel motivated to practice.		
Correlation Coefficient	.347	1.000
Sig. (2-tailed)	.016	0.0

I ran a post-hoc test to determine if there were any relationships between age with both enjoyment of practice and feelings about levels of motivation when practicing. I ran a chi-square test of independence comparing participant age and their enjoyment of practicing. No significant

relationship was found ($\chi^2 (3) = 3.886, p > .05$) between these two variables. I calculated a chi-square test of independence to compare student age and motivation to practice. I found a significant interaction ($\chi^2 (6) = 17.118, p < .01$) between these variables, which confirms that younger students tend to be more motivated to practice.

Qualitative Focus Group Interview Data

The band directors at each school selected the focus group participants based on parental permission, minor assent, and student schedule and availability. The focus groups took place at School A and School B. No focus group interviews took place at School C. A total of four ($n = 4$) focus group interviews took place, two at each school. I conducted the interviews via Zoom videoconferencing software. Prior to the focus group interviews, I corresponded with the directors at School A and School B to determine the best time of day to speak with two to three students at once. I aimed for two to three students in each focus group to provide a level of comfort and support when discussing their practice habits with me, and to also give the students more opportunities to share their ideas and thoughts pertaining to practicing.

Demographics

A total of twelve ($n = 12$) participants spoke with me during the focus group interviews. Each focus group interview consisted of three ($n = 3$) participants. The participant identities will remain confidential, and I will use pseudonyms to refer to the participants to protect their identities. I completed the interviews at School A first. I sent a Zoom link to the director at School A. The director and I selected two dates and times that worked best with the schedules of the students who were selected to participate in the focus groups. Both interviews at School A took place over Zoom and for each interview, the three participants logged in from one computer in the director's office adjacent to the band room. I also had a research assistant in the Zoom call

to assist in case of any technology mishaps or technical difficulties. The research assistant was a former middle school choir director who was also pursuing a doctorate degree and had experience with technology and the qualitative research process.

The first interview at School A lasted approximately 18 minutes and was the shortest of all four interviews. The sound and microphone were tested before the start of the interview with the director in the room. Once the interview began and the director began rehearsal, it was difficult to hear the participants, as they were not using an external microphone for the recording. As a result, I had difficulty hearing the students and asked them to repeat themselves throughout the interview. Some statements were indecipherable in the recording and could not be clearly notated. The three participants were all in the eighth grade and were Eric (male), who played alto saxophone, Alex (male) who played trombone, and Marissa (female) who played trumpet.

The second interview took place the following day with participants from School A. After reviewing the first focus group video, I asked that the students use an external microphone for the recording. The result was much clearer and easier to hear. This interview lasted approximately 31 minutes. The three participants in this focus group were all in the eighth grade and all members of the percussion section. Their names were Lucas (male), Archie (male), and Ellen (female).

The first interview at School B took place the following week. I worked with the director to determine the dates and times of the two focus groups based on the availability and schedule of the consenting students. Three students participated in the first interview at School B, which lasted 22 minutes. I communicated with the band director at School B prior to conducting the interviews and delivered an external microphone to the school for use in the interviews. I did this to prepare for any difficulty hearing the students, as the interviews took place in the director's

office adjacent to the band room while rehearsal was taking place simultaneously. These participating students were all in seventh grade and all played clarinet. The participants were Liam (male), Leonard (male), and Lucy (female). The second interview at School B lasted 30 minutes and consisted of three participants: Vincent (male) who played alto saxophone, Shelby (male) who played French Horn, and Zoey (female) who played alto saxophone. All three students were in the seventh grade.

Organization

The findings presented in this section are organized by emergent themes. In general, five main themes surfaced: (a) goal setting, (b) motivation, (c) self-regulation, (d) flow, and (e) technology. In some cases, a large idea or theme was divided into multiple sub-categories for better organization of data. Participant quotes are used throughout to support each of the themes.

Theme 1: Goal setting

Goal setting emerged as a theme in my discussions with the participants. The participant answers were in response to interview questions that asked the students directly how they described their practice goals and how they determined what to practice each day:

- How do you determine what you are going to practice each day?
- How would you describe your practice goals?

I organized the responses into two sub-categories: performance-based goals and time-based goals. Two students from School B engaged in a conversation about performance-based versus time-based goal setting and how the two can be intermingled depending on the material that is being rehearsed. Shelby said, “if I’ve been practicing for a long time on that one like line or something I’ll stop because we’re probably going to keep working on it in class the next day, so I’ll work on it in class, then the next day I’ll go home and try it again.” Vincent responded,

“Same for me too like...when like my timer goes up if I’m still working on something I’ll continue to work on it.”

Some students spoke about performance goals driving their practice goals. In Leonard’s case, he would continue to practice past his allotted practice time if he had a goal he wanted to achieve. Leonard stated: “I generally have a goal that I’ll play 12 major scales then go over my piece [...] for orchestra and go over band. But the thing is, I always try to finish that so even like...I’m over that 45-minute limit if I still have time if I didn't finish, I’ll try to finish when I’m playing.” Lucy, who has a sibling and practices while at home with her brother and parents, stated: “When I play my schedule gets interrupted a lot, so I will sometimes practice with only 10 minutes on the practice sheet. But I always try to like have certain things that I want to finish every time I practice”.

The band directors at each school utilized practice sheets (often referred to as practice logs by the students) and students at both schools spoke frequently about the incorporation of practice sheets into their after-school practicing. More information will be included on the use of practice records in the Chapter 5 discussion, but it is important to illustrate through participant quotes how often the students relied on the structure of a practice record to accomplish their goals during their practicing. Students shared that practice records informed their goal setting, and many of the participants spoke explicitly about achieving a time goal during practice that was associated with a practice record. Ellen explained:

Normally [my teacher] makes us practice 20 minutes a day. ‘Cause sometimes like when you don't do it like on that day, you have to...my mom normally makes me during the week like do all the time I miss because...I don’t know...If I miss time like over the

week I try and like make it up on the weekend, since we don't have as much to do. So normally more practice goes in during the weekend rather than school days.

Students at School A had a practice goal of 140 minutes per week (set by the band director).

Ellen said, “Yeah you could do you know 40 one day and then do like 10 another day so it's not like 20 exactly.” Zoey, who attends a different school than Ellen and is only required to practice 100 minutes on her practice sheet, elaborated on her practice schedule: “I practice for 20 minutes...20 minutes each weekday and try to do about 10 minutes each weekend day.” Zoey continued: “Sometimes I know...I know that I have to practice 20 minutes, every day, and if I do 20 minutes every day then that equals 100 minutes and our least amount of time we have to do each week is 100 minutes. And so, if I do less than 20 minutes, I know that other days I will have to do more, when I don't want to.”

Most participants were dependent on their technology (rather than a parent or sibling) to time out their practicing. Shelby uses a timer to determine how long he practices each day. Vincent uses an Alexa timer to measure his practicing. Zoey uses other appliances such as the oven or microwave clocks to check her practice time. In general, all but one student spoke about using timers on devices to help them either know when to stop practicing (by use of an alarm) or to check the time periodically as they practice and notate when they begin and end each practice session.

Theme 2: Motivation

I asked three questions to determine how students felt about practicing their instruments:

1. Can you describe your feelings about instrument practice?
2. What are your attitudes or feelings about practicing your instrument?
3. What motivates you to practice?

I broke the larger theme of motivation into two categories: extrinsic motivation and intrinsic motivation. Lucas explained that his motivation for practicing is driven by both wanting to earn something after his practice (such as getting to play outside) and in also wanting to play more challenging music and be in a more advanced band:

I feel like it's more motivating for what's after practicing because it's more fun. Like you're more motivated if you get something after you finish practicing. I mean let's say it's like your mom says, you get candy I mean that's not really motivating that much now. I mean last...like when I was three it might be but like it's not really now because, like...it's candy. It's...it's gone...it's gone in three seconds, so I normally like it's something like...like let's say you get...you get to go outside or something like that, or like you get to play on a game like that's more motivating because it's something that lasts longer instead of something that's like 30 seconds that you can enjoy.

Lucas continued, “I don't want to like be in like the lowest band and have boring music, that is... isn't fun to play for like...because, like I want something that's challenging me.” Ellen agreed with Lucas and added, “Yeah, I think, if you like, know that you get something after you're practicing and even if you don't want to be...like once I get this out of the way then I get to go somewhere I get to go hang out with someone too. Normally that's motivating to like know that once you get your practice done, you're done with it and you have other things to do.”

Archie found motivation in wanting to pursue bigger life goals through music: “So my motivation to keep on practicing...is basically like I want to become like a part time drummer. For an actual band. So my motivation is to get better and make sure that I can do what I really want to do.” Lucas also agreed that he sees music as a potential career choice and that it helps him to stay motivated to practice: “I realized that band is really fun when you get to like be like

more together. So I...I've been starting to like realize that and it's like more fun of a career.”

Ellen continued, stating that for her, staying motivated to practice comes down to knowing that she wants to do well on placement tests:

And I think like when we have something that we're trying to like work to or like we want to make a band, like the placement test it's easier to practice just because you know...like when you practice you're going to get better and then you're gonna like...get something that you want, and so it's like easier practice when you're like working toward a goal rather than just like practicing.

Theme 3: Self-Regulation

Self-regulation is a broad category that I also chose to break apart into multiple sub-categories. I received valuable information from the participants that I felt needed to be included in this section and organized in such a way that it is apparent how the students organized their time. These questions addressed self-regulation in the focus group interviews:

1. Do you feel like you stay focused when you practice?
 - 1.1.If yes, how do you help keep yourself focused?
 - 1.2.If no, what prevents you from staying focused?
2. When you practice, do you turn off other technology (tv/music/computer) when practicing?
 - 2.1.Why or why not?
3. In general, what happens when you get a notification (text message, phone call, notification from *Snapchat*, *TikTok*, *Instagram*, etc.) when you are practicing?

I chose to subdivide the self-regulation theme into four sub-categories: management of external distractions, parent or sibling help, practice structure, and technology alerts and notifications.

Managing External Distractions. Several participants spoke about external distractions in the form of other people in the house while they were practicing. Some participants worked to manage distractions by siblings, such as Lucas:

I have seven people in my family so every time I would record [a playing test] I had to do like 60 times because my brothers would always walk in or my...or someone is screaming in the back and it messes me up and I remember one time, I was like at the end and then my dad called me like, as I was on the last line and I had to start all over because it was like really loud so that's...that happened to me once.

Shelby also spoke about his siblings: “I have three siblings so it's really hard to...we're all doing something a...something at different times it's it's...it's really hard, sometimes for me to stay focused especially when one of them is doing something else so but I try my best to try to focus on practicing.” Two of the students spoke about their ability to manage those distractions by either putting headphones in while they practiced, or by turning off outside noises such as the television to focus on their practicing.

Parent or Sibling Help. It was clear that while the students showed great attention to managing their time on their instruments, there were others in their households that also held them accountable for practicing and making the most out of their practice time. The percussion students shared that it was especially helpful to have someone play parts along with them when they practiced at home, due to the often sparse nature of their concert music. Lucas stated, “I asked my dad...he likes to play drums. So I would ask him if you do one part while I did the other.” Archie, also a percussionist, had help from an uncle who helped him practice his drum set. Liam, a clarinetist, was able to enlist the help of an older sister who played piano and who would accompany him on some of his music.

Practice Structure. As previously mentioned, a more in-depth discussion on the use of practice records is included in Chapter 5, but it is important that the role of practice records is not overlooked in how the students structured their practice time. Ellen spoke of how she approached practicing: “Sometimes I’ll have a plan, but other times I was...kind of just go work on the music rather than like warming up. The normal I try and like warm up if it's all like melodic I try and warm up on something easier or simpler that's like kind of more structural and then work on the music.” It seems apparent that the students are modeling their practice time in the same way that their rehearsals are likely set up during band classes at school.

At School B, the director provides an outline for how the students should structure their practice time in addition to a suggested number of minutes each week. The students from School B spoke more about this. Zoey stated: “I try and practice, there are two blocks, well, I have to practice the warmup block every single day, but I usually practice the book work and the music the most, and I do the chunks whenever I have extra time.” She continued, “[our director] ...she doesn't tell us something we have to practice, but during the week, we have to practice every single block and our music at least one time or two times so we just practice, whatever we can each day, and she never really dictates what we do.” The blocks that Zoey is referring to are practice blocks that their band director assigns them that consist of rhythm work, band music, warm-ups, etc.

Shelby, also at School B, agreed with Zoey: “Like [Zoey] said, we have more freedom with our log sheet...when I write down all the music I play I can't all fit it in one block so some days I might practice only two songs I can fit in my block and then the next day I’ll make sure I practice songs I didn't get to the song or songs I didn't get to.” Shelby continued: “Well, for me...it depends on what we're doing in class that week, I base it off of that. But mostly I stick to

the same routine every day. I do my warmups then my rhythm chunks then my book work, then my music.” Vincent agreed: “I like that we get...we can practice in any order that we want, like I can do that I can go to bookwork and then music and then rhythm chunks or any way.” The practice records not only helped the students practice more effectively, but in many ways helped the students manage their time more efficiently during the week. Shelby spoke to this:

For me...I try to practice at least 30 minutes a day because um...we get our log sheets on Tuesdays. If I do 30 minutes a day that would be 90 and then I can practice, however much I want really just over 10 on Monday. But um, if like if something takes me awhile on somedays... like if I’m working on the line for a really long time and I lose track of time say on a Wednesday and end up practicing for like 45 minutes that day I might only practice for like 20 minutes the next day.

Technology Alerts and Notifications. I asked the students whether they turned their notifications or sound off on their device while they were practicing, and if they did not, if they stopped their practice to engage with their technology. Ellen said: “Most of the technology is downstairs in my house so normally when I practice, I’ll try and like go upstairs because I don’t have like a TV or anything in my room and practice there and just like take my phone for a metronome.” She continued: “Yeah I normally just put my phone on like silent and if it’s only 20 minutes of practice I shouldn’t have like that many notifications after so...I’ll put it on silent and after I’ll check it.”

Archie agreed, stating: “Oh yeah I usually put my phone on silent. And like [Lucas] said I use my school iPad. But sometimes I forget to put my phone on silent. But like I don’t ever check it until like I’m done. Cause I kinda like to get all of my practicing in without any interruptions.” Zoey, who does not have her own phone, said that technology for her was rarely an issue with

distraction during practice: “I don’t have a phone or anything to have when I’m doing things, the only kind of device I have is a phone that I share with both of my sisters. And usually my big sister has the phone. So probably the only technology I have in there is my iPad for school and my watch. And my watch doesn’t really ring and my iPad doesn't ring.”

Some students had wearable devices, which were not explicitly asked about in the focus groups nor included in the survey but were brought up by some of the participants. Vincent said: “I wear my watch all the time, and so on when it goes off while I’m practicing, I don't really pay much attention to it so.” For most students, it appeared that having technology was a normal part of functioning both at school and after school, but it did not appear to be a hinderance to their productivity in activities involving homework or practicing. Shelby spoke to this, stating:

Well, I do have a personal device computer, but I leave that in my room, so I don't really have email on...I just check my Gmail account on that. But then I also have my school iPad in the room, which I have it on...on full volume, so I can hear the metronome. And sometimes it goes off when I have like...if I forget to like check something off my reminders app I might get a notification saying turn that off, but I’ll turn it off when I’m finished playing whatever scale or line that I’m doing.

I asked the students whether they stopped practice to answer notifications or respond to alerts on their devices, and Leonard shared: “Well I at least try to finish like the thing I’m doing even though I’m so curious about what it is. I still like I...I finish everything and check. So then maybe after like the piece I’m playing.” Liam agreed that he turned off all notifications on his devices until he was finished practicing. Two students at School A said they leave their devices off completely when they practice. When asked why they chose to do that, Marissa answered: “If a notification comes in or something, it could distract me. And then like get off.”

Theme 4: Flow theory

I did not expect to find “flow” in the words of middle school students. However, as I spoke with the participants, a few mentioned losing track of time while they practiced as a result of finding fulfillment and joy in the activity. These participants were experiencing flow while playing their instruments, and more importantly, embracing it. Leonard provided this insight into his enjoyment of practicing: “I mean if I practice, I feel like I’m in this world where it’s only me and the clarinet and the notes I’m playing and then like I play whatever sounds good to play. It’s really entertaining. So I just do that and then like an hour goes by really quickly.” Leonard continued with:

I just feel like...I mean...I feel like it's not my job, but it's like a thing. It's like a hobby. I just really want to play this and then like...when it's time for clarinet it's like a stress reliever for all the stress I got from school or like my [inaudible] and stuff, but I think about it like it's fun. I really love practicing the clarinet. It makes me want to practice more.

Lucy stated: “Well like when I’m practicing, it’s just like... I always have people over at my house because like my brother and my parents. But I always like put in my headphones to try to block out everything else. And I’ll just sit there for I don’t even know how long and do it because it’s just so fun to do.”

Theme 5: Technology Applications

In this last section I spoke with the students about the ways music technology is helpful to them while they practice, and I listened to their thoughts on how and why they felt technology is helpful. The questions that I used to initiate these discussions are as follows:

- How often do you use music technology when you practice?

- What type of music technology do you use the most, and why?
- What type of music technology do you use the least, and why?
- Can you please tell me about the ways you use music technology when you practice?
 - How does music technology help you practice your instrument?
 - How does music technology help make you a better musician and performer on your instrument?
 - Do you use any other types of technology when you practice? This can be music-related or not.

I also included these questions in the survey. I designed this intentionally for the potential of elaboration on any or all of the questions and prompts. Most students cited the metronome as the music technology they used most frequently. This is consistent with the survey results. I asked the participants how the metronome specifically benefitted them during practice, and Archie stated: “I think it like helps us stay on beat. Like if you get it like in your head...like you can like...have a metronome and then you don’t really need it as much as you used to.” Ellen said: “I think when you use a metronome at home and like get better at staying on beat then you’ll do it better when you actually have to like perform or do it for a teacher.” Only one student mentioned not using a metronome, but that they actively using a recording device for test taking.

Shelby mentioned that his use of the metronome is due to the inability to find other technology that he felt best suited his instrument: “I use the metronome the most. I tried to find a tuner but I really couldn't find one that was good for the French horn so I’d mostly use the metronome.” Shelby continued, “For me, it helps me get better....at staying with the tempo at different...at different like paces and music like 100 or 50 helped me stay at different ones.”

Both Zoey and Vincent agreed with Shelby, and said it helped them to be prepared to stay at the tempo(s) required for tests. Shelby also told me that he re-watches his playing tests and recordings: “Same here, for me it helps me stay at beat with my tests, but then also I can kind of like... it helps me like when I re-watch the test, I can hear like how fast or how slow I’m going compared to like...to see if I’m playing or staying at the tempo or not in class.”

Leonard spoke of the importance of producing a characteristic tone on his instrument, the clarinet: “I think, I use the tuner most because I mean...I love metronome. But I really want to hear a good sound and my teacher always told me to get good sound when playing, though I think a tuner is the music technology I use.” Leonard elaborated by describing the difference between the two: “At first using a metronome makes me not go faster and not go slower. And then ah...using a tuner helps me to get pitch which makes it sound better. And generally when we’re practicing long tones it’s really better for you to hear.”

Technology also helped the students improve their overall musicianship, as Ellen described: “I play other instruments like outside of school, so it helps like...if you if you work on something here, then it like they all just kind of connect and they all end up helping each other, like the things I do.” This aligns with the opinions of band directors’ surveyed in 2020 in that they believe individual musicianship was increased during the COVID-19 pandemic due to remote learning (Hash, 2020). I will discuss the findings, explore different avenues for conducting similar research in the future, and provide implications for future research in the next chapter.

Chapter Five

Discussion

Productive and deliberate practice is essential to improving on an instrument (Byo & Cassidy, 2008; Ericsson et al., 1993; Lehmann & Ericsson, 1996; Macnamara et al, 2014). The Tanglewood Symposium advocated for the full incorporation of technology into music programs (Choate, 1968) and that charge was continued at the Vision 2020: Housewright Symposium in 1999 (National Association for Music Education, 2000). Technology has expanded and is now prevalent in nearly all areas of education and has become a necessary tool for students and teachers alike (Dammers, 2009, 2012; Gorgoretti, 2019; Gray & Lewis, 2020; Merrick, 2018; Okojie, 2006; Yoo, 2020).

While many teachers encourage the use of technology to inform, supplement, and guide students' independent learning, there is little evidence of how young musicians interact with their technology when practicing in solitude outside of school. Oare (2012) conducted research with young musicians in grades seven through nine to examine their decision-making processes as they practiced and found they benefitted most from performance goals. However, little research focuses explicitly on how young music students practice and set goals during their practice, specifically through the lens of music technology. The student perspective is insightful in determining how students self-regulate their practice time specifically with technology, and how they set goals and stay motivated to do so.

I sought to understand how students self-regulate their technology while practicing. In this research I relied on beginning band students' abilities to self-report and describe their interaction with technology during their practice. As a result of asking students about their use of technology when they practiced, I hoped to determine the ways students used technology

effectively. In this chapter, I discuss the results presented in Chapter Four with more detail. First, I discuss the preliminary questions that differentiated between the participants who used technology and those that did not, followed by a discussion of my research questions. I will combine the information gathered through both qualitative and quantitative data collection and draw conclusions, offer suggestions, and provide implications for how this research can be used to help music educators better understand how students are utilizing technology and managing their time while practicing.

Student Use of Music Technology in Practice Sessions

The first research question sought to determine if students used music technology in their practicing. The findings from the research indicated that most of the participants used technology at least sometimes when they practiced. The survey was designed to eliminate all students who did not use technology during their practice sessions. The first elimination question in the survey asked the participants if they had a personal device. All participants responded “yes.” This is not surprising, as a Common Sense Media study conducted in 2019 found that approximately 69% of children in the United States owned a smartphone by age 12. This aligned with the responses of the students from the survey, which indicated that most of the students used a smartphone as their primary personal device. Most students responded that they kept their device with them when they practiced and that they used technology either most of the time, sometimes, or always. Only one student responded that they rarely used music technology during practice. The focus group interviews supported the survey findings, as only one out of the 12 students in the focus group interviews indicated that they rarely used music technology. That participant stated that when it was used, it was because of an assessment requirement by the band director, such as to complete a playing test or recording for a class assignment.

There are a few reasons that may attribute to the increase in music technology use. The ease and convenience of music applications have enabled many students to download applications onto their personal devices to use while practicing and completing homework and other school assignments. There likely was more explicit instruction from band directors on proper and effective technology use especially after the COVID-19 pandemic, as technology played a vital role in communication and instruction while students and teachers remained at home or separated (Biasutti, Philippe & Schiavio, 2021; Hash, 2020; Kocoglu & Tekdal, 2020). As students shared in the focus group interviews, technology was required when they were at home during quarantine. The participants wanted to remain caught up on assignments in all classes, including band. The students spoke of the importance of not falling behind to play well enough to take chair auditions and move to more advanced ensembles in their school. Based on the participant testimonials, it seems clear that the students took ownership of their own learning in band and were able to understand that the work done at home alone would be beneficial to their development as musicians in the full ensemble.

Use of Personal Devices During Practice

Music educators must design their curricula in such a way that allows students to incorporate technology into their practice with the understanding that it is appreciated in the classroom (Merrick, 2018). Further, the incorporation of technology must align with the NAfME standards and provide opportunities for students to learn using technology (Yoo, 2020). It was apparent that the students involved in this research were well acquainted with music technology and had been encouraged to use it by their teachers, especially when self-evaluation was the focus. One participant in the focus groups spoke about recording a playing test multiple times to turn in their best work to the teacher for a grade. When students can self-evaluate and critique

their own performances, they are developing critical listening skills that pay off not only in individual performance, but in the ensemble as well. These are characteristics of self-regulated learners (Benbenutty, 2011; Zimmerman, 2002). This aligns with research from Hewitt that found that self-evaluation alone did not improve young musicians' performance, but self-evaluation combined with recordings allowed musicians to develop independent performance skills (2001).

There is extensive research on the benefits of using technology in the classroom (Choate, 1968; Dammers, 2012; Gorgoretti, 2019; Linklater, 1997; Merrick, 2018; Middleton & Murray, 1999; Okojie, 2006; Yoo, 2020) but there is a lack of research on the attitudes of young students toward technology in their individual practice. My second research question sought to learn how students used and interacted with their personal device during their practice time. To better organize the findings, I divided the results into separate groups: music applications and attitudes toward music technology.

Music Applications

In a 2006 study, undergraduate and graduate music majors reported the use of recordings, metronomes, and tuners as practice strategies (Miksza). Similarly, the survey results showed that most students used between one and three music applications while they practiced. The most popular music application was the metronome, and not surprisingly the second most used type of music technology were video players such as *YouTube* or *Vimeo*. I believe this is directly related to the increasing popularity of *YouTube* among children. Neumann and Herodotu (2020) found that 80% of children through age seven use *YouTube*. It is likely that as children grow up using *YouTube* for entertainment, they also evolve to using it to assist them in their homework due to *YouTube*'s familiarity and extensive resources, such as recordings of their band music or

instructional videos on their instruments. Some students in the focus groups spoke about the convenience of *YouTube* and their ability to look up their music and play along with it as they practiced. This was helpful to the students when they wanted to learn how their individual parts fit into the whole. Thoughtful self-evaluation combined with recordings can help young musicians develop independent performance skills (Hewitt, 2001).

I believe that because so many of the participants began learning instruments during a pandemic year, they are keenly aware that they need to understand the make-up and characteristics of the entire ensemble to better understand their unique part. Band is uniquely both an individual activity and a group activity, therefore students who participate in band must be able to practice independently and understand the role they play in the ensemble.

Attitudes Toward Music Technology

When a student has clear goals, practice strategies, and self-discipline, they are more likely to achieve deliberate and productive practice (Byo & Cassidy, 2008; Miksza, 2007; Oare, 2012). Most of the participants (95.8%) believed that music technology helped them improve on their instruments when they practiced. The two students that did not feel music technology helped them on their instruments may be the students who rarely used music technology or who only used it when it was required by the teacher. These two responses may be interpreted as either a selection mistake on behalf of the participants, or as outliers, as all participants agreed that technology helped them improve their overall musicianship. This finding is interesting because it leads me to believe that the students understand the importance of music technology in the overall improvement of the ensemble, rather than only on their own individual performance on a test. Students in the focus groups spoke about using technology to help them understand other parts in the music, which illustrates an awareness of the music outside of the student's

individual part. The participants in the focus groups spoke about the importance of the metronome in providing structure for them as they practiced alone, but also in teaching them how to play music at varying tempos so that playing with an ensemble was easier. I was impressed at how frequently the findings indicated that students worked toward improving for the betterment of the ensemble rather than betterment of the individual.

The participants were divided on their feelings toward technology increasing their enjoyment of practice. Fifteen participants responded “mostly no” or “no” to whether technology helped them enjoy practice more. In talking with the participants, I also got mixed responses. Some students viewed music technology as a tool for completing a task efficiently, rather than a way to increase practice enjoyment. Technology certainly helped the students improve in their practice, but not all students enjoyed using it, and instead saw it as a necessity.

Lastly, most of the participants agreed that music technology helped them remain focused when they practiced. Many students in the focus groups talked about their use of a timer, whether it was on their device, watch, or on a kitchen appliance to help them establish practice routines and goals. The students spoke of wanting to play well on chair tests, and of their desires to become better on their instruments and make a higher or more advanced band. They believed that technology helped them do this and were willing to commit their time to establishing clear goals in their practice. A follow-up research question sought to determine if there was a relationship between the ways students interacted with their personal device and their perceived success on their instrument; their enjoyment of practicing their instrument; and/or their perceived focus while practicing. The Spearman’s rho showed that many students who believed that technology helped them improve on their instrument also believed that technology helped them improve their overall musicianship.

Student Use of Self-Regulation Strategies

I relied heavily on participant testimonials to understand the ways students employed self-regulation strategies to remain focused while they practiced and used technology. Most students in the focus groups spoke of setting either time-based or performance-based goals in their practicing. As previously mentioned, some students were motivated by wanting to do well on a playing test or by being able to move up to a more advanced ensemble. Others sought more immediate rewards, like being able to play video games or play outside. Some students spoke of approaching band homework in the way they would complete homework for any other class. When students can manage their distractions and take responsibility for their learning by setting goals and managing their time, they are practicing self-regulation skills that are more effective than simply counting minutes practiced (Bembenutty, 2011; McCann & Turner, 2004; Ramdass & Zimmerman, 2011; Zimmerman, 2002). Below I discuss other themes that emerged in the findings. It is important to acknowledge that in the focus groups, I spoke to students who seemed very responsible and invested in both band and their individual instruments, and who were very eager to talk with me about how they practiced. Though the findings indicate that these students were able to measure and regulate their practice time and goals with their use of technology, this is not generalizable among all seventh and eighth grade band students.

Practice Records

I found that students relied heavily on practice records to structure their practice time throughout the week. Though there is very little research on the effectiveness and use of practice records, Barry and McArthur (1994) did find that practice records may not always attribute to effective practice. I did not ask exclusively about the use of practice records in the survey or in the focus groups, however the students volunteered this information and spoke about their

reliance on practice records. It was clear that the students measured their practice time both by minutes and by performance goals. A few participants spoke about shifting the priority from practicing an instrument to studying for a test depending on the week. However, the students expressed that if they had to cut short their practice time, they would make up for it later in the week. In one of the schools, the director had specific “blocks” or “chunks” that the students were required to complete on their practice records which helped the students compartmentalize their practicing.

Follow-up questioning of the directors at these schools would provide insight as to how many students complete the practice records each week, and whether they are required to complete the practice records for a grade. Certainly, students who care about their grades in any class would be committed to completing practice records if it contributed as a grade for band. My previous experience has taught me that while many students complete practice records in full, some students may be dishonest about the amount of practice they complete. Even with verification through the use of a required parent signature, the students could still falsify their practice time. There is a need for research that focuses on the many ways that practice records are utilized in secondary instrumental classrooms and their effectiveness in helping students learn proper and efficient practice and self-regulation strategies while maintaining integrity and honesty.

Do Not Disturb/Silent

A surprising finding were the split responses in the survey as to whether the students kept their personal device on “Do Not Disturb,” “Silent,” or “Airplane Mode” when they practiced. “No” was the most popular answer and “yes” was the second most popular. I suspect that this comes down to personality type and/or learning style of each student. In the focus groups, some

students spoke of looking for places in their homes to be away from family members who were making noise or watching television. Other students spoke of using headphones to block out other noises while they practiced. It is likely that the students who preferred to keep their devices on silent were also the students who sought a quiet place to practice and complete homework, indicating that the students know the environment in which they are most productive. These behaviors align with descriptions of self-regulation, as the ability to control one's environment directly contributes to self-awareness (Austin & Berg, 2006; Byo & Cassidy, 2008; Ericsson et al., 1993; Xu & Corno, 2003; Zimmerman, 2002). For other students, minor sounds and/or notifications were treated as normal sound effects in their daily life, just as were sibling and parent noises throughout the house. One student spoke of her ability to hear her phone ring or vibrate while practicing but that she was able to ignore it until she was ready to take a break or quit practicing.

The students' inability to get distracted by their technology was my most interesting discovery. Most students did not appear to be so attached to their technology that it distracted them from their current tasks, contrary to research that claimed school-age children may experience anxiety related to addiction to personal devices (Billeuex et al., 2015; Rosen, 2017). As a millennial who can remember life before cell phones and iPads, I still consider the cell phone a valuable and necessary part of my adulthood and will never take for granted the ways technology allows me to connect with the world. For these students who are part of a generation immersed in technology with information always available at their fingertips, the novelty of the cell phone and internet appear to be non-existent.

More research would be useful in understanding self-regulation among middle school band students and their use of technology during practice. Research that explores students both

younger and older than the participants in this study could reveal trends or differences among responses by grade level and experience on their instruments. It would also be beneficial to expand the research to include rural and urban school systems to seek more diverse participants. The school systems used in this study were in affluent communities near a large university, where there 58% of all adults ages 25 and older are reported to have a bachelor's degree or higher (U.S. Census, 2021). Students in communities who do not have parents at home after school may be more likely to overconsume technology or may not have an ideal practice environment due to external variables out of their control. Further, conducting this research post-pandemic could also potentially yield different responses from the students. An expansion upon this research to include band directors' perceptions of their students' use of technology, the directors' attitudes toward technology as a practice tool, and directors' opinions on how well their students practice would be beneficial.

Taking Breaks During Practice

Taking mental breaks while completing a task is helpful in managing engagement and boredom with an activity (Gazzaley & Rosen, 2018). The survey results showed that most students do not take breaks from practicing to check their devices for phone calls, text messages, social media notifications, or to play games. The students were asked how they used their device in other ways while practicing. Most participants indicated that they either sometimes or never answered a phone call or responded to a text message. I asked the participants specifically about their use of *Snapchat*, *TikTok*, *Instagram* and *Facebook* and whether they took breaks while practicing to open any of those applications. The responses were an overwhelming "no" to each prompt. A small number of students indicated that they sometimes opened *Snapchat*, *TikTok*, and *Instagram*, but no participants expressed indicated that they used *Facebook*. I asked the students

in the focus groups to describe any other ways they used their device while practicing. The responses were similar to the survey results in that they didn't take breaks to use their device nor feel interrupted by their device while practicing. One participant indicated that he didn't have many friends to text him, so he rarely felt he was interrupted. For some participants, the reason they had a cell phone at all was to communicate with their parents who were generally at home with the participants when they practiced.

Student Motivation

The final research questions addressed how students felt about their levels of motivation and sought to determine if there was a relationship between their feelings of motivation and how much they enjoyed practicing. All students either always or sometimes set goals for their practice, according to the survey. All students responded that they either always or sometimes enjoyed practicing their instrument, and when asked if they felt motivated to practice their instrument all but one participant indicated that they either sometimes or always felt motivated to practice. Understanding motivation is critical to understanding why students begin playing an instrument and choose to practice and stick with it through the many challenges that learning an instrument brings.

Earlier in this chapter I discussed the numerous ways that students set goals when they practiced. Many students spoke of external motivators such as practicing to be placed in a higher or more advanced band or practicing simply to complete their work to be allowed to play outside. Other students spoke of internal motivators for practicing, which revolved around wanting to be better performers and musicians not only for themselves and their own enjoyment but for the betterment of the ensemble. There are many reasons that may attribute to these responses. First, the students are all either in their first or second year in band. Previous research

shows that attitudes toward instrumental music are higher in a musician's first year of instruction and tend to decline after the first year (Brown, 1996). Most of the eighth-grade students started band in a pandemic year and spent a good amount of time learning virtually. The seventh-grade students are in their first year of band and are eager to progress and learn a new skill.

School culture cannot be overlooked in this discussion of student perceptions of enjoying practicing. The students who participated in the research are part of successful and supported band programs with teachers who foster their musical growth and development. A few students in the focus group interviews spoke of having family members who also played instruments, so there was no lack of support for these young students in pursuing their musical outlet. The focus group interviews provided insight on how students stayed focused when they practiced. In addition to mentioning performance and time-based goals, a few students mentioned losing sense of time, so much that an hour passed by quickly when they were focused solely on practicing. This description of flow aligns with definitions outlined by Csikszentmihalyi (1990). The statement also aligns with a 2020 study by Lui and Csikszentmihalyi that identified flow as a phenomenon that happens commonly in solitude, as would be likely when a student is practicing an instrument. The participant testimonials aligned with the survey in revealing that many students enjoyed practicing their instruments.

Participant and Study Limitations

I aimed to find a diverse sample of participants from multiple schools to both survey and interview for this research study. However, many situations in the execution of the research could not be controlled for, as is expected when conducting research with minors in school systems. I distributed permission forms to 380 students, and only 75 forms were returned complete, which was less than my desired goal of 100 completed permission forms. Further, I

designed this research for students in grades seven and eight because these are the first two years of participation in organized school bands in the schools used in the study. At School A, the band director initially sent the informational letter and permission forms to students in eighth and ninth grades. Despite several ninth-grade students returning complete permission forms, I could not use them in the research because they were not in the approved or desired age and experience bracket. At School B, the director distributed the survey to a few participants who did not have completed permission forms with all signatures. Those survey responses were redacted.

External barriers limited my reach and interaction with the participants, specifically in participant recruitment. At the time the IRB was written and approved in the summer of 2021, COVID-19 safety protocols were still in place at both Auburn University and within each school system, which prevented me from entering the schools to interact with the potential participants myself. I relied solely on the band directors at each school to distribute the informational letter and permission form packets to all students in the band programs.

Time was also problematic in conducting this research. Prior to IRB approval, I met with one of the band directors to determine a timeline of events for distributing the information to the students, collecting permission forms, emailing surveys, and conducting the focus group interviews. The remaining two band directors also adopted this timeline with only slight modifications. I designed the study with the intent that the students complete the survey before being interviewed in the focus groups. Although this is how the timeline was designed at the two schools that participated in the focus group interviews, all four of the focus group interviews took place before the survey was emailed to the participants. I hoped that by taking the survey first, the participants would be prepared with an understanding of what would be asked in the

focus group interviews. I am not certain the students were ready to answer the questions fully in the focus groups due to the reverse order of distribution.

Conclusions and Discussion

Technology in education continues to evolve and in the past two years has become a vital lifeline and source of connection between teachers and students. The way that students learn affects the way teachers design their curriculum, and this does not escape the world of music education. Digital natives now make up our classrooms, and the call to meet those students' needs and learning styles using the resources we have is imperative. Teachers must show young students the best ways to incorporate technology into their practicing. Further, teachers cannot overlook the need to address how students use their technology in ways that benefit them during practice.

This research aimed to learn the ways students incorporated self-regulation strategies while using technology when they practiced. My overarching conclusion after reviewing the data is that middle school band students understand the role that technology plays in helping them improve both on their instruments, and more importantly, as musicians that enhance the overall ensemble. I believe the students in this study can see the larger picture of the benefits of technology outside their own individual improvement. We know that practicing an instrument effectively, like completing homework, is a skill that takes time to develop (Ramdass & Zimmerman, 2011). The students expressed that their technology rarely distracts them from accomplishing either their performance or time-based goals, and rather it provides them with resources for completing their band homework. Similar to a 2018 article by Tang and Patrick, I found that students who set academic and performance-based goals tend to use their technology

more for school-related activities (such as practicing and homework) and less for social interaction.

These results are encouraging for many reasons. First, the students are acting on behalf of their peers and their ensemble by committing to focused practice. While the students are motivated by improving on their instruments, they are also bringing those skills to the full ensemble as well to increase overall performance of the group, much like a team. Second, the participants in this study understand how to manage their time and it is likely that structuring their practice helps them to practice valuable time management skills. Practice records may also be contributing to their regimented practice schedules. Finally, this research shows that young music students are more interested in completing their tasks in full as opposed to taking breaks while practicing. While previous research shows that many students multitask and use technology while completing other academic tasks (Duckworth, 2019), the participants spoke of prioritizing their work over the use of social media or texting to complete their homework for band and other classes before engaging in other social activities. Other research found that technology could distract students and lead to higher levels of stress and anxiety (Rosen, 2017; Rozgonjuk et al., 2019). No students in this study reported feeling stressed or anxious about missing any notifications or communication or feeling addicted to their device. The directors may have selected the students for the focus group interviews due to their strong work ethic in band, which would help explain the highly motivated and goal-driven responses from the participants. A more diverse sample of participants from multiple geographic locations in various schools may have yielded different results from the focus group interviews.

Implications for Future Research

A plethora of ways exist in which this research can be continued or expanded. Though I did not design this research to investigate the effects of the COVID-19 epidemic on the use of technology in the music classroom and in practicing, there is certainly a clear opportunity to study band directors and students on how technology allowed a continuation of learning and improving on their instruments. As we near the close of another academic year slammed with quarantines, masks, and renewed dependence on technology and independent learning, it would be unwise to ignore the many ways that technology use has changed for directors and students.

This research included only a small sample of the age demographic I sought; therefore, these results are not generalizable. A larger sample size may lead to a broader range of responses from the participants, particularly if the make-up of the participants were more diverse and included students in both rural and urban school systems. Though this specific research design was intended to study only young musicians emerging in their development of music and practice skills, it would be helpful to also include older students in the sample to obtain a better understanding as to how students' attitudes and practice habits evolve during the important first few years in band.

I originally intended to distribute the surveys before I interviewed students in focus groups. Because of schedule constraints, none of the participants completed the survey before participating in the focus group interviews. To ensure that the participants understood the type of questions asked, I believe it would be beneficial to replicate this study and complete it as initially designed, with the survey before the interviews to prepare the participants for a discussion about practice habits. Regarding diversity and selection bias, I believe that randomly selecting the students from the approved list of participants may have yielded more diverse responses from the

students. Now that this research is complete and I have the benefit of hindsight, I know that I should have included a wider range of technology for students to select, specifically wearable devices. Students use these devices in many of same ways that they may use a smart phone and including watches in the types of technology used may have yielded different results. I also did not predict that practice records would come up so frequently in my conversations with the participants. Had I the ability to replicate this study, I would modify both the survey and interview questions to address self-regulation from the lens of practice records.

The role of the band directors cannot be overlooked in the discussion of student success during practice. Though I designed this research because I felt there was a lack of research published on the perceptions of young music students, I believe interviews with band directors on the aspects of technology and practice instruction are beneficial. An exploration of class instruction on how to use technology productively during practice and director perceptions of the effectiveness of practice records on students' abilities to achieve practice and performance goals would provide updated insight on how this may have shifted after the rise of technology reliance. A comparison of the opinions of band directors with those of middle school band students would also be valuable for providing ways that directors can improve upon their own practice in technology use and instruction.

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Appendix A: Institutional Review Board Approval

Tuesday, February 15, 2022 at 14:28:42 Central Standard Time

Subject: Gibbs Approval, Protocol #21-272 EP 2107, "Technology Use in Instrumental Practicing: A Mixed Methods Study of Middle School Band Students"
Date: Thursday, July 15, 2021 at 9:01:06 AM Central Daylight Time
From: IRB Administration
To: Elizabeth Gibbs
CC: Jane Kuehne, Marilyn Strutchen
Attachments: Gibbs 21-272 EP 2107 new revisions 1.pdf, Investigators Responsibilities rev 1-2011.docx

Use IRBsubmit@auburn.edu for protocol-related submissions and IRBadmin@auburn.edu for questions and information. The IRB only accepts forms posted at <https://cws.auburn.edu/vpr/compliance/humansubjects/?Forms> and submitted electronically.

Dear Elizabeth,

Your protocol entitled "Technology Use in Instrumental Practicing: A Mixed Methods Study of Middle School Band Students" has received approval as "EP" under federal regulation 45 CFR 46(b)(6,7). Please find approval of your protocol attached.

Official notice:

This e-mail serves as official notice the protocol has been approved. By accepting this approval, you also accept your responsibilities associated with this approval. Details of your responsibilities are attached. Retain a copy for your records.

Consent documents:

Attached is a copy of your consent form. You must provide a copy for each participant to keep.

Expiration:

Continuing review of this Expedited protocol is not required; however, all modification/revisions to the approved protocol must be reviewed and approved by the IRB.

- When you have completed all research activities, have no plans to collect additional data and have destroyed all identifiable information as approved by the IRB, please submit a final report.

- Best wishes for success with your research!

IRB Admin
Office of Research Compliance
Auburn University
115 Ramsay Hall
Auburn, AL

**AUBURN UNIVERSITY INSTITUTIONAL REVIEW BOARD for RESEARCH INVOLVING HUMAN SUBJECTS
RESEARCH PROTOCOL REVIEW FORM
FULL BOARD or EXPEDITED**

For Information or help contact **THE OFFICE OF RESEARCH COMPLIANCE (ORC)**
Phone: 334-844-5966 **e-mail:** IRBAdmin@auburn.edu **Web Address:** <http://www.auburn.edu/research/vpr/ohs/index.htm>

Revised 10.08.2020

Submit completed form to IRBsubmit@auburn.edu

Complete this form using Adobe Acrobat Writer (versions 5.0 and greater). Hand written copies not accepted.

1. PROPOSED START DATE of STUDY: 10/01/2021 Today's Date: 06/07/21

PROPOSED REVIEW CATEGORY (Check one): FULL BOARD EXPEDITED

SUBMISSION STATUS (Check one): NEW REVISIONS (to address IRB Review Comments)

2. PROJECT TITLE: "Technology Use in Instrumental Practicing: A Mixed Methods Study of Middle School Band Students"

Elizabeth Haynes Gibbs	Ph.D. Candidate	Curriculum and Teaching	hayneep@auburn.edu
PRINCIPAL INVESTIGATOR	TITLE	DEPT	AU E-MAIL
3980 Waverly Pkwy Opelika, AL 36801	256-610-1776		hayneep@gmail.com
MAILING ADDRESS	PHONE	ALTERNATE E-MAIL	

4. FUNDING SUPPORT: N/A Internal External Agency: _____ Pending Received

For federal funding, list agency and grant number (if available). _____

5a. List any contractors, sub-contractors, other entities associated with this project:

b. List any other IRBs associated with this project (including Reviewed, Deferred, Determination, etc.):

PROTOCOL PACKET CHECKLIST

All protocols must include the following items:

- Research Protocol Review Form** (All signatures included and all sections completed)
(Examples of appended documents are found on the OHSR website: <http://www.auburn.edu/research/vpr/ohs/sample.htm>)
- CITI Training Certificates** for all Key Personnel.
- Consent Form or Information Letter** and any Releases (audio, video or photo) that the participant will sign.
- Appendix A**, "Reference List"
- Appendix B** if e-mails, flyers, advertisements, generalized announcements or scripts, etc., are used to recruit participants.
- Appendix C** if data collection sheets, surveys, tests, other recording instruments, interview scripts, etc. will be used for data collection. Be sure to attach them in the order in which they are listed in # 13c.
- Appendix D** if you will be using a debriefing form or include emergency plans/procedures and medical referral lists
(A referral list may be attached to the consent document).
- Appendix E** if research is being conducted at sites other than Auburn University or in cooperation with other entities. A **permission letter** from the site / program director must be included indicating their cooperation or involvement in the project.
NOTE: If the proposed research is a multi-site project, involving investigators or participants at other academic institutions, hospitals or private research organizations, a letter of **IRB approval** from each entity is required prior to initiating the project.
- Appendix F** - Written evidence of acceptance by the host country if research is conducted outside the United States.

The Auburn University Institutional Review Board has approved this Document for use from 07/14/2021 to -----
Protocol # 21-272 EP 2107

Version Date (date document created): 07/13/2021

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Appendix B: Parental Permission Form



COLLEGE OF EDUCATION CURRICULUM & TEACHING

(NOTE: DO NOT SIGN THIS DOCUMENT UNLESS AN IRB APPROVAL STAMP WITH CURRENT DATES HAS BEEN APPLIED TO THIS DOCUMENT.)

**INFORMED CONSENT/PARENT OR GUARDIAN PERMISSION OR CONSENT
for a research study entitled
“Technology Use in Instrumental Practicing: A Mixed Methods Study of
Middle School Band Students”**

Your son or daughter is invited to participate in a research study in order to investigate and learn about the ways young music students incorporate technology and self-regulation into their practice time. The study is being conducted by Elizabeth Gibbs, PhD candidate in the Auburn University Department of Curriculum and Teaching, Music Education Program, under the direction of Dr. Jane Kuehne, professor in the Auburn University College of Education. Your son/daughter was selected as a possible participant because of their membership and participation in a middle school instrumental program. Since he/she is age 18 or younger, we must have your permission to include him/ her in the study.

What will be involved if he or she participates? If you decide to allow your son/daughter to participate in this two-part mixed methods research study, he or she will be asked to complete a survey that questions his or her practice habits, how often they incorporate technology, and how they manage their technology while practicing their instrument. His or her total time commitment will be approximately ten minutes or less. In addition, a small number of survey participants will be randomly selected to join a focus group in which they will be asked to further describe their interactions with technology while practicing their instruments. The total time for the focus group interviews will be approximately 20 minutes. Student’s responses will be audio and video recorded for accuracy of data collection. An Audio and Video Release form is also included.

Are there any risks or discomforts? The risks associated with this study are breach of confidentiality and coercion. In addition, they may feel discomfort in sharing their practice goals and habits around their peers in the focus group.

Are there benefits to your son/daughter or others? If he/she participates in this study, he/she can expect to gain a better understanding and awareness of how to incorporate technology more effectively in practice sessions.

Will your son/daughter receive compensation for participating? Your son/daughter will not receive any compensation for participating in this research.

Are there any costs? There are no costs to participants.

If you change your mind about his/ her participation, he/she can be withdrawn at any time during the study. Your son’s/ daughter’s participation is completely

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Protocol # 21-272 EP 2107

voluntary. If you or they choose to withdraw, your son's/daughter's data can be withdrawn as long as it is identifiable. You or their decision about whether or not to participate or to stop participating will not jeopardize your or their future relations with Auburn University, the College of Education, the Department of Curriculum and Teaching, nor the Department of Music.

Your son's/ daughter's privacy will be protected. Any information obtained in connection with this survey portion of this study will remain *anonymous*. The data collected through the focus group interviews, if you elect to have your child participate, will be kept confidential. The data collected will be protected by myself, the researcher. Information obtained through his/her participation may be used for professional presentations and/or professional publication.

If you have any questions about this study, *please ask them now* or contact Elizabeth Gibbs at hayneep@auburn.edu. A copy of this document will be given to you to keep.

If you have any questions about your son's/daughter's rights as a research participant, you may contact the Auburn University Office of Research Compliance or the Institutional Review Board by phone (334) 844-5966 or e-mail at IRBAdmin@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER OR NOT YOU WISH FOR YOUR SON OR DAUGHTER TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE INDICATES YOUR WILLINGNESS TO ALLOW HIM OR HER TO PARTICIPATE.

Survey Participation:

Parent/ Guardian Signature Date Printed Name Date

Investigator Obtaining Consent Date Printed Name Date

Minor's Name (printed)

Focus-Group Participation:

Parent/ Guardian Signature Date Printed Name Date

Investigator Obtaining Consent Date Printed Name Date

Minor's Name (printed)

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Appendix C: Minor Assent



COLLEGE OF EDUCATION CURRICULUM & TEACHING

MINOR ASSENT

**for a research study entitled
“Technology Use in Instrumental Practicing: A Mixed Methods Study of
Middle School Band Students”**

You are invited to be in a research study to help us understand how middle school band students use technology while practicing their instruments.

If you decide you want to be in this study, you will complete a short survey (approximately 5-10 minutes) and may be asked to participate in a focus group interview, where you and 1-2 of your peers will be asked questions about your technology use while practicing your instruments.

Neither the survey nor the focus group interview are for a grade but will help us understand how middle school band students use music technology and personal devices (cell phones, tablets, laptops, etc.) to regulate their instrument practice time. If you choose and are selected to participate in the focus group, I will ask that our interview be audio and video-recorded for accuracy of information.

You can stop at any time. Just tell your parent/guardian, band director, or myself if you do not wish to continue with the study. No one will be angry with you if you choose to stop participating.

If you have any questions about what you will do or what will happen, please ask your parents or guardians or ask your band director now. If you have any questions while you are completing the survey, please ask me.

If you have decided to help me, please sign or print your name on the next page:

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FAX:
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Survey Participation:

Minor's Signature Date

Printed Name Date

Parent/Guardian's Signature Date

Printed Name Date

Investigator Obtaining Consent

Printed Name Date

Focus-Group Participation:

Minor's Signature Date

Printed Name Date

Parent/Guardian's Signature Date

Printed Name Date

Investigator Obtaining Consent

Printed Name Date

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Appendix D: Audio and Video Release



COLLEGE OF EDUCATION CURRICULUM & TEACHING

AUDIO AND VIDEO RELEASE

During your participation in this research study, “**Technology Use in Instrumental Practicing: A Mixed Methods Study of Middle School Band Students,**” you may be audio and/or videotaped. Your signature on the Informed Consent gives us permission to do so.

Your signature on this document gives us permission to use the audio recording(s) and/or video recording(s) for the additional purposes of research poster, professional presentations and publications beyond the immediate needs of this study. These audio recording(s) and/or video recording(s) will not be destroyed at the end of this research but will be retained indefinitely.

In addition, the following persons or groups will have access to the recording(s):

- Participant (below)
- Elizabeth Gibbs

Your permission:

I give my permission for audio recording(s) and/or video recordings produced in the study, “Technology Use in Instrumental Practicing: A Mixed Methods Study of Middle School Band Students,” to be used for the purposes listed above, and to also be retained indefinitely.

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_____ Minor’s Signature	_____ Date	_____ Printed Name	_____ Date
_____ Parent/Guardian’s Signature	_____ Date	_____ Printed Name	_____ Date
_____ Investigator	_____ Date	_____ Printed Name	_____ Date

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Appendix E: Survey Instrument

Start of Block: Information Letter

Dear student,

You are invited to be in a research study to help me understand how middle school band students use technology while practicing their instruments. You have received this email because your guardian gave permission and you agreed to complete this survey.

The survey is not for a grade and will take you between 5 and 10 minutes to complete. You can stop at any time if you do not wish to continue. No one will be angry with you if you choose to stop participating.

If you still want to help me and take the survey, please type your name and your school name in the box below.

Your name (first and last) _____

Your school _____

Start of Block: Part I: Demographics

Q1 Please select your grade level in school.

- 6
- 7
- 8

Q2 What is your age, in years?

- 11
- 12
- 13
- 14
- Other _____

Q3 What is your gender assigned at birth?

- Male
- Female
- I prefer not to respond.

Q4 What is your ethnicity?

- Asian
- Black/ African
- Caucasian
- Hispanic/ Latinx
- Native American/ American Indian
- Pacific Islander
- I prefer not to respond.

Q5 What is the primary instrument you play in band?

- Flute
- Oboe
- Clarinet
- Saxophone
- French Horn
- Trumpet
- Trombone
- Euphonium
- Tuba
- Percussion
- Other (please type below _____)

Q6 How long have you been playing your instrument?

- Less than 1 year
- 1-2 years
- 2-3 years
- years or more

Q7 Do you have a personal device such as a cell phone, tablet, iPad, school-issued Chromebook or laptop?

- Yes
- No

Skip Logic: If "No" is selected. skip to end of survey

End of Block: Part I: Demographics

Start of Block: Part 2: Frequency of Music Technology Use

Q8 Do you keep your personal device with you when you practice?

- Yes
- Mostly Yes
- Mostly No
- No

Skip Logic: If "No" is selected. skip to end of survey

Q9 Here you will let us know if you use music technology when you practice. Music technology can be any of the following: metronome, tuner, *SmartMusic*, a drone or sustained note, recordings of music or other musicians, or the use of websites such as *Sight Reading Factory* or *MusicTheory.net*

Do you use music technology when you practice?

- Yes
- No

Skip Logic: If "No" is selected. skip to end of survey

Q10 How often do you use music technology when you practice?

- Always
- Most of the time
- Sometimes
- Not very often

End of Block: Part 2: Frequency of Music Technology Use

Start of Block: Part 3: Types of Music Technology Used

Q11 Which of the following music apps, tools, and/or programs do you use while practicing? Please select all that apply.

- Metronome
- Tuner
- SmartMusic*
- A drone or sustained note/pitch
- Video players such as *YouTube*, *Vimeo*, etc. (specifically for music practice)
- Recording devices and applications
- Music reading websites such as *Sight Reading Factory*, *MusicTheory.net*, etc.
- Other (please type below) _____
- None of the above

Q12 Of the music technology listed below, which do you use the most?

- Metronome
- Tuner
- SmartMusic*
- Drone
- Video players such as *YouTube*, *Vimeo* (specifically for music practice)
- Recording devices and applications
- Music reading websites such as *Sight Reading Factory*, *MusicTheory.net*, etc.
- Other (please type below) _____

Q13 Please select the response that most accurately describes your use of music technology.

	Yes	Mostly Yes	Mostly No	No
I feel that using music technology while I practice helps me improve on my instrument.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that using music technology while I practice helps improve my overall musicianship.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that using music technology while I practice allows me to enjoy practicing my instrument more.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that using music technology while I practice helps me to stay more focused while I practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Part 3: Types of Music Technology Used
Start of Block: Part 4: Self-Regulation and Music Practice

Q14 Please select the response that most accurately describes your use of your personal device while practicing.

	Yes	Mostly Yes	Mostly No	No
I keep my device on "Do Not Disturb," "Silent," or "Airplane Mode" when I practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I use my personal device to keep up with my practice time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q15 Please select the response that most accurately describes your use of your personal device while practicing.

	Yes	No
I take breaks from practicing to check for text messages and phone calls on my device.	<input type="radio"/>	<input type="radio"/>
I take breaks from practicing to check my social media notifications (Tik Tok, <i>Instagram</i> , <i>Snapchat</i> , etc.) on my device.	<input type="radio"/>	<input type="radio"/>
I take breaks from practicing to play games on my device.	<input type="radio"/>	<input type="radio"/>

Q16 Please tell us how often you do the following while practicing:

	Always	Sometimes	Never
Answer a phone call.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Check and/or respond to a text.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Check and/or respond to a social media notification.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Part 4: Self-Regulation and Music Practice

Start of Block: Goal Setting and Motivation

Q17 Please tell us how the following options relate to you and your instrument practice:

	Always	Sometimes	Never
I set goals for myself when I practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy practicing my instrument.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel motivated to practice my instrument.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

End of Block: Goal Setting and Motivation

End of Survey

Appendix F: Interview Protocol

Consenting Process:

Thank you for your willingness to participate in this focus-group interview. I would like to now confirm that each of you have received and completed the Parental Permission Form, Assent Form and Video + Audio Release Form.

*Certify that each student's name corresponds with each collected form before continuing.

Everything that you say here will remain confidential, meaning I will not release your name(s) with any identifying information. I will ask you a few open-ended questions that will pertain to your use of a personal device (cell phone, tablet, Chromebook, laptop, etc.) in your practice sessions. You each were selected to participate in the focus group interviews because you completed the "Technology Use in Music Practice" survey and consented to also be interviewed.

If at any time you do not wish to continue with the interview, you may tell me and be excused from the interview.

Semi-Structured Interview Questions:

Research Question 1: Do students use music-related technology in their practice?

- How often do you use music technology when you practice? Music technology may be any combination of the following: metronome, tuner, *SmartMusic*, drone, recording device, video players such as *YouTube*, *MusicTheory.net*, *Sight Reading Factory*, etc.
 - What type of music technology do you use the most, and why?
 - What type of music technology do you use the least, and why?

Research Question 2: In what ways do students interact with their personal device during their practice time?

- Tell me about the ways you incorporate music technology into your practice.
 - Can you describe how you use music technology in ways that help you practice your instrument?
 - Can you describe how you use music technology in ways that make you a better musician and performer on your instrument?
 - Can you describe any other technology (music-related or not) that you use while you practice, and how it affects your practice time?

Research Question 3: In what ways do students employ self-regulation strategies to remain focused in their practice while using technology?

- How do you stay focused when you practice?
 - Do you get help from a parent/guardian or sibling?
 - Do you practice at the same time and place each day?
 - Do you turn off other technology (tv/music/computer) when practicing?
- Do you feel that you need to respond to notifications (phone calls, text messages, social media notifications) as soon as you get them?
 - Does this ever happen while you are practicing?

Research Question 3a: In what other ways is technology used in practice sessions?

- Can you describe how you feel when you get a notification on your phone/device while you are practicing? This could be a phone call, text, social media notification, etc.
- Do you feel anxious if you cannot answer a phone call or respond to a text message when you are practicing?

Research Question 4: How do students feel about their levels of motivation while practicing?

- Do you have music-related goals, or anything you want to accomplish on your instrument?
- Do you have practice goals?
 - How would you describe your practice goals?
 - Are your goals to practice until you achieve or accomplish something in the music?
 - Are your goals time-based? Can you tell me more about that?

Research Question 4a: Is there a relationship between how much the students enjoy practicing and the number of times they feel unmotivated while practicing?

- Can you describe your feelings about instrument practice?
 - What are your attitudes or feelings about practicing your instrument?
 - Do your feelings about practice change from day-to-day, or do they stay the same?

Closing

Thank you so much for sharing your experiences with me. I appreciate your willingness to help me learn more about the ways we all use technology and practice our instruments.

Appendix G: Themes and Categories

Theme	Categories
Goal-Setting	Performance-based goals Time-based goals
Motivation	Extrinsic motivation Intrinsic motivation
Self-Regulation	Distracted by external distractions Parent and/or sibling help Practice structure Social Media Technology Alerts and Notifications
Flow	Practice for fun
Technology Applications	Musicianship development through technology

Appendix H: Transcripts

School A: Interview Transcript #1

EHG: Okay, can y'all hear me okay?

[Nods]

EHG: Awesome. Okay so first of all I'm going to read you a couple of things that I have to go over with you, before I ask you, some questions just so you know kind of how this works and what it's going to look like. First of all, thank you so much for your willingness to come in here and talk with me in this focus group interview.

Um. You were selected, because you consented to participate in the focus group interview, which is what this is and you also said that you would complete a survey, umm... that would pertain to how you practice your instrument, so I don't think you guys have done that yet have you?

[shake heads no]

EHG: Okay, so I think that's probably coming a little bit later, but you'll get to do that and you'll have a heads up because you've already talked with me about some of this stuff.

Um.. So I just want to double check that each of you have completed the assent form and the audio release form. So could you tell me your names is really quickly?

Eric: My name is Eric

EHG: Eric? Okay gotcha.

[inaudible]

EHG: Alex, is that right? Okay, and then.

Marissa: I'm Marissa.

EHG: Marissa okay awesome. I have all your names have all your information so y'all are good.

EHG: So just a couple of things, everything that you say here in this meeting will stay confidential meaning I won't share any of your names (um) and I won't share any information that would identify you, such as the school that you go to the grade you're in.

And I'm just going to ask you a few open ended questions about how you use a personal device. So personal device could be a cell phone a tablet a chromebook a laptop or something like that. Some kind of technology in your practice sessions.

This is not for a grade, so you have to worry about any wrong answers, and there are no wrong answers at all.

If at any point, you want to stop talking to me, and you want to stop doing the focus group interview, you can just tell me, and you can be excused. So there's no penalty, there's no bad grade or anything like that.

I'm just happy that you're all here and willing to talk to me! So if y'all don't have any questions about that we'll go ahead and get started.

Okay awesome. So first of all, could you please tell me what grade you're in and what instrument you all play? So Eric we'll start with you.

Eric: I'm in 8th grade and I play alto saxophone.

EHG: Eighth grade and Alto saxophone? Cool. All right, Alex.

[inaudible]

EHG: What do you play?

Alex: Trombone

Trombone okay cool the facemasks make it a little bit hard for me to hear you so thank you for saying that again. And then, Marissa?

Marissa: I'm also in 8th grade and I play the trumpet.

EHG: Trumpet? So we have three different instruments that's cool. We got two brass and a woodwind. So that's a good... good mix right there. Do you like playing each of those instruments?

[nods]

EHG: Yeah? Cool. Cool. So we'll get into some of the (um) some more questions about how you practice your instruments.

EHG: Umm...specifically I wanted to talk to you about how you use your technology when you practice at home. So...i'm curious how often you use any kind of music related technology. That can be like using *SmartMusic*...I don't know if you use *SmartMusic* in your school, it could be a metronome or a tuner or umm listening to recordings and playing along with recordings. Umm. Could you tell me if you use any of those kinds of devices, when you practice?

Marissa: Every time I practice I use the metronome like the digital metronome on my phone and it helps me practice.

EHG: Cool.
[inaudible]

Sorry, Eric what did you say?

Eric: inaudible

EHG: I'm sorry I still can't hear you. You use a tuner?

Eric: and a metronome

Elizabeth: And a metronome. Okay cool! All right. Yeah. So those are all really handy devices and is that on your phone Eric that you use?

Eric: No I use my iPad.

EHG: On your iPad? Okay very cool. Would you say that the metronome and tuner are the ones you use the most, or is there anything else that you use more than that?

Eric: Uhh sometimes

EHG: Okay. Which one would you say you use the least? Is there something that you just don't use it all, when it comes to technology?

[Inaudible]

EHG: Can you say that one more time? I'm having a hard time hearing you Eric.

Eric: I don't use the tuner a lot.

EHG: Okay. Alex, What about you?

Alex: I just use the metronome.

EHG: Okay. Yeah. Metronome. It's definitely a good tool to have handy when you practice isn't it? Alright, so moving on...um, how do you feel that music technology helps you to practice? Anybody can answer this.

Marissa: It would be pretty hard to practice without a metronome. And like on *YouTube* and stuff there's examples of the music we're playing and that helps like to know what it

EHG: That's a great... a great suggestion. So you use *YouTube* to find sample recordings of what you're playing?

[nods]

EHG: Is that is that specific to your...your band pieces or solos that you work on?

Marissa: yeah it's pretty much...cause like the sheet music we play other people play it too so it's like it...so we can practice it right.

EHG: Yeah. Yeah that's a great answer. Thank you Marissa. Anybody else? How do you think music technology helps you the most?

[silence]

EHG: And it's okay if you're not sure yet. [laughs] So I'll ask you a couple other questions about music technology. Umm...specifically, how would you say it helps you to be a better performer on your instrument?

[silence]

EHG: So when you use a metronome or tuner or when you're listening to other groups play the music that you're working on....do you think it makes you better at your specific skills on your instrument?

[nods from students]

EHG: Okay, how so? how would you say?

Student: (maybe Marissa) I feel like it's the same answer like... we can play in time with the metronome. I mean the tuner helps to make sure we're playing. And seeing other people play the pieces we play also like...helps us. So I talked about that a lot. Like you can see how other people play and like be like "oh I wanna play like that" or "I want this specific aspect about it" and that helps.

EHG: Yeah that's a good answer so specifically looking at tempos maybe? Or dynamics, or just what the piece sounds like and their phrasing maybe and how they play it?

[nods]

Elizabeth: Cool. Yeah that's a good answer.

EHG: I'm thinking is there any other technology that you use when you practice that's maybe not even music related? Do use like a stopwatch or anything to measure your amount of practice time. Or when you use technology when you practice is it specific to music apps like tuners and metronomes?

Students: Pretty much.

EHG: Yeah? Okay.

Student: Sometimes I time my practice so I know how long how long I've practiced that day cause.

Okay, and is that... I'm glad you said. Is that is that how you measure your goals when you practice? Do you usually do time-based goals? So let's say on Wednesday afternoon I'm going to practice for 30 minutes.

Students: yes.

EHG: Okay cool and I see Eric nodding, so Eric do you do that too?

Eric: sometimes.

EHG: yeah cool.

[inaudible]

Elizabeth: What was that you said?

[inaudible]

EHG: Yeah okay.

EHG: So talking about practicing and how you spend your practice time...how do you feel like you stay focused when you practice? Like do you...do you have an easy time staying focused when you're practicing your instrument by yourself at home?

Marissa: Kind of? I mean Sometimes...Sometimes I get frustrated and like walk off. I mean, I like, I plan out my practice sessions before I actually start them. So like.... "I want to do this and then I want to practice this piece of music" and that's kind of like...that helps me get it all done.

EHG: Okay. So you sometimes have...you have performance-based goals sometimes. In other words you say, well, I want to...I'm just making up this example, but I want to play this scale this tempo with these articulations and so that's maybe what you focus on doing that day?

Marissa: Yes.

EHG: Okay cool. What about Alex or Eric?

[no response]

EHG: So do you... do you have an easy time staying focused when you practice? Or...or yeah? For the most part?

Student: I don't

EHG: You don't? Okay, so um, what do you think prevents you from staying focused when you practice?

Student (Alex I think): Other sounds in the house

EHG: Did you say other sounds in the house?

[nods]

EHG: Okay. Is that like...like other siblings or like the TV on or stuff like that?

[nods]

EHG: Okay yeah that's.. that's a really common thing actually Alex so I'm glad you said that. A lot of...a lot of people do have a hard time staying focused when there are other distractions going on. So it can be really hard to stick to your goals and the things that you've thought about and for what you want to practice.

EHG: So kind of adding on to that with your...with your practicing and with your technology...so some of you, I know use iPads and phones to help you practice. When you're practicing do you turn off other technology that you're not using? So let's say you're using your iPad to help you with a metronome or with a tuner. Do you turn your phone off and leave that alone when you practice or do you have it all just kind of on and waiting for you.

Student: I have it on.

EHG: You have it on?

Student: I have it off.

EHG: Off? Okay.

EHG: Anybody else?

Student: I usually leave my stuff off too.

EHG: You leave it off too? Okay. Y'all are...y'all are already exercising self control in being able to turn things off and...and stay away from it, when you don't need to use it so kudos to you guys for doing that. Why, why do you turn other technology off when you...when you're not using it?

Marissa: Like. If a notification comes in or something, it could distract me. And then like get off...

EHG: Yeah.
[inaudible]

EHG: You said, if you see light? Is that what you said? I'm sorry I'm having a hard time hearing you.

[nods]

EHG: Okay. Yeah, I mean I can certainly relate to that. Sometimes if I get a notification it distracts me from my...my line of thought you know and what I'm trying to do so that makes sense, I appreciate that you said that. So we kind of talked about this Marissa a little bit, but how do you determine what you were going to practice each day? Maybe this is more for Eric and Alex because Marissa said some days it's timed some days it's performance based or do you do you practice every day or just some days?

Student: I don't really practice every day.

EHG: Okay, and how do you know what you're going to practice when you do?

Student: inaudible

EHG: Sorry, what'd you say?

Student: I practice stuff I need to get done.

EHG: Okay. And so you are, you are also kind of a performance based goal person. So you think...maybe you have a playing test or something so you work on something that's going to be on the playing test so that you can get better at that?

Students: nod

Elizabeth: Yeah. OK. Cool. So what happens when you're practicing and you feel like you have achieved the goal that you wanted to achieve when you practice? So let's say you're practicing for a playing test and you feel like in your practicing you've got it as good as you're going to get it...do you keep playing, do you do other things, or do you normally after you have achieved your success on that particular goal, do you pack your instrument up? Or do you keep practicing some more other...other things?

Student: I keep practicing.

EHG: You do? Just because...

Marissa: Well sometimes, if it's like a big thing I like to...(inaudible)

EHG: So sometimes if it's a big thing you keep practicing Is that what you said

Marissa: Well if it's a big thing I usually stop there. Because I like to end on a good note. But if it's something in the beginning then I'll keep practicing.

EHG: Okay. Yeah that makes sense it...it kind of affects your mood when you end and you don't feel like you achieve what you wanted to achieve when you practice so that's a good feeling to end and I feel like "yes, I got it" you know, and then you can pack your instrument up and be proud of yourself and happy with your results so I understand that.

EHG: Generally, and this is a very broad question so you can answer this, however, you want. How do you feel about practicing your instrument? Generally, like what are your what are your attitudes about practicing?

[pause]

EHG: So let me help you out a little bit. When you practice are you generally excited about practicing? Do you practice because you're in band, and you're kind of kind of should practice your instrument? Do you practice because you want to...you know...be higher in your section? Why do y'all... why do you practice, what are your attitudes about practicing?

Alex: I practice because it makes me feel good...[inaudible] so that's why I practice.

EHG: Thank you Alex. Marissa?

Marissa: Well...sometimes, like I'll be in band class and be like "Oh, I need to practice this when I get home. So...I have like things...I don't know...sometimes I'm not that excited about practicing, because its...I don't know.

EHG: And you can change day to day.

Marissa: Yeah

EHG: So some days you may say, "well, I don't really want to practice but I need to" so "because I have a test tomorrow" or something like that and then some days you might say, "well, I just want to practice today" I want to..."it makes me feel good" like Alex said it makes me feel like I'm working at something so I guess yeah you're right Marissa, it can change day to day. What about you, Eric?

Eric: I practice to get better.

EHG: Yeah do you kind of...to ask you one more question Eric, do you practice to get better because you want to be better at your instrument yourself? Or do you practice because you want to let's say be higher in the section or be a leader in this section and how you play your instrument?

Eric: I guess a little of both.

EHG: Yeah I mean, I understand that. Yeah .Thank you Eric. So that kind of concludes all the questions that I have, but before we leave the interview is there anything else that y'all want to add about using your music technology or how you practice your instrument or how you manage your time when you practice your instrument? Anything at all?

[pause/silence]

EHG: Don't think so? Okay awesome. Well thank you so much, all of you for sitting here and talking with me about how you practice and use technology. I really appreciate your help, because I'm...again I'm trying to learn how you interact with technology and how you manage your time and your goals, so this will really help me to form my ideas, a little bit more, so I appreciate all of your help. Thank you so much. And I think y'all are good to go ahead and hop back into band class now. Thank you, bye.

Students: Bye

School A: Interview Transcript #2

EHG: We're going to do a quick check just to make sure I could hear you guys okay. And then I can also meet you and get your names. So we'll start over...it's on my left in the Champion sweat shirt, can you tell me your name, please?

Archie: Archie.

EHG: You're Archie? Okay awesome. Thank you, Archie, it's nice to meet you...and then in the middle?

EHG: Right Lucas is that right?

Lucas: Lucas.

EHG: Right, do you have a...Did I say it right?

EHG: Okay, do you...Are you...do you have a microphone or something you can...can or you're wearing them around your neck is that what it is?

No ma'am it's like in front of the computer.

EHG: Okay, so can y'all do me a favor...for whenever you speak individually, maybe get a little bit closer to the computer and then I could hear you a little bit better.

[student scoot forward]

Y'all are so nice. Thank you so much. Y'all are awesome already. Okay so Lucas correct?

[nods]

EHG: Okay awesome Thank you and then last but not least....

Ellen: I'm Ellen

EHG: Ellen okay awesome. Well as you were saying that I was checking and I already have all of your permission forms and everything, so you guys are good to go. How are y'all doing today?

Students respond together: Good.

EHG: Good. Okay, well, I am Elizabeth Gibbs and I am a doctoral student at Auburn University. I am getting my doctorate in music education, so my job right now...I am a student and I am working to learn a little bit more about how you guys practice your instruments and use technology as you practice your instruments so we'll talk a little bit more about what that is, but I also wanted to introduce you to my friend, and this is Mr. Sexton.

[Mr. Sexton waves]

EHG: And he is also working on his doctorate in music education at Auburn as well. So he's just in here to kind of help me stay organized and just to listen as well. So are y'all good to go? Can y'all...everybody can hear me? And we're good to start?

Students: We are good.

EHG: Awesome. Thank you. Alright so first of all...thank you for your willingness to talk to me today and be in this focus group interview. Have y'all ever done anything like this before?

Students: No; no ma'am

EHG: Well cool, this is a first time for y'all then so it's...it's really not bad at all, I promise you're just talking to me honestly about how you practice. So you each were selected because you filled out a consent form and your parents signed off on it, saying that you could talk to me about how you practice. So I think you may not have completed the survey yet, but have y'all been sent a survey about how you practice from [your band director]?

Students: No ma'am.

EHG: Okay that's okay so you'll get that probably in the next couple of days, and all of those questions will be kind of similar to what I'm talking to you about right now so you'll already kind of have a heads up on that. So I've already checked you off I got Archie, Lucas and Libby. And just so you know I am recording this, but everything that you say in this meeting will be confidential, which means I'm not going to go tell [your band director] what you said, I'm not going to, so there are no wrong answers there's...this is not for grade it's not a test or anything like that. And when I do publish this I won't have your names and I won't include the school or your instrument or your grade or anything like that. I'm just curious to hear what you have to say about practicing. I'm going to ask you a few questions about how you use your personal device when you practice. So your personal device can be your phone or a Chromebook or an iPad or something like that. And I'm going to ask you that specifically when you about how you use those things when you practice. So, again it's not for a grade, there are no wrong answers you're just telling me how you use that. And if at any time as we're going through if you don't want to answer something or if you need to get up and leave or want to stop talking, you can do that at any time, so not going to be mad at you, if you do. Do y'all have any questions before we start?

Students: No ma'am.

EHG: Okay awesome well then we're going to go ahead and jump right in so can we start with...we'll start with Ellen, can you tell me what grade you're in and what instrument you play?

Ellen: I'm in 8th grade and I play percussion.

EHG: Percussion very cool first percussionist that we've had talking to us tso very cool. Okay Lucas what about you? I'm sorry Lucas. Lucas. Thanks.

Lucas: I'm also in 8th grade and I also play percussion.

EHG: Awesome alright and Archie?

Archie: 8th grade and I play percussion.

EHG: Woah three percussionists that's awesome! I'm very curious to hear what y'all have to say about practicing. So do y'all like being in the percussion section?

Students: Yes ma'am; yes.

EHG: Yeah? Cool was that your first choice on instruments?

Students: Yes ma'am.

EHG: Cool. It's always good when you get your first choice isn't it? Alright, so let's go ahead and talk a little bit about how you practice and use your technology. So we're going to talk a little bit about music related technology. And music related technology can be any kind of device or app that you have on your phone, such as a metronome or a tuner or using your video recording software on your phone to record yourself practicing, looking up videos, looking up music, *SmartMusic*...if you use that at your school. So when you're thinking about music technology we're thinking about those things. So, first of all, do you use music technology, when you practice?

Students: Yes ma'am, yes.

EHG: Okay cool. So if you had to say we'll kind of just go down the line, what is the type of music technology that you use the most?

Students: Metronome; metronome

EHG: All three of you metronome?

Students nod.

Elizabeth: Okay, and what if you had to pick something that you use the least?

Lucas: Normally I would say, someone else like clapping or something.

Archie: Or a tuner.

Ellen: Yeah I don't really use a tuner since we don't have like timpani at home. We only have that in class.

EHG: That makes sense. Yeah that makes sense. That's a really...that's a that makes sense to me as a percussionist. How do you think using a metronome benefits you in your practicing?

Archie: I think it like helps us stay on beat. Like if you get it like in your head...like you can like...have a metronome and then you don't really need it as much as you used to.

Ellen: I think when you use a metronome at home and like get better at staying on beat then you'll do it better when you actually have to like perform or do it for a teacher

Elizabeth: Agreed. Yeah those are really good answers. It helps you to kind of you know not only learn the tempos of your music, but be able to practice them the same way, the same tempo the same consistency so that's...that's good that makes sense to me. How do you think...kind of elaborating on that, how do you think in general music technology helps you to practice? Maybe not specific to just a metronome but, in general, all music technology, how does it help you?

Lucas: It helps you...the performance and the way you like feel in a like performance. Like let's say you've been practicing with one thing, then you probably would have...be less stressed out when you're performing.

EHG: Does anybody else have something to add?

Ellen: Also last year we had to film a bunch of things for band, just cause we couldn't do them in like actual band class. So like we would have home stuff and have to submit it. It was helpful for that.

EHG: Yeah I mean that was kind of your connection to band was in having to record yourselves. Yeah...yeah go ahead.

Archie: Well for me...because like last year they didn't put me in band even though that was my first pick. Because like apparently they didn't have enough room in it so I got put in choir.

EHG: Okay.

Archie: But we still did have to record our voices and stuff.

EHG: Yeah well, I think that was you know one kind-of good thing that came out of the craziness of last year, is that we got to be pretty good at technology and we used it for... for things like music when we weren't used to using it as much for music and having to record ourselves in it, I think that was a really good thing because recording yourselves as a good thing you get to hear yourself and kind of reflect on what you're doing so yeah. Good. Thank y'all. Do you think it helps to make you a better overall musician? So not...maybe not specifically in your performance but in other ways?

Students: Yes; yes ma'am.

EHG: Could you elaborate a little bit?

Lucas: Umm it could help me like. Not really in a performance but like as all like, if you want to be a teacher, maybe a music teacher using the online stuff could like help you teach your students that stuff and like get them more comfortable.

EHG: Absolutely

Ellen: I play other instruments like outside of school, so it helps like...if you if you work on something here, then it like they all just kind of connect and they all end up helping each other, like the things I do.

EHG: Yeah so it kind of helps your overall musicianship and not just percussion? You know...not just one instrument? Yeah. Yeah I agree, I think that's a really good answer. Um do you use any other kind of technology, when you practice?

Archie: Not on the not on the...I guess...Not really on the top of my head. Like I mean sometimes like when stuff is happening like I remember once I when some like sound was happening in the back out, I was like...Maybe like get into the beat with it, or something. I don't know that was like help me a little.

Ellen: Yeah I would put headphones on and sometimes I'm like listen to what I'm supposed to be playing and like play along with it that way it's kinda like you're doing it with someone else.

EHG: Yeah. Yeah I bet that helped a lot last year, when you maybe weren't always in a band class...you can play along with something. Yeah. Yeah that's really cool. So, Lucas, and I think it was you, that said that you, you play along with other things, when you hear them? Is that right? Yeah, so that's...that's a really cool answer too, and then you, you are able to find headphones and play along with things and...and *YouTube* I think was said as well? How do you use *YouTube* yeah Archie, how do you use *YouTube*?

Archie: Sometimes I use it as a metronome. Also I use it for like music that I play along to like Lucas said.

EHG: Okay. Yeah...yeah very cool. *YouTube* is great isn't it? Um so we're going to talk about practicing a little bit more, but maybe not so much from the side of technology, but now more so from the perspective of staying focused when you practice. So first of all, do you feel like you have an easy time or a difficult time staying focused when you practice?

Student: I would say a neutral.

Ellen: Yeah kind

EHG: Okay. Sometimes like when your mind is on something else. Like let's say you have homework, or something and...but you're practicing you don't really...you're like thinking about something like your homework and when you're going to do it instead of paying attention to what you're practicing.

Ellen: I think it also helps when we have something in class I'm like enjoying or that I'm looking forward to practicing to. But if it's something that like I don't really like and I have to practice then it just doesn't...it's not really like easy to focus or

EHG: Yeah. Archie did you have anything to add? You agree with them?

Archie: nods

EHG: Yeah so...so Ellen you said when you have something fun to practice, it makes you more willing to practice right? When...when you say that, how would you describe the way you plan your practicing? Let's say you have something that you really want to practice. When you go to practice it, how do you structure that practice time? Do you have a plan at all, or do you just start playing?

Ellen: Sometimes I'll have a plan, but other times I was kind of just go work on the music rather than like warming up. The normal I try and like warm up if it's all like melodic I try and warm up on something easier or simpler that's like kind of more structural and then work on the music.

EHG: Okay. What about anybody else?

Archie: Normally I also don't really...I don't really like. I remember one time last year, we had a performance music and, and so it was like a whole bunch of different percussion instruments, so I went and I asked my dad...he likes to play the drums. So I would ask him if you do one part while I did the other. Because sometimes like when you have a part it's not...it's really boring because...you...like it doesn't make sense, what you're playing is just random so normally, you have to like include other instruments.

EHG: Yeah...yeah that's really cool that you have your dad to help you fill out some of those other parts, too, because if...you're right when you have band music and you playing the triangle you know, sometimes there's not a lot going on between those few little triangle dings right? Yeah that's a great point. So I guess that probably is why you guys, especially really like to listen to recordings and play along with recordings?

Students: nod

EHG: So you already answered this a little bit, but I'm curious about anybody else does anybody else have a parent or guardian or sibling...somebody to help them practice? Or stay...yeah?

Ellen: No ma'am I'm the only like musical person in my family.

EHG: And Archie you have somebody that kind of helps you?

Archie: My uncle...he played the drum set for high school band. And when he was in high school he had his own drum set and stuff. And now that now he has like two...he gave one of them to me that one was his high school. And so he helps me practice by like bringing his

electric drumset to help me like separate my hand and foot...feet. And like...do more complicated rhythms and stuff.

EHG: Yeah that's awesome. That's awesome that you have that and Ellen just hang in there.

Ellen: I have a brother in older grades that help sometimes but.

EHG: Yeah. Well that's very cool. Um when y'all practice, do you usually practice the same time each day or a certain amount of days of the week? Or how would y'all, how would y'all describe your practice time?

Lucas: Normally [our band director] makes us practice 20 minutes a day. Cause sometimes like when you don't do it like on that day, you have to...my mom normally makes me during the week like do all the time I miss because...I don't know

Ellen: If I miss time like over the week I try and like make it up on the weekend, since we don't have as much to do. So normally more practice goes in during the weekend rather than school days.

EHG: Okay, so y'all...y'all...y'all do practice records or practice logs is what it sounds like at school? And are all pretty good about...you know, being able to stick to that if it's 20 minutes a day what is that 100 minutes a week or so?

Ellen: I think it's like 140

EHG: Are you doing for all...all seven days?

Ellen: Yeah you could do you know 40 one day and then do like 10 another day so it's not like 20 exactly.

Elizabeth: Yeah okay.

Archie: Normally you don't. Like whenever like I don't really time myself like I don't have like a timer on the side I normally like look at it, when I start, and then I go through. Cause no one's wants like the exact millisecond of when I finished my practicing. So I just like normally go back a minute.

Because I remember last year, at the end, there were some of them that, like a bunch of people didn't put the like minutes and stuff like they put on the milliseconds and stuff inside so, like when we had to like add them all up at the end of the quarter, they were always have these long, complicated math problems.

EHG: They were...kind of over complicating it huh a little bit? Makes it look like they were practicing a lot longer than they were practicing right? Well it's good that you have those goals and even if they aren't specifically the same amount of minutes each day it sounds like all three of you are very disciplined and being able to find time to practice several times throughout the

week so kudos to all three of you for being able to do that. When you practice, do you turn off your other technology? So like when you're practicing even though you might be using your phone or your tablet do you turn it off or leave it on?

Lucas: I normally leave it on because when I practice I don't have a practice pad so I'm only either like using desk or...or like I have a drum set, but like it's electric so I have to like...it's like it's like really small, so I have to like do this a little, but sometimes I just hit on the side so... Because when you hit it it's really it's really loud, so I normally put headphones on and like listen to like beats and stuff so it's easier because if you're just banging on it it's hard to like focus about the music because it's...it's really loud and my mom doesn't like really loud things.

Ellen: And, most of the technology is downstairs in my house so normally when I practice I'll try and like go upstairs because I don't have like a TV or anything in my room and practice there and just like take my phone for a metronome.

EHG: Yeah. Yeah very cool. So speaking of your phones...when you're practicing do you leave them like full volume... ready to get a phone call, ready to get a text message or do you put them on Silent or Do Not Disturb?

Lucas: To be honest, I don't have many people in my phone contacts, so I just leave it there, because no...no one really calls me that much. All my...all my...the only people that would call me are my mom but she's normally at the house when I do it because my mom like calls me whenever she doesn't see me and I'm not like...like when I get picked up for like practice or something if I'm like not there in 30 seconds, she will like call me. And it's like...so like I always have like my phone it's just sitting there, but no one really calls me because I don't...I don't use my phone for like my music and stuff because it's...it's I don't know. I use the school iPad because I feel like is louder.

Ellen: Yeah I normally just put my phone on like silent and if it's only 20 minutes of practice I shouldn't have like that many notifications after so...I'll put it on silent and after I'll check it.

EHG: Right. What about you, Archie?

Archie: Oh yeah usually put my phone on silent. And like Lucas said I use my school iPad. And so...yeah. But sometimes I forget to put my phone on silent. But like I don't ever check it until like I'm done. Cause I kinda like to get all of my practicing in without any interruptions.

EHG: You guys are so responsible! I just...I mean I'm impressed, seriously! That's awesome.

Lucas: I remember...the only time I really put my phone on silent is during the playing test like when you gotta record for like a test or something that goes on your grade it's really not. Like I...when I was...so last year I lived in like this small house, because it's a rental since I've only been here two years. So we lived in a small house and there was always...I have seven people in my family so every time I would record, I had to do like 60 times because my brothers would always walk in or my...or someone is screaming in the back and it messes me up and I

remember one time, I was like at the end and then my dad called me like, as I was on the last line and I had to start all over because it was like really loud so that's...that happened to me once.

EHG: Yeah. Yeah that's...that's tricky when you have a lot of people in the same house, you try to find your quiet spot to get your work done. So yeah I can relate to that. Um well, thank you. These are all really, really fantastic answers and so I'm very, very happy to be talking with you three. I have just a couple more questions and I'm going to try to end at nine o'clock so just a few more minutes. And you talked about this just a little bit, but let's hear from I know we can have heard from Libby on this one.

EHG: Practice goals, so when you go to practice what motivates you to practice? Or do you have a...do you have an easy time staying motivated to go practice?

Lucas: My mom...when I get home I don't really have a chore list. So. When I can't I'm not allowed to do anything till I get it done so I normally like get it done. Like right now we don't really have much because we have a playing test coming up to like put us in a band, so we don't have music yet so like I don't have my...I have a bell set, but like it doesn't have enough notes to play the part, so I normally like...I don't really do that. I can't do that at my house, so I, I would like go on my drums and practice on that, but like it wouldn't be as fun because there's like no reason to do it, so I don't. It's sometimes like it's not motive, like last year was motivating because, like we had stuff to work on. Like we had a thing called pie game last year it was like it was like really like. I don't know why...it was it was kind of like a simple game, but it was like very like...it was fun to play for some reason. I don't know why it was just fun, for me, because they always have like these weird names in them like strawberries and stuff like. So I don't know...it was motivating a little.

EHG: So would you say that the game is what motivated you or um it was just more fun, so you are more willing to practice?

Lucas: I was, I feel like it's more motivating for what's after practicing because it's more fun. Like you're more motivated if you get something after you finish practicing because now I'm like. I mean let's say it's like your mom says, you get candy mean that's not really motivating that much now. I mean last...like when I was three it might be but like it's not really now because, like...it's candy. It's...it's gone...it's gone in three seconds, so I normally like it's something like...like let's say you get...you get to go outside or something like that, or like you get a play on a game like that's more motivating because it's something that last longer instead of something that's like 30 seconds that you can enjoy.

Ellen: Yeah, I think, if you like, know that you get something after you're practicing and even if you don't want to be like once I get this out of the way then I get to go somewhere I get to go hang out with someone too. Normally that's motivating to like know that once you get your practice done you're done with it and you have other things to do.

EHG: Are any of you, and those are great answers I appreciate you sharing all that. Are any of you, motivated by something in your band classes?

Lucas: Like what do you mean by that?

Elizabeth: Like I think you said that you have like a chair placement or a band placement coming up? So is that motivating to you?

Lucas: Yeah because I don't really want to be put...I've been...I was there last year, so I feel like I'm not like really bad, to the point where I don't want to be in the lowest band, so I want to like. There's... there's a lot of ninth graders in our class so there's only like me and like a few eighth graders so my goal is just to get either the first two. Because I...I don't want to like be in like the lowest band and have boring music, that is, isn't fun to play for like...because, like I want something that's challenging me. Not bells I'm not good at bells I cannot do that I remember last year we had like Star Wars music and stuff and it. I mean I knew how to do the Star Wars, but anything else, I was really bad at. I'm good at drums...like I remember last year, my favorite instrument was the timpani because it was it was fun like moving down the line, and that stuff so I remember like it was very fun like...it was very motivating to like...get to big drums.

EHG: Yeah I mean the end product is really fun right? Being able to do that with other people and...and play these bigger instruments that are not always just mallets or drum pad so... so I guess as a percussionist...I mean, let me ask you... are y'all motivated by being able to play other parts and other instruments?

Ellen: Yes ma'am

EHG: yeah

Lucas: I feel like it's more...I feel like the hardest thing for like percussion mainly is that. we're all...we're all separated from the other band because, like all the wind and brass and stuff they're all together right now. But we...we don't...we get a separate class so it's harder for us to like feel the music and like what is going to be so, I feel like that's like one of the harder parts of being a percussionist you.

EHG: Yeah. Yeah I can understand that. Absolutely. We've got about a minute left so. Y'all have been extremely...extremely helpful and I really loved hearing what you all have to say. Is there anything else that you want to add about your practicing or about your practice goals or motivation or technology or...it's a lot, but is there anything else that you want to add that you were thinking about?

Archie: Um so my motivation to keep on practicing...is basically like I want to become like a part time drummer. For an actual band stuff. So my motivation is to get better and make sure that I can do what I really want to do.

EHG: Yeah that's a great...great way to stay motivated isn't it?

Ellen: And I think like when we have something that we're trying to like work to or like we want to make a band, like the placement test it's easier to practice just because you know...like when you practice you're going to get better and then you're gonna like...get something that you want,

and so it's like easier practice when you're like working toward a goal rather than just like practicing.

Lucas: Yeah like...like kinda like that. Like so...I like a lot of sometimes like I think about what I'm going to do in college because there's a lot of people that like wanted to do like...like a lot of boys want to do sports when they're young like be a professional football player or something. That was...that was my dream, and I was like since like last year, but then I realized that band is really fun when you get to like be like more together. So I...I've been starting to like realize that and it's like more fun of a career that I feel like because one on football, you either play or you don't play

Elizabeth: This is true

Lucas: It's no fun to like to sit there, and like bands you get a part, no matter what. Like if you're in a band so you're always gonna be a part of something, no matter what so and it's just more fun as just worrying about yourself.

EHG: Those are all fantastic additions to what you've been talking about this whole time and I am...I am so appreciative of all three of you for taking your time to talk with me. You all are so motivated and goal driven and really, really fantastic young musicians, I can already tell. So I'm going to take what you guys told me and I'm going to use that to kind of help formulate my research ideas so...Again, thank you all so much, I really appreciate it and I'm going to go ahead and let y'all hop on out and go back to percussion class it sounds like and if y'all want you can go ahead and just end the meeting on your side, and again thank you so much, it was so nice to meet you all.

Students: Nice to meet you too. Thank you.

EHG: Thank you, thank you.

School B: Interview Transcript #1

EHG: ...said because you're going to give me good information I just know it, and I want to be able to remember all of it. So first of all, I want to thank you one more time for being so nice and giving of your time and letting me talk to you today and ask you some questions This is a focus group interview which means it's just you guys and I'm gonna...you know...I want you to answer questions honestly and openly and just know that there are no wrong answers. So if you... for whatever you say, it's all good it's all good information to me. This is not for grade, you know I'm not grading you so you can't get anything wrong. So I'm just curious...you know about some of the things that you do when you practice. And so you all did the...the focus...the...you're doing the focus group and I'm not sure if you've done the survey yet. Have you guys done the survey yet?

[shake heads]

EHG: Okay so maybe you'll do that soon so that's again going to be more questions kind of similar to what I'm going to ask you about today. So you all did sign and complete the consent forms and...and all of that, so I have all of your stuff so you are good to go. And before we get going, I just wanted you to know that this is recorded but I'm not going to use any of your names or your school or anything like that when I write up my results, so I won't identify you at all if that makes you feel any better, I just wanted you to know that. And, before we actually start do y'all have any questions for me?

Students: I don't think so.

EHG: Now okay awesome and if any point you have a question, please just jump in and ask me, okay? You can interrupt me it's totally fine. So, first of all, what instruments do you play?

Liam: I play the clarinet.

EHG: Clarinet.

EHG: All three of you?

Liam: All three of us.

Elizabeth: Oh...oh awesome very cool, how do y'all like the clarinet?

Leonard: I really like it, because when I started playing clarinet I wasn't really good at it, but I really like to play the recorder, it's kind of similar so...

EHG: Yeah. Yeah it's very similar in just set up you know from the clarinet and to recorder yeah. Lucy what about you?

Lucy: I like it because my mom played the clarinet.

EHG: Do you get to practice with your mom?

[nods]

EHG: That's cool. That's very cool. Liam what about you?

Liam: I like the like combination of the...the combination of the notes.

EHG: Did you say the combination of the notes?

Liam: Yeah you like press keys to make noise. And it's a little different.

EHG: I'm having a hard time hearing you, Liam. I don't know if it was...I don't know how close you are to the microphone...maybe you could scoot a little bit closer?

Liam: I like how you can like press keys to make sounds.

EHG: Yeah. Yeah the different combinations of keys to make sounds. Yes, yes, I heard that so...good. Yeah well...and y'all have...y'all are pretty new own clarinet aren't you? Did you just kind of start in what...August?

Leonard: I started two years ago. I started two years ago if that counts.

EHG: Oh awesome, wow cool. Well it's really, really cool that you all play the same instrument. That's going to give me kind of a unique perspective on what woodwind students think about practicing. So, first of all let's talk about music technology when you practice. So music technology is like a metronome or a tuner, or I don't know if you use *SmartMusic* at your school or not it's a computer program but technology with music can also be recordings, so playing along with the recording or recording yourself playing and listening back to what you just did. Can you tell me if you use music technology at all when you practice?

Leonard: I do.

Lucy: I do.

Liam: Yeah I do too.

EHG: So three yeses okay good. Good. What would you say, and we can just go down the line, what would you say is the kind of music technology that you use the most?

Leonard: I think, I use the tuner most because I mean...I love metronome. But I really want to hear a good sound and my teacher always told me to get good sound when playing, though I think a tuner is the music technology I use.

EHG: Cool.

Lucy: So I use probably a metronome and the website that goes with our book. We have a website that has all the songs recorded.

EHG: Is that by chance, is that Essential Elements?

Student: I think it is [inaudible]

EHG: Got it. Yes, yes cool okay yeah. So you get to play along with the exercises in the book too with the...yeah cool okay and Liam, what about you?

Liam: I use the metronome.

EHG: Good. Very cool. Well all three of you seem like you're very responsible because you're using all of these apps to help you practice. Is there something that you just don't use at all just because it's...you haven't figured it out, or is there a music technology that you just don't use yet?

Liam: I know all of them but I just don't use tuner. Like the tuner and website, I just use the metronome.

EHG: Okay. Yeah so you're more about trying to find rhythm and trying to find tempos more so than tuning right now and different... Okay gotcha that makes sense. Cool. Um...so. How do you think...how do you think that using that music technology helps you when you're practicing?

Leonard: At first using a metronome makes me not go faster and not go slower. And then ah...using a tuner helps me to get pitch which makes it sound better. And generally when we're practicing long tones it's really better for you to hear.

EHG: Yeah. Yeah good. I mean I agree that's great. That's all really good things. Does anybody else want to offer how music technology helps you to...to get better when you practice?

Lucy: Um well when I'm using the website that goes with the book, it helps me always before I play a song to hear it

EHG: So you're able to hear what the music sounds on before you play along with it?

[she nods]

EHG: Yeah cool.

Liam: Mine is...the thing that helps me is basically the same thing is the metronome. It helps me match to the beat so I don't go faster or slower.

EHG: Yeah. And it's really nice too because it kind of takes the guesswork out of where the tempo is doesn't it? With a metronome it just kind of does the work for you so that you can think

about other things when you practice so yeah. In general...so those are very specific things...how do you think it makes you a better musician overall when you use your technology? Thinking...let's say...you practice with your technology and then you get to go back in your band class and play with your peers or play somewhere else. Do you think that it helps you in other ways, on your...as you are developing your musicianship? As you're becoming better at your instrument?

Leonard: I mean overall if I use a metronome I think like I got a standard beat on my foot and then, if I tap it...it just helps me don't rush, you know, like...like listening to the metronome when I practice helps me to practice better.

EHG: Yeah. Does anybody else have anything or...?

Liam: I get like...so I get like kinda like the beat works or the tempo...[inaudible]

EHG: So again, more of the...more of helping you find a good tempo and a good beat and that kind of helps you and other band settings too?

Students nod.

EHG: Yeah. Very cool. Um do you use any other kind of technology when you practice outside of music technology?

Leonard: I use a website called Easy Virtual Choir. Choir. And then that's when like if I want to play duets I don't really have anyone to play with, I just like record myself and then I can play duets, trios and quartets, so it's really helpful.

EHG: That's very cool. Very cool. Um thank you...thanks for sharing that. So we're going to shift gears a little bit and stop talking about technology as much and talk just a little bit more about how you practice. So um do y'all feel like you were able to stay focused when you practice your instrument?

[students nod and say yes]

EHG: All three yeses okay well y'all are so good. That's awesome, how do you stay focused, how do y'all, how do you all do that?

Leonard: I'll go first. I mean if I practice, I feel like I'm in this world where it's only me and the clarinet and the notes I'm playing and then like I play whatever sounds good to play. It's really entertaining. So I just do that and then like an hour goes by really quickly.

EHG: Wow so do you feel like... you kind of lose sense of time when you practice?

Leonard: I really love practicing the clarinet. It makes me want to practice more.

EHG: That's awesome. That's really cool. Anybody else?

Lucy: Well like when I'm practicing, it's just like... I always have people over at my house because like my brother and my parents. But I always like put in my headphones to try to block out everything else. And I'll just sit there for I don't even know how long and do it because it's just so fun to do.

EHG: So you put headphones on and that's to kind of block out other noises that you hear?

[she nods]

EHG: Yeah cool. Liam, what about you? How do you stay focused when you practice?

Liam: Well my sister plays the piano and she practices a lot, so I just go in my room. And then when...[inaudible]

EHG: Sorry, what was that last thing you said?

Liam: Oh since my sister plays piano sometimes we play together.

EHG: Do y'all play together?

Liam: I play the clarinet and she plays the piano.

EHG: Oh that's so cool. So do y'all, I mean do you practice together during the week a lot?

Liam: nods

EHG: Cool. That's very cool so...um y'all are all...you sound so responsible all three of you, and you just sound like you're so on top of it so good for you, first of all I'm impressed seriously very, very cool. So just out of curiosity, do you guys practice a certain amount of time a week? Or do you practice the same days every week? Do you have a set schedule, when you practice?

Leonard: I always aim for 45 minutes in the morning and 45 minutes in the afternoon.

EHG: That's impressive.

Leonard: But only...not on Monday, because that's when I have my lessons and I don't want to get stressed out.

EHG: Yeah. Yeah I understand that. What about you guys, do you practice, the same time, every day?

Lucy: I really practice as soon as I come home from school but I don't practice with a specific schedule, because I have a lot of chess stuff things going on. But I practice that a lot too, so I don't always have as much time as I wish I have

EHG: Gotcha.

Liam: Yeah I try to do it the same day, like him. But I got stuff...[inaudible]. Just trying to do home work...for the week.

EHG: Very cool. You all sound like you're busy, but you maintain time to practice which is really good and really very cool that y'all do that. So when you practice...kind of going back to saying focused...do you have your phone or your like...if you have a Chromebook or an iPad...do you have any of that technology with you? Is that what you use to help you with your music technology, where your tuners and metronomes are?

Leonard: My metronome I just bought it off of Amazon, and then for my tuner and everything else I use my laptop.

EHG: On your what?

Leonard: On my computer.

EHG: On your computer okay. Okay cool.

Liam: I use my...I use a metronome on my iPad and my computer

EHG: Okay, cool.

Lucy: I also just use my iPad.

Elizabeth: That's...that's cool. So it's good that you have this kind of technology that can specifically help you, with your practicing like that. Do you have other things on that, like do you have social media at all, or anything on...on your devices?

Liam: No

Leonard: I mean I don't have social media.

EHG: Do you...okay and that's okay. If two of you don't and that's fine. This is just kind of one of my questions...I'm just curious if you get a notification...either from social media or from like somebody texting you or calling you if you have your phone nearby you... Are you able to...do you normally stop practicing to answer it? Or to respond to it?

Leonard: Well I at least try to finish like the thing I'm doing even though I'm so curious about what it is. I still like I...I finish everything and check. So then maybe after like the piece I'm playing then I'll...

EHG: Then you check so yeah you have just finish... a stopping point, and then you check?

Leonard: nods

Liam: [inaudible]

EHG: Sorry, Liam what did you say? You turn off...

Liam: Yeah I turn off notifications...until I finish. And then when I'm done...[inaudible]

EHG: That makes sense, do you also...do you turn off the ringer or do you put your phone on silent?

Liam: I don't have a phone but I have a computer so I basically use it.

EHG: Yeah. Kind of the same thing. And Lucy you were...you were nodding, so you...you put your devices on silent?

Lucy: Yeah but they're normally on vibrate, so I'll feel it go off. And when I get to a part where I might just...[inaudible] I'll just check it to see if it's important and if it's not important I'll [inaudible] unless it is important.

EHG: Got it. Yeah so you feel it vibrate so you know it went off but whenever you get to a stopping point it's kind of like you were saying you...you...you check it then and just save as anything important. Y'all all sound like you are very goal driven when you practice. Do you usually set...and I know you know you were talking about having morning time practice and afternoon time...afternoon practice time, but do you...do you set performance goals for yourself when you practice? So when you...when you go to practice, do you say "Oh, I want to get through these lines in the book...or this particular scale" or something like that? Or do you practice by minutes?

Leonard: I generally have a goal that I'll play 12 major scales then go over my piece of gear and for orchestra and go over band. But the thing is, I always try to finish that so even like...I'm over that 45 minute limit if I still have time if I didn't finish I'll try to finish when I'm playing.

EHG: So a little bit of both? Very cool.

Lucy: Now, when I play my schedule gets interrupted a lot, so I will sometimes practice with only 10 minutes on the practice sheet. But I always try to like have certain things that I want to finish every time I practice.

EHG: Okay.

Lucy: And then I'll have at least 30 minutes to practice.

EHG: What are your...what are your things that you'd like to practice every day...that you try to practice every day?

Lucy: Like the scales and our performance tests that we have.

EHG: Got it. So to get...scales and then to get ready for tests that you have coming up? Yeah Liam...what about you?

Liam: I just do about 30 minutes [inaudible]..an hour...[inaudible]...I don't really have...[inaudible]

EHG: I heard part of what you said, I think you said...I'm sorry I keep...I keep saying, I have a hard time hearing you, but I think you said that you tend to practice like 30 minutes a day is that what you said?

Liam: 30 minutes to an hour.

EHG: 30 to an hour? Okay.

Liam: I try to get as much done. You know how like she gives us stuff to do. I just try to...[inaudible]

Elizabeth: So y'all prepare, would you say you're motivated by making good grades on your tests in band?

Students nod

EHG: Yeah. Yeah. I mean that makes sense, nobody wants to do badly on a test right? So...what are your feelings in general about practicing your instrument? It seems like you guys are very responsible and that you have an easy time getting your jobs done on your instruments. Do you in general, when...when you go to practice...what's your feelings about practicing?

Leonard: I just feel like...I mean...I feel like it's not my job, but it's like a thing. It's like a hobby. I just really want to play this and then like...when it's time for clarinet it's like a stress reliever for all the stress I got from school or like my {inaudible} and stuff, but I think about it like it's fun

EHG: Yeah it's good to have a hobby that is also fun that you can do in school, too. Yeah. Liam, what about you?

Liam: I just think about it as like...I would think about it as like something fun I would love to do an extra curriculum that I just think...every...[inaudible]...hobby. I don't know I don't really think of it as something mandatory. Cause it's something extra that's fun.

EHG: Yeah because you know...you chose to be in band, right? And...and it's just part of one of the things you do when you're in band. And it should be fun to be in band right? And then Lucy, what about you? How do you feel about practicing?

Lucy: So I like it because I have so much going on like other than clarinet...[inaudible]

EHG: I'm sorry Lucy I had a...you kind of cut out a little bit. You said you...you have fun playing the clarinet?

Lucy: I said that it helps when I just like...it helps me forget about everything else...[inaudible]

EHG: It helps you forget about other things going on? So, two of y'all have spoken about that... you've said that it helps you to block out other things, and you kind of lose sense of time, and I think that's a really cool thing that...that shows me that you all really enjoy playing clarinet and that you enjoy being in band, and I think that's so important because that helps you to practice. You know the better you get the more you want to practice and that kind of pays off, so I think that's so cool. It sounds like y'all have practice logs. How many minutes are you technically supposed...I feel like you all practice your minutes...but how many minutes are you supposed to practice?

Leonard: 100

EHG: Sorry 100? 100 a week? Okay yeah that's a pretty normal number so and do y'all normally meet your 100 minutes?

Leonard: I think we all go above 100 minutes.

EHG: You sound like you probably do.

EHG: So. In general, is there anything else about practicing... about playing your instrument or music technology, when you practice that you want to share before we hop off of Zoom? There are no wrong answers so....

[pause]

EHG: And it's okay if you don't have anything else to say but...and I just think that you all have given me some really, really good information and I'm so excited that I got to talk with all three of you and it's been very helpful and y'all have been so nice and y'all are seriously superstars so I really appreciate you talking to me. Thank you guys so much.

Leonard: Thank you.

Elizabeth: So we are, we are done unless there's anything else you guys want to say. And if there's not then you can go ahead and hop out of the Zoom meeting on your end if you want to go ahead and end it from your side, and I will just send [your band director] a follow up and let her know we finished.

EHG: Are y'all good?

Leonard: Uh huh. I have a question.

EHG: Sorry?

Leonard: Oh, what studies you major in?

EHG: What's...so I'm studying music education. So that's why we're doing research.

Leonard: Thank you.

EHG: Thank you. Bye-bye.

School B: Interview Transcript #2

EHG: ...get into microphone so I can hear you and I want to make sure I can hear everything that you're saying. So can we start on the end? there you go. So can I get one of you to tell me your name I can't quite see all of you.

[students adjust]

Now I can see you a little better. Can Y'all hear me okay?

[nods]

Okay awesome Okay, so can we start on...it looks like it's on my right, can you please tell me your name?

[inaudible]

EHG: Um I can't hear you I'm sorry, can you do that, one more time?

[inaudible]

EHG: I'm still not able to hear you um let's see. Do you have that, is there a microphone in front of you?

[nods]

You may have to like pass it around as you talk and let's see if that helps. Because I wasn't able to hear you and we can try to get until we get it right.

[inaudible]

EHG: I can't hear you hmm. Let's see...can y'all try something for me? On the computer on the zoom setting you see the little microphone on the left hand side? Can you click on the little up button next to that and where it says "select a microphone"? Do you see that?

[nods]

EHG: Okay, what does it say? Maybe switch to a different microphone so maybe use the one that's on the computer instead of the one that you have because I can't hear you and we'll see if that fixes it.

EHG: And then, can we all say something to see if I can hear you?

[inaudible]

EHG: Okay, I heard a little bit! Can you try it one more time?

Student: Hello?

EHG: There you go I can hear you! Yay! Y'all are...y'all are tech...tech geniuses!

EHG: Okay, so let's try this maybe one more time so whenever you go to speak, maybe come right into the computer I know it's going to feel a little awkward but then that way I can hear everything you're saying. So let's try, one more time we'll go down the line, and if you could tell me your name.

Student: Hi my name is Zoey

EHG: Zoey Zoey yay I can hear you! Okay, let me mark your names off as I get to you so Zoey.

Student: Hi my name is Vincent.

EHG: Vincent all right, let me find you on my list Zoey you're good Vincent I'm looking for your name.

EHG: Vincent gotcha Okay, and then, last but not least.

Student: Hi my name is Shelby.

EHG: Shelby all right. Y'all are so helpful. Thank you so much for getting the technology stuff figured out, so we should be good to go now so...First of all, I wanted to give you a huge, thank you for taking time out of your band class today, I know you all must really enjoy playing your instruments, so thank you for taking this time to talk with me a little bit about the ways you practice and...It looks like my friend is coming in, right now, and I'll introduce you to him in just a second. So, first of all, my name is Elizabeth Gibbs and I am a doctoral student at Auburn University so I'm working on my doctorate in music education. So I'm studying music and I'm studying, specifically the way you all practice your instruments. So I'm going to ask you questions that are relevant to that and that pertain to your practicing. And my friend that just jumped in is Mr. Scott Sexton. He is also working on his PhD in music education at Auburn too, and he's going to be here to help me with any anything that was going on technology wise or connection wise and stuff like that so...First of all, let me make sure I got all the right names, I've got Zoey ,Vincent and Shelby right? Awesome good and hopefully we can hear everybody really well today. So are y'all ready to jump in?

Students: Yes.

EHG: Okay awesome so what this is...is a focus group interview, so it means y'all are all in a group and you're going to answer questions about the way you practice your instrument, specifically the way you use your technology. So music technology, meaning like a metronome or a tuner or videos or you know anything that you use to help you practice. And then I'm also going to ask you about the ways you stay motivated when you practice because you're all clearly very good musicians. You volunteered to be in here to talk with me today so I'm curious what you do when you practice. So you've all done all of your forms... you've completed all of your

consent and permission forms, so we are all good to go so before we start just wanted you to know that there are no wrong answers. Nothing that you say is going to get you in any trouble. Anything that you say is totally great for me. So, like you, can't get anything wrong it's not for grade, so I am just curious what you guys do when you practice and, before we start, do y'all have any questions before we get going?

[shakes head]

EHG: Awesome. Okay well let's just jump right in and talk about some practicing. So, first of all, what instruments do you all play?

Student: ...on..

EHG: Okay, did you say trombone?

Student: saxophone.

EHG: Saxophone...all three of you saxophone?

Student: Wait...I play the French Horn.

EHG: French Horn okay. So saxophone and French Horn. So two French horns and a saxophone very cool. There's there's, no, no...

Student: No...two saxophones and one French Horn.

EHG: Two saxophones and one French horn. Very cool. Those are some of my favorite instruments in the band, I really love the way all those instrument sound. Do y'all enjoy playing those instruments?

{nods}

EHG: Yeah? Good, good.

EHG: So when you practice your instruments when you're at home, do you use music technology? So do you use a tuner or a metronome or video recordings or anything like that?

Students: two nod yes one shakes head no

EHG: Okay, so I got one I got one "no" I got some...Zoey you are shaking your head right?

Zoey: I don't use a recorder, and I don't use metronome I only use a video recorder when I'm doing playing tests.

EHG: Okay that's helpful to know good. Vincent, what about you. What, what do you use the most of music technology?

Vincent: I use the metronome the most when I practice.

EHG: Yeah? Good. And then Shelby what about you?

Shelby: I use the metronome the most. I tried to find a tuner but I really couldn't find one that was good for the French Horn so I'd mostly use the metronome.

EHG: Yeah so, how would you say that...for those of you that do use the metronomes...How would you say that that music technology helps you to get better at playing your instrument?

Shelby: For me, it helps me get better at that staying at staying with the tempo a different...A different like paces and music like 100 or 50 helped me stay at different ones.

EHG: Right. Yeah exactly. Yeah it helps you to know where those different tempos are too. Yeah. Vincent, what about you?

Vincent: So, with the regular metronome it's harder to hear. So with a digital metronome you can turn it up as loud, as you want, so you can hear the beat, which is good.

EHG: Yeah. So Vincent you're kind of touching a little bit on the ease of use right? It's easy to use because you can hear it really well and...and actually you...something that you can actually use effectively when you practice. If you had to pick one that you don't use at all or that you use the least what would you say that is and why is that?

EHG: So Zoey you...you don't really, you said you use a video recorder right when you're recording something.

Zoey: I only use video recorder when [our band director] wants us to play and she wants us to hear us play alone. So at home, we video record ourselves playing and that's probably the thing I use the least.

EHG: Okay. Somebody else want to add to that?

Vincent: Yeah that's the same for me.

Shelby: I also use the video recording the least um. I...I use my metronome almost all the time I practice sometimes that I forget that I...then I almost instantly realize that I forgot my metronome because I use it to practice.

EHG: Yeah it's one of those things where you get to going when you're practicing and then you think "oh wait I forgot to turn on my metronome I need to get that" so yeah. Very cool. How do you guys think even Zoey since you don't use metronomes or tuners as much as the others, even in the way that you record your music tests... how do you think that that technology helps you overall as a musician? So, in other words, not even with specific things about playing your

instrument like learning a scale or learning a line out of a book, but how do you think it overall helps you or do you think it does it all?

Zoey: I think it helps me stay at the tempo on my tests.

Vincent: It does. It's the same for me too.

Elizabeth: Yeah.

Shelby: Same here, for me it helps me stay at beat with my tests, but then also I can kind of like... it helps me like when I re-watch the test, I can hear like how fast or how slow I'm going compared to like...to see if I'm playing or staying at the tempo or not in class.

EHG: Yeah so it kind of helps you when you go back and listen to your recording it helps you to figure out what you were doing right and what you mabey need to work on a little bit more in that recording?

[nods]

EHG: Yeah. That makes sense, yeah that's a really good answer. Do you guys use any other types of technology when you practice outside of music technology? So outside of video recording and metronomes and tuners?

Shelby: I use a timer to see how long I'm practicing.

EHG: Okay that's good.

Vincent: I use an Alexa timer to see how long I'm practicing.

Zoey: I use like the clock on like my oven or microwave to see how long I've been practicing for.

EHG: Cool and out of curiosity, do you set alarms on each of those like on Alexa or on the microwave?

Student: Yeah I set a timer on my watch.

EHG: Okay cool. So talking about length of time, and when you practice, do you guys aim to practice a certain amount of time...a certain amount of minutes each day?

[nods]

EHG: How many minutes do you try to practice a day?

Shelby: Well, for me, I...So basically I'm normally busy on the weekend, with all the activities, I do and I'm also busy during the week, which makes it hard but on during the on Tuesday ones

Monday, Tuesday, Wednesday and Thursday I try to practice for at the least 30 minutes each day.

EHG: That's good.

Vincent: 30 minutes each day too.

Zoey: I practice for 20 minutes 20 minutes each weekday and trying to do about 10 minutes each weekend day.

EHG: Yeah. And do you have a certain amount of minutes that you're...that you have to practice each week for band?

[nods]

Elizabeth: Okay, so does that help you to stay on track when you have a practice log that you have to fill out?

[nods]

Elizabeth: Yeah? Yeah. That kind of helps me to answer, or to kind of gauge this next question, but when you practice...let's say you've got an exercise or a line out of a book that you're practicing...If you have to work at that a lot, do you typically practice and when the timer goes off if you're not finished achieving what you wanted to achieve, do you stop practicing or do you keep working until you get that exercise as good as you want it? So, in other words, is it all about how many minutes you practice or do you set performance goals?

Shelby: Well, for me, it's kind of a mixture of the two. Like I've been practicing for a long time on that one like line or something I'll stop because we're probably going to keep working on it in class the next day so I'll work on it in class, then the next day I'll go home and try it again.

EHG: Okay.

Vincent: Same for me too like...When like my timer goes up if I'm still working on something I'll continue to work on it.

Elizabeth: Okay.

Student: Sometimes, if I'm working on something and, like, I have a test the next day or something, then I'll keep on practicing it for a little bit, but then I stop.

EHG: Yeah. You guys sound like you're...you are a good mixture of knowing that you need to get stuff done now, you know, knowing that you have a certain amount of minutes but also trying to prioritize other things that you're doing too with your practicing. Cool.

EHG: So do y'all have an easy time staying focused when you practice?

[mixed responses]

Shelby: Most of the time yes but sometimes like if I turn the Braves game on TV I might not be as focused.

EHG: (laughs) fair and the Braves are very exciting to watch right now aren't they?

EHG: Cool. Anybody else?

Vincent: When my dog starts barking at me.

Zoey: Sometimes when I flip the page or something and I'm looking at notes and I start thinking about my life.

EHG: (laughs) Very understandable for on all three of those accounts so...Just a little bit more about that, so you mentioned, Shelby, it was, I think it was you that mentioned the...the Braves...having like sports on TV, do you generally try to turn off TV and other...other technology when you're practicing?

Shelby: Yes, I do.

EHG: Yes, yeah and it's just...do other people in your house watch TV when you're practicing, is that why it's sometimes hard to... to focus?

[nods]

EHG: Yeah.

Shelby: Yeah, it is because I have three siblings so it's really hard to we're all doing something a...something at different times it's it's...it's really hard, sometimes for me to stay focused especially when one of them is doing something else so but I try my best to try to focus on practicing.

EHG: Yeah and Vincent, you mentioned like when a dog barks sometimes it's hard to stay focused. Do you try to...and this kind of is for all of you...do you typically practice at the same time, every day? You get to kind of go into your room and close the door and try to eliminate outside noises and distractions?

Student: Kinda

EHG: Yeah? No.

Student: I don't practice...I don't practice in my bedroom I practice in my living room so it's a lot harder.

EHG: And is that is that just because you have other...other things going on in the house?

[nods]

EHG: Yeah?

Shelby: It easier for me in case I have to do other homework afterwards I normally just finish homework before I can quickly get into my band.

EHG: That makes sense everything's already right there. That makes sense. So a little bit more about that specifically...about staying focused when you practice. Do you guys all...do you have a cell phone or a personal device that you typically keep with you just in general?

[students shake and nod heads]

EHG: One yes one no. Maybe. So you know I'm just curious when you're practicing your instruments do you have any kind of device that you know...rings or that goes off when you get a notification?

[nods and shakes heads]

EHG: Okay, so I've got one "yes" and I think one...two "no's" and one "maybe". So do you typically...when you're practicing your instruments...do you put your devices on a Do Not Disturb or on a silent setting so that you don't hear it when it goes off?

[Zoey shakes head]

EHG: So Zoey can you talk to you, you were shaking your head, can you talk to me a little bit more about that?

Zoey: I don't have a phone or anything to have when I'm doing things, the only kind of device I have is a phone that I share with both of my sisters. And usually my big sister has the phone. So probably the only technology I have in there is my iPad for school and my watch. And my watch doesn't really ring and my iPad doesn't ring.

EHG: Okay, and when you're practicing do you leave it do you leave the volume on so that you get those notifications?

Zoey: I don't really think about it, since it doesn't like it, the only time it rings is when I get like an email and I usually practice after school, so I usually don't get emails.

EHG: Gotcha, yeah.

EHG: Vincent what about you.

Vincent: I wear my watch...I wear my watch all the time, and so on when it goes off while I'm practicing I don't really pay much attention to it so.

EHG: Okay, good and Shelby, what about you?

Shelby: Well, I do have a personal device computer, but I leave that in my room, so I don't really have email on that I just check my Gmail account on that. But then I also have my school iPad in the room, which I have it on...on full volume, so I can hear the metronome. And sometimes it goes off when I have like...if I forget to like check something off my reminders app I might get a notification saying turn that off, but I'll turn it off when I'm finished playing whatever scale or line that I'm doing.

EHG: Okay, so from what it sounds like all three of you sound like even though you keep your devices with you...or where you can hear them or feel them if they vibrate... that you can kind of block that out when you're working on something is that true?

[nods]

EHG: Okay, three nods so that's good. You guys seem like you're able to really focus on what you're working on and for the most part...block out those kinds of distractions, which is a really good skill to have. So a couple of more questions about your practicing. How do you determine what you're going to practice each day?

Shelby: Well, normally, so we have four blocks music, warmups, rhythm chunks and book work. I try to get other sections and I'm ever done in a day based off of what we do in class, so I basically might copy or do a little more than what we do in class. But I...I normally do a little bit less on days when we have the film a playing tests, because it takes me a while to film my playing test.

Elizabeth Okay.

Vincent: We have four...we have four sections on our log sheet and that's what I practice.

EHG: Okay.

Zoey: I try and practice, there are two blocks, well, I have to practice the warmup block every single day, but I usually practice the book work and the music the most, and I do the chunks whenever I have extra time.

EHG: So, in that way it sounds like your band director helps you to kind of know how to guide your practicing during the week. She gives you different sections of things to practice... is that helpful to you guys?

[nods]

EHG: Yeah? For the most part? So how are you...how are you motivated to practice?

Zoey: I know if I practice I won't get in trouble.

Vincent: Just to get better.

EHG: You're motivated by getting better at your instrument? Yeah.

Shelby: Normally I... I'm excited to play our songs and practice our songs for our performances and so I'm like "I have to get all the other stuff done before I can play that". And I want to make a good grade in this class and I know that if I don't practice I'm not going to get a good grade on my log sheet.

EHG: Yeah. And so, in some ways, and I agree with you... some ways you you're motivated by wanting to get better but also wanting to do well in the class that you're taking so that you get a good grade because you want it to be known that you work really hard on your instrument, I understand that. And then last couple of questions so, what are your attitudes about practicing? So in general, how do you feel about practicing your instrument? And that kind of relates back to some of what you've already talked about...can you share a little bit about that?

Zoey: I'm usually not very excited towards it, because it's just something extra I have to do, besides my other homework but usually I get it done.

Elizabeth: Yeah.

Vincent: I like practicing it's...it's fun.

Shelby: So like said I practice Monday, Tuesday, Wednesday and Thursday. And most of those days, like I know I have to get the practice done. "okay I'll go do it." Some days, though if it's...if it's like...if it's like, if I had a bad day at my activity or something and I just... I might, like when I played band, and I don't get something right, I might just get really frustrated I just keep trying to push through it, though.

EHG: So Shelby you said something really cool. You said sometimes I get frustrated, but I push through it. In general, do you Vincent and Zoey...do you feel like you do that, or sometimes when you get frustrated, do you have to put it away for a little bit?

Vincent: I try to push through it mostly.

EHG: Yeah.

Zoey: I do a little bit of both.

EHG: Yeah I think I do sometimes I do a little bit of both too. It feels good when you push through, but sometimes you do need a little bit of a...walk away take a walk and come back to it sometimes so I understand that.

EHG: So I'm going to ask you guys if there's anything else you want to share about the way you practice your instruments or the way you use music technology, when you do practice.

Zoey: [Our director]...she doesn't tell us something we have to practice, but during the week, we have to practice every single block and our music at least one time or two times so we just practice, whatever we can each day, and she never really dictates what we do.

EHG: Yeah so that sounds like...it sounds like you guys have some freedom when it comes to your practicing so you get to make decisions on how to spend your practice time is that true?

Vincent: Yes.

Elizabeth: yeah.

EHG: Vincent do you want to add something else?

Vincent: um I like that we get...we can practice in any order that we want like I can do that I can go to bookwork and then music and then rhythm chunks or any way.

EHG: yeah.

Shelby: Like Zoey said, we have more freedom we run log sheet, she said, sometimes like I write a little too big and like...when I write down all the music I play I can't all fit it in one block so some days I might practice only two songs I can't fit it my block and then the next day I'll make sure I practice songs I didn't get to the song or songs I didn't get to.

EHG: So, in that sense, would you say you're kind of task oriented?

Shelby: Yes.

EHG: Yeah do you guys try to...do you change what you practice or how you practice each week?

Shelby: Well, for me it just like I said earlier, it depends on what we're doing in class that week I based off of that. But mostly I stick to the same routine every day. I do my warmups then my rhythm chunks then my book work, then my music.

Elizabeth: cool.

Vincent: [nods] mmhmm

EHG: Same thing? Yeah.

Shelby: Sometimes we change music and class music that we did in our last performance I don't really practice anymore so I'm working on songs that we're doing right now in the new chunk. So we have the other book work we get to do so yeah.

EHG: Yeah. It keeps it interesting right? Yeah. Zoey, did you have anything you wanted to add? No? Well, you all three of you have been so...so nice and so forthcoming about your experiences

practicing and I am so excited that I got to talk to all three of you and use your words to help me figure out my research and before we log off is there anything else you want to share, about how you practice?

EHG: No? Do y'all have any questions for...Oh Zoey, go for it.

Zoey: Sometimes I know...I know that I have to practice 20 minutes, every day, and if I do 20 minutes every day then that equals 100 minutes in our least amount of time we have to do each week is 100 minutes. And so, if I do less than 20 minutes, I know that other days I will have to do more, when I don't want to.

EHG: So you try to...Zoey would you say you're very much a schedule person you like to get your 20 minutes a day, so that you don't have to like add up 40 minutes on one day?

[Zoey nods]

Elizabeth: Yeah? Yeah.

Shelby: For me um like I try to practice at least 30 minutes a day because um...we get our log sheets on Tuesdays. If I do 30 minutes a day that would be 90 and then I can practice, however much I want really just over 10 on Monday. But um, if like if something takes me awhile on somedays... like if I'm working on the line for a really long time and I lose track of time say on a Wednesday and end up practicing for like 45 minutes that day I might only practice for like 20 minutes the next day.

EHG: So Shelby, you said something that I want to ask one more question about. Do you tend to lose time...like lose sense of time when you practice?

[nods]

EHG: Why do you think that is?

Shelby: Well, for me, it's because I'm so into practicing I really don't keep time I just look at my clock at when I start when I finish.

EHG: And so...if the timer goes off, if you're 20 or 30 minutes is up, do you just turn it off and keep practicing?

Vincent: Sometimes, yes.

EHG: Yeah, that's cool. Very cool. You guys all sound like you're very responsible and very diligent musicians and that you care a lot about how you play and about how you practice and about how you spend your time so that's a really cool thing, especially for you to be...are you all on your first year in your instruments?

[nods]

EHG: Yeah so that's really impressive that you already have such good practice habits already and you've only been playing for a couple of months. So I feel so honored that I got to talk to you all today and again I'm just so thrilled that what you have said, is going to help me so much with my research and help other band directors out there, too, so you've given me really good information and I really appreciate it. And if y'all don't have anything else you want to add about practicing, then I will stop the recording and you all can just end the zoom meeting on your end, and thank you so much, one more time for all of your help today!

Student: Thank you.

EHG: You're welcome.