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Digital emancipation: Black musicians'
use of technology to disrupt
socioeconomic barriers and
epistemological bias within public school
instrumental music programs

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BOSTON UNIVERSITY
COLLEGE OF FINE ARTS

Dissertation

**DIGITAL EMANCIPATION:
BLACK MUSICIANS' USE OF TECHNOLOGY TO DISRUPT
SOCIOECONOMIC BARRIERS AND EPISTEMOLOGICAL BIAS
WITHIN PUBLIC SCHOOL INSTRUMENTAL MUSIC PROGRAMS**

by

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DEDICATION

I dedicate this dissertation to my loving friends and family whose unwavering understanding, steadfast support, and remarkable patience have been the pillars of strength throughout my academic journey. Your belief in me and your endless encouragement have illuminated the path to this accomplishment. This work stands as a testament to the impact you have had on my life, and I am eternally grateful for your presence in every chapter of my academic, professional, and personal story.

I also dedicate this work to the memory of Elijah McClain, a talented Black violinist whose life was stolen from him in an unjust act of violence. In dedicating this work to him, I aim to honor his memory and draw attention to the urgent need for justice and equity in our society.

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ABSTRACT

This research study explicates the underrepresentation of Black students in public school instrumental music programs through a critical race perspective, focusing on socioeconomic and epistemological barriers perpetuated by public policy and school music curricula. Such barriers have encouraged some Black musicians to seek agency and satisfy their musical interests in spaces outside of the classroom, particularly in the church and community. Considering that the theory of disruptive innovation purports the potential to increase access and disrupt both socioeconomic and epistemological barriers through the use of technology, this exploratory research study sought to investigate whether Black instrumental musicians use technology in order to disrupt the socioeconomic and epistemological barriers unveiled by a critical race perspective. By employing qualitative research methods, participants' personal experiences were synthesized into a thematic analysis which ultimately support the potential of technology to increase access, revealing that participants successfully disrupted socioeconomic and epistemological barriers through the use of asynchronous online lessons.

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LIST OF ABBREVIATIONS

MOOCs.....	Massive Open Online Courses
WSN.....	Western Standard Notation

GLOSSARY

Aurality refers to the practice of learning, performing, and transmitting music by ear, independent of Western standard notation (Brothers, 1997); often includes learning activities such as repetition and imitation (Brothers, 1997; Hess, 2020); and, is common among musicians who perform popular music (Hess, 2020; Narita & Green, 2016).

Western art music refers to music that is of European origin (Bell, 2015); composed and performed using Western standard notation (Peršolja, 2020; Tagg, 1982); composed and performed by musicians who have undergone formal music training (Bell, 2015; Peršolja, 2020; Tagg, 1982); and, typically reflects musical interests of those from middle- and upper-socioeconomic status (Bell, 2015).

CHAPTER ONE: INTRODUCTION TO THE PROBLEM

In 1999, 175 music education stakeholders convened in Florida to envision the future of music education in public schools throughout the United States. From this meeting, commonly referred to as the Housewright Symposium, a series of principles emerged, including that “all persons, regardless of age, cultural heritage, ability, venue, or financial circumstance deserve to participate fully in the best music experiences possible” (Madsen, 2020, p. 205). Though it is the general belief among music educators in the United States that public school music education should be accessible to all students (Anderson, 2018; Kinney, 2010; Simon, 2013), demographics of those who participate in instrumental ensembles do not reflect this principle.

Demographics such as race (Elpus & Abril, 2011; 2019) and socioeconomic status (Elpus & Abril, 2011; 2019; Chapleau & Iwanaga, 1999; Costa-Giomi, 2008) are significantly associated with overall ensemble enrollment. Black students are among those to take the fewest music courses (Elpus & Abril, 2019; Stewart, 1991; Watts et al., 1994) and least retained in public school music education programs when compared with students of other races (Gustafson, 2009). In fact, attrition from public school music programs among Black students is nearly “100 percent” (p. xi). While representation among Black students is limited in public school music programs, music making outside of schools boasts greater diversity. As Carter (1993) asserted, “Black students are quite active in music outside of schools’ music programs; there are no indications that [Black] students have lost interest in making and learning music” (p. 8). This discrepancy necessitates a critique of the practices and policies that may contribute to the

underrepresentation of Black students in public school music education programs.

Because this phenomenon is highly associated with race, an investigation of its cause may be best situated through the lens of critical race theory. To provide a brief history, critical race theory emerged from the realization that, despite the advancements made in the Civil Rights era, racism persists under a covert system of laws and institutional norms which continue to undermine the advancement of people of color (Delgado & Stefancic, 2017). This covert system of racial oppression is commonly referred to as systemic racism (Irons, 2021) and has since been challenged in courts of law by litigants using critical race theory as a legal framework (Delgado & Stefancic, 2017).

Though the theory originated in the field of law (Delgado & Stefancic, 2017), it has since been expanded and applied to the field of education (Ledesma & Calderón, 2015). Just as legal scholars applied the theory to highlight ways in which public policy upholds racial inequities, education scholars have similarly applied the theory to unveil ways in which education policies covertly perpetuate racial inequities in public schools (Ledesma & Calderón, 2015). Critical race inquiry within education has since drawn attention to ways in which school funding (Alemán, 2007; Ladson-Billings, 1998), textbooks (Brown, 2010; Murray, 2018), and standardized tests (Ladson-Billings, 1998; Popham, 2004) collectively undermine the educational opportunities of Black students.

Investigating Racial Disparities in Music Education through a Critical Race Lens

Despite what Bradley (2015) noted as the propensity among some music educators to believe that systemic racism does apply to music education, a critical race perspective reveals significant inequities which disproportionately undermine the musical opportunities for Black students in public school music programs. The following section briefly introduces socioeconomic and epistemological factors that contribute to this phenomenon. I provide a more thorough explication of these concepts in Chapter Two.

Though critical race theory places race in the foreground of analysis, “it also challenges the separate discourse on race...and class” (Solórzano & Yosso, 2002, p. 24) in order to understand how such variables “intersect to affect the experiences of students of color” (p. 24). Because “socioeconomic status [is] a variable closely linked to race and ethnicity in the United States” (Elpus & Abril, 2019, p. 324), it is important to investigate the economic characteristics of music education and their potential impact on the underrepresentation of Black students within public school music education programs.

The financial commitment required to participate in public school instrumental music programs is significant (DeLorenzo, 2012; Simon, 2013). Students are typically responsible for instrument acquisition, methods books, accessories, performance attire, transportation, maintenance, and private lessons (Bates, 2012), the costs of which may be prohibitive for students with financial limitations (DeLorenzo, 2012; Elpus & Abril, 2011; Simon, 2013). Considering the fact that 26.4 percent of Black children live in poverty — the highest rate of poverty among children of any race (U.S. Department of Education, 2019) — these financial obligations may be disproportionately burdensome

for Black students.

While these socioeconomic variables are considerable within the context of this phenomenon, they alone cannot account for the full scope of this problem. Though some music educators tend to “attribute a lack of representation of Black students in ensemble settings to a lack of financial resources” (Clauhs, 2021, p. 454), there are additional, compounding “structural inequities and systems...[which may also] affect interest and participation” (p. 454). To gain a more comprehensive understanding of the underrepresentation of Black students in public school music education programs, it is equally important to explore epistemological barriers that may also contribute to this phenomenon.

Ever since music was introduced as a subject in public schools in the United States, music education programs have consistently upheld Western art music as the exemplar (Hein, 2022) due to the belief that it would “develop the more elite listener” (Gustafson, 2009, p. 107). While pedagogues celebrated Western art music for its “complexity and refinement” (Gustafson, 2009, p. 16), non-Western art music was characterized as illegitimate and pernicious (Burney, 1789; Clark, 1912; Cole, 1912; Earhart, 1912; Surette & Mason, 1907; Thurman, 2021). Clark (1912) warned that music education supervisors must protect students’ musical innocence by monitoring their exposure to unworthy music. Earhart (1912) echoed these sentiments, characterizing “the noisy pound of the ragtime” as commonplace music, which he dismissed as “cheap and brainless” (p. 9). Cole (1912) advocated for year-long orchestra programs, which she suggested would dampen the consumption of “ragtime of the lowest type, coon songs” (p.

13), thus encouraging “moral results upon the masses” (p. 13). Though these views might appear extreme, it is important to note that the attitudes of these authors are not fringe examples for the time. Clark, Earhart, and Cole expressed these attitudes at the 1912 Music Supervisors’ National Conference, indicating the broader professional resonance of their ideas. After the conference, Cole’s report was praised by *School Music*, the official professional journal of the National Education Association’s Department of Music Education (Mark & Gary, 1999). The journal wished to “call especial attention to [her] serious paper” (Hayden, 1912, p. 17). Similarly, after Earhart’s report, which “attracted the attention of educators throughout the country” (p. 34), he was invited to address several state teachers’ associations throughout the country.

Though the language describing non-Western art music may have softened since 1912, repertoire and representation from non-Western art music remains on the periphery of music education curricula (Hess, 2018). While music education textbooks typically neglect representations from Black composers (Banfield, 2004), the prominence of Western art music within public school music education programs persists (Bradley, 2015; Hess, 2018). Contrary to the notion that music is a universal language (Bradley, 2015; wa Mukuna, 1997), the prominence of Western art music may have serious academic consequences, particularly for students of color. The centrality of Western art music within music education curricula fosters “culturally biased environments” (Carter, 1993, p. 31). For “minority students [who] may not be interested in...Western-European [art] music” (Wheelhouse, 2009, p. 31), such culturally biased music education environments tacitly imply that the music centered within the curriculum is of greatest

value while “the rest is unworthy of being taught in schools” (p. 198). Given such cultural bias, Carter (1993) exclaimed that “it is a near miracle that [Black] students participate in any school activities, music included” (p. 8).

The dominance of Western art music within music education curricula echoes the concept of the master script, which Swartz (1992) defined as “classroom practices, pedagogy, and instructional materials...that are grounded in Euro-centric...ideologies” (p. 341). As dominant ideologies are upheld, the master script “silences multiple voices” (p. 341) and delegitimizes other epistemologies — “system[s] of knowing...[which are] linked intimately to worldview” (Ladson-Billings, 2000, pp. 257-258). Despite the many worldviews, institutions in the United States have typically “choked and blocked” (Banfield, 2004, p. 195) epistemologies associated with Black artistry, thus reinforcing the master script.

Consider, for example, the prominence of music literacy within music education classrooms. Despite the fact that “non-literacy is the norm [in] most of the world’s musical cultures” (Small, 1987, p. 230), music education programs in the United States continue to centralize the literacy of Western standard notation (WSN) (Brothers, 1997; Hamilton, 2021). Cook (1912) went as far as to argue that WSN should be the *only* epistemology tolerated within public schools. He demanded:

There is such a thing as illiteracy in music and there are some who seem to take pride in not reading music...Such an attitude is unworthy of any teacher or student. The teaching of music reading must be carried on until there is no such thing in America, as illiteracy in music. (p. 19)

Vaugeois (2009) suggested that music programs which focus exclusively on WSN may be exclusionary and that “the curricular significance of literacy versus [aurality] is strongly rooted in class and race divisions” (p. 17). Hamilton (2021) explained these race divisions, noting that “most forms of Black music are aural traditions” (p. 24). Because students with strong WSN literacy skills may be considered “brighter or more musical than those who do not read music” (Narita & Green, 2016, p. 306), the dominance of WSN within public school music programs may be particularly marginalizing for Black students who prefer to learn and perform music aurally. Considering Hess’ (2018) findings that “students [who prefer to learn] music aurally [but do] not find their approach to learning accommodated...[may find] their learning validated in the space outside the formal school music program” (p. 333), the dominance of WSN within public school music education programs seems especially relevant to the phenomenon of this study.

Since the 1960s, there has been a significant increase in the inclusion of non-Western art music within music education curricula — an attempt to “correct the underrepresentation of peoples of color and their musics” (Bradley, 2015, p. 190). However, newly included representations of aural and popular music — music typically learned and performed through “non-written form” (Tagg, 1982, p. 41) — were often taught through WSN transcriptions. Tagg (1982) argued that, though WSN may be a “viable starting point for much art music analysis...popular music, not least in its Afro-American guises, is neither conceived nor designed to be stored or distributed as notation” (p. 41). Good-Perkins (2021) elaborated, explaining that the imposition of

WSN onto aural genres, such as gospel music, divorces the music from its original cultural context, forfeiting the idiomatic characteristics associated with aural music, such as speech-like performance, improvisation, and emulation (Brothers, 1997).

This history is reminiscent of Swartz's (1992) observation that, when faced with demands for the inclusion of historically marginalized epistemologies, textbooks and curricular compromises have merely only included the previously unincorporated "without a reconceptualization of content" (p. 342). Likened to Swartz's sentiments, the field's movement towards inclusion of non-Western art music is undermined by the failure to reconceptualize (Schmidt-Jones, 2021) how aural music may be taught in order to maintain its original epistemic traditions.

Though the teaching of aural music through WSN may seem inconsequential, Schmidt-Jones (2021) argued that cultural context "is what allows learners to construct their own useful understanding of a subject" (p. 7). Shaw (2012) provided an example, explaining that, although the inclusion of Gospel music may be culturally responsive, the reliance on notation "may not be synchronous" (p. 78) with the learning and performance styles of "[Black] students who have grown up singing gospel at their church, where music is learned aurally" (p. 78). Good-Perkins (2021) agreed, suggesting that studying gospel music with WSN imposes "Western classical musical concepts that are irrelevant [onto] Afrocentric music traditions" (p. 135). Despite increased representations of genres outside of the Western art music canon (Bradley, 2015), such initiatives may encourage feelings of marginalization among students of color if Western epistemologies remain dominant (Standley, 2003; Wheelhouse, 2009).

Seeking Musical Agency in Spaces outside of Public School Music Programs

Carter (1993) suggested that Black music students are often expected to “meld with and become a part of the dominant culture” (p. 7) typically perpetuated within public school music education programs. Driven by such expectations, some Black music students, whose cultural values and musical interests diverge from those associated with Western art music, have sought musical validation and fulfillment in spaces *outside* of public-school music education programs (Carter, 1993; Hendry, 2023). Carter (1993) highlighted community music schools, churches, and self-instruction as examples of such spaces, explaining that their ease of access, relevant curricula, and/or culturally aware teachers illustrate “how music education can remain attractive to [B]lack students” (Carter, 1993, p. 9). Hendry (2023) similarly found that Black music students and teachers in the United Kingdom sought “sources of agency” (p. 38) outside of formal music education, noting that music making in the community and in church had affirmed participants’ aural musical talents “in a way that their [formal] music education had not” (p. 38). The authors’ observation that some Black musicians disrupted epistemological bias in alternative spaces evokes the themes of another unrelated theoretical framework — the theory of disruptive innovation. This theory purports that technology-based learning improves affordability, accessibility, and supports “learn[ing] in ways that are customized for [students]” (Christensen et al., 2008, p. 92) — benefits which reflect the issues of access highlighted by a critical race perspective. Given the abundance of music education resources available in technology-based learning formats (Hanson, 2018; Schmidt-Jones, 2021) and the potential to “challenge...traditional pedagogies” (Louth,

2015, p. 475) through their use, one ponders whether technology-based learning is also a venue through which Black musicians seek musical affirmation.

Disruptive Innovation Theory

While a critical race perspective can help researchers expose systemic barriers that may contribute to the underrepresentation of Black students in school music programs, disruptive innovation theory suggests the potential to disrupt such barriers through technology (Christensen, 1998). Inherent within both theories are the converging interests in improving access for traditionally marginalized communities and challenging dominant ideologies (Christensen et al., 2008; Delgado & Stefancic, 2017). In the following section, I introduce a brief history of disruptive innovation theory, its historical impact on educational inequities, and reflect on its potential application to the phenomenon of this study. I provide a more thorough explication of these concepts in Chapter Two.

Christensen (1997) first proposed the theory of disruptive innovation in order to explain trends in the business sector. The theory discriminates between sustaining innovations and disruptive innovations. He characterized sustaining innovations as incremental improvements to technology, services, or products within an existing marketplace: batteries with greater energy capacities, car engines with greater speed potential, televisions with sharper images, et cetera (Christensen et al., 2008). Such innovations typically satisfy the interests of consumers who already enjoy the technology, service, or product (Christensen et al., 2008). Conversely, disruptive innovations are not characterized by development; in fact, they may be *less* advanced than existing

technologies. However, the value of disruptive innovations exists in introducing to the marketplace a technology, service, or product which increases access for those whom the technology, service, or product had previously been inaccessible, whether due to cost, skill, or other barriers (Christensen et al., 2008).

Christensen et al. (2008) offered the development of the personal computers as an example of disruptive innovation. The first computer introduced to the market occupied the space of an entire room. Later, Digital Equipment Corporation introduced the minicomputer, which cost over \$200,000 and required an engineering degree to operate. Needless to say, its cost and complexity were prohibitive for many. Apple, a technology company based in the United States, subsequently developed the model IIe, a personal computer that, while less advanced than the minicomputer, was sold at a far cheaper price—\$1,395. Though minicomputer users found Apple’s new computer inadequate due to its rudimentary features, by “making the product affordable and simple to use, the disruptive innovation benefits people who had been unable to consume the [product]” (Christensen et al., 2008, p. 47). In whole, disruptive innovations succeed due to their focus on disrupting barriers to access.

Disruptive Innovation in Music Education

Within the field of education, Christensen et al. (2008) highlighted technology-based learning for its disruptive potential. Citing fewer elective options in urban, low-income schools, Christensen et al. (2008) suggested that technology-based learning may be a “welcome solution when the alternative is to forgo learning the subject altogether” (p. 93). Dye (2016) echoed, exclaiming, “whether live, face-to-face contact is prevented

due to circumstances of logistics, geography, transportation, or other impediments, [online lessons hold the] potential to enable opportunities in circumstance[s] where they may otherwise not exist” (p. 169). Though the authors’ notions are of interest to the phenomenon of this study, they must be tamed within a critical race perspective. As reminder, Carter (1993) suggested that “Black students are quite active in music outside of schools’ music programs” (Carter, 1993, p. 8), indicating that the absence of school music programs does not necessarily equate to a complete lack of opportunities. However, considering the stark reality that “[Black] students have experienced reductions in arts [electives] of 49 percent” (The American Academy of Arts and Sciences, 2021, p. 7) since the mid 1980s, the authors’ suggestions are noteworthy for students with no alternatives for learning and making music.

Nevertheless, the benefits of disruptive innovations extend far beyond scenarios in which music classes are unavailable. Hanson (2018) highlighted the potential for online lessons to increase convenience and break down the barriers “separating instruction at school from practice at home” (p. 137). Partti and Karlsen (2010) found that students enjoyed the flexibility of online lessons — some of whom satisfied their individual learning needs and preferences more effectively than in traditional lessons. Dammers (2009) highlighted online lessons’ affordability. As many online lessons are offered “free of charge” (Sultan, 2009, p. 201), they may be particularly beneficial for those with financial restrictions (Dye, 2016; Sultan, 2009). Reflecting on the implications of such benefits, Dammers (2009) suggested that online lessons may “equalize the disparity of musical opportunities” (p. 23).

The mediation of online lessons may also satisfy epistemological preferences. Christensen et al. (2008) suggested that technology-based learning facilitates “user-generated, collaborative learning libraries through which participants worldwide can instruct and learn from one another” (p. 138). Louth (2015) characterized peer-learning as a constructivist approach which may enable “otherwise silenced voices to be heard” (p. 484). This potential emancipatory mediation of technology (Louth, 2015) shares a significant interest with critical race theory, which aims to challenge dominant ideologies within public school curricula (Swartz, 1992). Swartz (1992) noted that challenging dominant ideologies requires the emancipation of “multiple and collective origins of knowledge” (p. 342). One avenue for emancipation, she proposed, involves facilitating “interactions [which] stimulate both students and teachers to be producers of knowledge” (p. 343). Reflecting on the constructivist potential of technology-based learning (Christensen et al., 2008; Louth, 2015), perhaps this approach may also support those whose epistemological preferences are often ignored in the music classroom.

Among all online resources, YouTube has played a significant role in facilitating disruptive opportunities outside of the formal music classroom (Loeckx, 2015). YouTube is “particularly rich in musical offerings” (Schmidt-Jones, 2021, p. 5). In fact, of all tutorial searches on YouTube in 2011, music tutorials were among the top 10 (Hanson, 2018). Kao (2021) likened YouTube to a “self-directed classroom” (p. 66) due to features like “24/7 access and the ability to pause, rewind, and repeat lessons” (Hanson, 2018, p. 140). Lessons on the site are available in many genres (Schmidt-Jones, 2021), which may increase users’ motivation (Kao, 2021). Whitaker et al. (2014) highlighted YouTube’s

potential to “bridge geographical gap[s] between music teachers and learners” (p. 50) and facilitate “a deeper understanding of music and performance practices from around the world” (p. 54). The authors’ latter assertion seems especially relevant considering the propensity among music education textbooks to whitewash (Byrd, 2009) non-Western art music. Further, as a free service, its value is particularly important for schools with budget concerns (Burke & Snyder, 2008). These benefits have encouraged its application within music education settings around the world (Schmidt-Jones, 2021).

A YouTube search for *How to Hold a Violin Bow* yields 1,080,000 video results. Though some may question the quality of content available offered from a free, online resource, the results from this specific search yield free video lessons produced by accomplished performers and teachers including Itzhak Perlman, world-renowned violinist and Juilliard graduate; Professor William Fitzpatrick, Juilliard graduate; Professor Beth Blackerby, professor of violin at Southwestern University; and, Nathan Cole, First Associate Concertmaster of the Los Angeles Philharmonic. This result reflects Hanson’s findings (2018), which state that 64% of lessons found on YouTube feature instruction by a professional (performing artists, public school teachers, military band members, or music retailer instructors). As Schmidt-Jones (2021) argued that peer-led learning is “sometimes perceived as more authentic than formal education” (p. 6), even the amateur-created lessons on YouTube have value. Considering its popularity and vast music learning resources, one ponders the mediation of technology to disrupt the socioeconomic and epistemological barriers exposed by the critical race lens.

Targeting Disruption

Despite the potential to disrupt socioeconomic and epistemological barriers through the use of technology, the integration of educational technology has not been done in a manner to facilitate such benefits (Loeckx, 2015). For example, despite having spent billions of dollars over the past few decades on computer and technology resources (Christensen et al., 2008), schools in the United States have realized no significant overall academic improvements (OECD, 2015). Kulow (2014) observed neither academic nor engagement differences between cohorts of students with and without Chromebooks. Cuban (2001) explained this discrepancy, noting that educational technology is commonly implemented in ways that only amplify ineffective teaching strategies “rather than transform[ing] prevailing instructional practice” (p. 72). A meta-analysis of data spanning four decades of research supported this notion, finding that the manner in which technology is used is a significant determinant of academic improvement — not simply its application (Schmid et al., 2009). That is, ineffective pedagogy will yield ineffective results — no matter its medium.

The same dilemma applies to music education. Despite the fact that music teachers have incorporated educational technology into their classrooms (Schmidt-Jones, 2021), they have not “yet extensively [utilized] technology directly with students to improve learning” (Loeckx, 2015, p. 22). This problem is perpetuated by attitudes similar to those expressed by Whitaker et al. (2014), who warned that some online lessons “may digress from common practice or...may defy traditional interpretation” (p. 55). The authors’ interest in judging the efficacy of online lessons based on common practice and

traditional interpretation reflects a monolithic application of technology which caters to the needs of those who have been historically privileged (Christensen et al., 2011). Further, their notion that, “if music teachers choose to use YouTube videos...close examination of the instruction content and methods should be undertaken prior to students being exposed to the video” (Whitaker et al., 2014, p. 55) is reminiscent of Clark’s (1912) assertion that “it should be the duty of every [music education] supervisor...to safeguard the children from hearing and learning music of unworthy character” (p. 15). In reality, it may be common practices and an allegiance to traditional interpretations which hinder a student’s musical potential. Instead, as Ward and Kushner Benson (2010) suggested, “quality [technology-based] education will be realized only when traditional views of content and pedagogy are reconceptualized within new frameworks that include technology” (p. 49). Likened to the concepts of this study, the emancipatory potential of technology-based learning (Louth, 2015) might only be realized if its application is accompanied by a deliberate intent to disrupt the barriers that have disproportionately marginalized Black music students.

Purpose Statement and Justification

The purpose of this study is to explore the disruptive impact of technology-based learning on socioeconomic and epistemological barriers that have historically disadvantaged Black students in public school instrumental music programs. I seek to answer the following research questions:

1. What barriers, if any, do Black instrumentalists seek to disrupt through the use of (a)synchronous online instrumental lessons?

2. What particular technological features of online lessons do participants find most impactful on their learning?

The first research question is inspired by both critical race and disruptive innovation theories. The findings from this question reveal what, if any, barriers encouraged participants' use of technology-based learning. Further, the findings provide subsequent insight regarding the impact of technology-based learning on such barriers. The second research question, unrelated to race, is inspired by disruptive innovation theory. The findings from this question reveal the technology-specific features that users find most impactful on their learning.

Rationale

The benefits of this study are threefold. First, it contributes participants' counter-narratives to the body of critical race literature. Counter-narratives draw upon the "experiential knowledge of people of color" (Solórzano and Yosso, 2002, p. 26) in order to "challenge [and] displace...pernicious narratives" (Delgado & Stefancic, 2001 p. 43). Pernicious narratives continue to be perpetuated within the field of music education. For example, in 2016, Michael Butera, the executive director of the National Association for Music Education, a music education advocacy organization in the United States, was fired after suggesting that "Blacks and Latinos lack the keyboard skills needed to advance in [the profession]" (Cooper, 2016, para. 1). In 2012, American political commentator, Ben Shapiro, insisted that rap, which some Black students may find culturally affirming (Sullivan, 2003), does not qualify as music and that those who disagree are stupid (Hein, 2021). Shapiro's comments reflect Wahl's (2018) notion that genres such as jazz and

gospel are sometimes judged as “non-intellectual” or “lesser art forms” (p. 504). More recently, consider TwoSet Violin’s 2021 review of the Superbowl Halftime Show, which featured an all-Black string orchestra. The classical violinist commentators, who have amassed over 1.4 billion views on their YouTube channel, referred to the violinists as “people with instruments — not musicians.” They described the performance as “sacrilegious” and exclaimed, “as classical musicians, we practice — practice hours so we can give an authentic and honest performance.” However, this was a pop concert — not a classical one. In each of these narratives, the critics support their arguments by asserting the supremacy of their own epistemological beliefs. Considering that critical race theory seeks to counter elitism (Leake, 2018), the counter-narratives resulting from this study will contribute to this objective.

A second benefit of this study is its contribution to disruptive innovation literature, which remains “relatively underinvestigated” (Loeckx, 2015, p. 22) within the field of music education. Though prior research suggests that technology-based music learning can increase convenience, improve affordability, and satisfy users’ music preferences (Dammers, 2009; Dye, 2016; Louth, 2015; Waldron, 2012), little research exists on its emancipatory potential. Considering Louth’s (2015) assertion that “music educators have an ethical responsibility to consider new technologies as media that [may] potentially shift learning toward emancipatory or ideological ends” (p. 484), the findings from this research study may provide examples and illustrate what this might actually look like in practice.

Lastly, studying participants' attitudes towards technology-specific features is important considering one's attitudes towards such features influence users' decision to use or reject technology (Vogelsang, 2013). In other words, hypothetically, though technology-based learning may be an effective disruptor, users may avoid a technology-based resource if its features are too complex to use. Understanding the impact of technology-specific features may have best-practice implications for those wishing to produce technology-based resources in the future.

Statement of Positionality

As a researcher, I understand that my specific cultural biases and lived experiences influence my work. As such, I acknowledge that such biases and experiences can be neither entirely objective nor detached from the topics explored within this study. As a White male, I acknowledge that "members of this country's dominant racial group cannot easily grasp what it is like to be nonwhite" (Delgado & Stefancic, 2001, p. 39); however, I do not concede that my life experiences are entirely removed from this phenomenon. Though I am White, I come from a mixed-race household in which half of my immediate, biological family is biracial — Black and White. Though I have not suffered any burden of systemic racism, I have witnessed its impact on those I care for most — experiences which have cultivated my race-consciousness from a young age. Further, having been discouraged from studying the violin due to its purported femininity, my personal experiences with heteronormativity within the music education classroom (Shane, 2020) as an openly gay music student contributed to my interest in dismantling all forms of oppression within the music classroom.

After completing my undergraduate degree, I spent six years teaching elementary and middle school instrumental music in a low-income, majority-Black school. Subsequently, I spent seven additional years teaching middle and high school instrumental music in a wealthier, Whiter school district. While most students in the first school district qualified for free or reduced-price lunch and struggled to acquire the resources necessary for participation in instrumental music, it was common for students in the second school district to have two instruments — one to keep at home and one to keep at school. These experiences have motivated my sincere interest in anti-racism and social justice in all areas of our society, especially within public education.

My experiences with technology as a disruptor also influence my work. I grew up in a public school without an orchestra program. As an aspiring violinist, I began using online lessons to disrupt such access barriers. I continued to use online lessons even throughout college to satisfy my own musical preferences, which were at odds with the repertoire I was obliged to learn. As my college ensembles were centered on Western art music repertoire and technique, I recall warnings from studio teachers who insisted that playing popular music would interfere with classical technique. Online lessons helped me to overcome such epistemological barriers.

CHAPTER TWO: REVIEW OF LITERATURE

The purpose of this chapter is to explicate theoretical literature as it pertains to the underrepresentation of Black students within instrumental music education and the potential disruptive impact of technology on this phenomenon. In order to provide a comprehensive analysis, I employ two theoretical frameworks in tandem: critical race theory and disruptive innovation theory. I employ the critical race lens in order to assess specific barriers which may contribute to the underrepresentation of Black students within instrumental music education. Subsequently, I employ the disruptive innovation lens in order to assess the potential to disrupt such barriers through technology.

Critical Race Theory

In 1964, President Lyndon Johnson signed The Civil Rights Act of 1964 into law. Touted as the “cornerstone of modern civil rights” (Rose, 1989, p. 1122), the legislation outlawed overt racial discrimination in employment, public education, and public facilities (Gregory, 2014; Rose, 1989). Despite these advancements, social and economic disparities between Black and White Americans persist (Delgado & Stefancic, 2001). Black Americans face housing discrimination, receive worse healthcare, and live shorter lives than do White Americans. Black Americans are overrepresented in the prison population and pay more for goods and services. Similarly qualified Black job applicants are more likely to be rejected than are White candidates, and high-ranking jobs such as chief executive officers, surgeons, and university presidents are more often occupied by White employees (Delgado & Stefancic, 2001). These ongoing disparities support the notion that, post-Civil Rights, a subtler, “contemporary racism” (Mitchell Viesca, 2013,

p. 1) continues to undermine the social and economic advancement of Black Americans (Delgado & Stefancic, 2001).

Observing this evolution of racism, scholars and activists realized the need for a legal theory which could effectively challenge systemic racism through the legal system (Crenshaw et al., 1995; Delgado & Stefancic, 2017). Thus, the foundational literature of critical race theory began to emerge. As Cornell West exclaimed, critical race theory represents a “gasp of emancipatory hope that law can serve liberation rather than domination (as cited in Crenshaw, 1995, p. xii).

Though critical race theory is not a finite discourse with a set of indisputable ideas upon which all critical race theorists agree (Gaztambide-Fernández et al., 2018), there are key tenets to which critical race theorists generally subscribe (Delgado & Stefancic, 2001). The first is that racism is ordinary (Delgado & Stefancic, 2001) — a “permanent fixture of American Life” (Bell as cited in Ladson-Billings, 1999, p. 213). The second concept is the idea of interest convergence, which suggests that, because White people benefit materially from racism (Delgado & Stefancic, 2001), they may lack the incentive to help eradicate it. As a result, Delgado and Stefancic (2001) suggested, historic milestones of racial liberation may have been motivated by the “self-interest of elite whites [rather] than a desire to help Blacks” (p. 7). To illustrate this point, Bell (1980) suggested that, in the case of *Brown v. Board of Education*, school desegregation was not motivated by any intrinsic will to correct injustice; rather, it stemmed from an extrinsic will to repair America’s reputation during an ideological battle with Communist countries. Bell (1980) argued that upholding segregation would have contradicted the

messages of freedom and justice purported by the United States during the Second World War, potentially weakening its global position. The third tenet suggests that, rather than an objective, biological reality, the concept of race is a social construct which adapts over time with political and economic realities (Lynn & Parker, 2006). Delgado and Stefancic (2001) offered an example, reminding us that “Irish, Jews, and Italians were [once] considered nonwhite — that is, on par with African Americans” (p. 78). Only after having amassed wealth and gained power through labor unions did these groups acquire the social standing of those considered White (Delgado & Stefancic, 2001). A fourth tenet is the concept of the counter-narrative (Vereen, 2021), which “draw[s] explicitly on the lived experiences of people of color” (Solórzano & Yosso, 2002, p. 26) in order to challenge the majoritarian narratives that uphold White supremacy. For example, while a majoritarian narrative asserts that the academic achievement gap between Black and White students is due to the “intellectual superiority of White people” (Love, 2004, p. 236), a counter-narrative highlights that, despite *Brown v. Board of Education*, systemic barriers continue to undermine academic opportunities for Black students (Love, 2004). I explore such system barriers in the following section.

Critical Race Theory in Education

While critical race theory originated in the field of law, it has “rapidly spread beyond that discipline” (Delgado & Stefancic, 2001, p. 3), including into the field of education (Ledesma & Calderón, 2015). Critical race theorists’ interest in public education becomes clearer upon examining the relationship between access to education and social advancement (Cremin, 1957; Gonzalez, 2008). Education is often associated

with upward professional and economic mobility (Abel & Deitz, 2014; Council of Economic Advisers and the U.S. Department of Labor Statistics, 1995), improved health (Clark & Royer, 2013; Cutler & Lleras-Muney, 2010; Grossman, 2006), and greater social capital (Trostel, 2015). Acknowledging the potential for such advancement, politicians, community leaders, and activists have professed that education is a human right (American Civil Liberties Union, 2020; Blad & Ujifusa, 2019; Wallfisch, 1982). Despite these sentiments, academic and wealth gaps between Black and White Americans persist (Houseworth & Fisher, 2017; Howard, 2010; O’Gorman, 2010; Rowley & Wright, 2011; Singleton & Linton, 2006), indicating that the benefits of public education are bestowed discriminately.

Just as legal scholars applied critical race theory to expose ways in which public policies perpetuate racial inequities, education scholars have similarly applied the theory in order to investigate educational policies and their role in perpetuating racial inequities within public schools. As Ledesma and Calderón (2015) noted, “from issues of pedagogy, curriculum, to leadership, policy, and school politics, [critical race theory] in education highlights the persistence of racism across education” (p. 207). Researchers have since highlighted the ways in which curricula (Delgado & Stefancic, 2001; Swartz, 1992), school funding (Alemán, 2007; Ladson-Billings, 1998), textbooks (Brown, 2010; Murray, 2018), and standardized tests (Ladson-Billings, 1998; Popham, 2004) have collectively oppressed educational opportunities for Black students.

This oppression manifests through limited access to advanced courses (Loveless, 2016) and discipline policies which are disproportionately punitive for Black students

(Okonofua & Eberhardt, 2015). Black and Hispanic students are less likely to receive a high school diploma (Reeves et al., 2016), and, despite serving the same number of students, majority-nonwhite schools receive \$23 billion less than do schools serving majority-White students (EdBuild, 2019). Though *Brown v. Board of Education* abolished racial segregation in American public schools, critical race theorists argue that covert education policies and practices continue to undermine educational opportunities for Black students (Ledesma & Calderón, 2015).

Critical Race Theory in Instrumental Music Education

Similar racial disparities exist within the field of music education, particularly within instrumental ensembles. Elpus and Abril (2019) found that neither student race nor socioeconomic status were correlated with the likelihood of enrolling in choir and that the enrollment of Black students in school choirs was representative of the general student population. However, they discovered “significant bivariate relationships between instrumental music ensemble enrollment and race” (p. 335); specifically, Black students were “significantly underrepresented” (p. 335) within school instrumental ensembles. Meanwhile, White students and those of higher socioeconomic status were overrepresented within all ensembles (Elpus & Abril, 2019). Reflecting on Carter’s (1993) assertion that Black students are “quite active in music outside of schools’ music programs” (p. 8), one ponders the variables that contribute to this discrepancy. While a majoritarian narrative purports that representation in school music programs is strictly the result of a student’s talent (Hendricks, 2021), a counter-narrative argues that school music programs fail to provide access for Black students (Carter, 1993).

Just as researchers have applied critical race theory to critique systemic racism within public policy and the public education system, its application within music education reveals similar insights regarding the underrepresentation of Black students in instrumental music ensembles. Although some music educators may believe that music is strictly an artform, immune from systemic racism (Bradley, 2015), considering America's historical use of the education system as a means of cultural assimilation (Christensen et al., 2008; Davis-Delano et al., 2001; Fletcher, 1894) and considering the significance of music within Black communities (Brothers, 1997), it stands to reason that perhaps music from Black communities has *also* been subjected to the modern permutations of racism (Brothers, 1997).

Adopting Bell's notion that "racism is a permanent fixture of American Life...[and] the strategy of those who fight for social justice is one of unmasking and exposing racism in its various permutations" (as cited in Ladson-Billings, 1999, p. 213), it is through the critical race lens that I explore the phenomenon of the underrepresentation of Black students within public school instrumental ensembles. In the following section, I explicate a complex nexus of variables which contribute to this phenomenon, the most significant of which are socioeconomic and epistemological barriers.

The Intersection Between Race and Socioeconomic Status

It is difficult to investigate the underrepresentation of Black students in instrumental music without first confronting the intersectionality of race and poverty. As Hiraldo (2010) emphasized, critical race theorists “work to address the intersectionality of race and social identities within their analysis” (p. 57); further, “one cannot simply think about race, class, sexuality, or gender independent from one another” (p. 57). At 26.4 percent, Black students are disproportionately burdened by poverty when compared with poverty rates among students of other races (U.S. Department of Education, 2019). This economic disparity is further emphasized by a stark wealth gap in which the average wealth of a Black family is merely 14.5 percent that of the average wealth of a White family (Weller & Roberts, 2021).

While a majoritarian narrative argues that poverty and wealth are strictly determined by one’s merit — that racial wealth gaps persist because “Blacks...[are] too lazy or uninspired to work for their own money” (Cheatam, 2014, p. 200) — these narratives neglect the reality that the racial wealth gap is, in part, a product of public policy. The origins of this wealth disparity can be partially attributed to systemic racism within the United States’ mid-twentieth-century housing policies, which prevented Black families from accumulating generational wealth (Woods, 2013). As World War II ended in 1945, over a million Black veterans returned home to the United States (Woods, 2013). In order to assist their re-entry into civilian life, the Servicemen’s Readjustment Act of 1944 provided benefits to help veterans achieve homeownership. Such potential benefits offered hope to returning veterans as homeownership was associated with financial

advancement. As Woods (2013) explained, in postwar America, homeownership “was the realization of popular notions of upward mobility” (p. 410). Encouraged by these prospects, many Black veterans submitted mortgage applications with their local banks; however, many were denied due to “racially exclusionary practices” (p. 396). Such discrimination prevented Black families from the opportunity to amass the wealth enjoyed by White veterans through homeownership, thus “widening both the growing homeownership and racial wealth gaps” (p. 411).

Racial Wealth Gap Perpetuates School Funding Disparities

The relevance of the history of housing discrimination in the United States becomes clear upon examining the connection between housing, community wealth, and school funding. Allocations from state and local resources represent the majority of a school district’s budget (U.S. Census Bureau, 2021). Because the local share is funded by property taxes, a school’s budget is ultimately influenced by the wealth of its community (Alemán, 2013). While schools in the country’s wealthiest communities “spend ten times more per pupil than some of the poorest” (Arbuthnot, 2011, p. 35), schools in communities with lower tax revenues contend with fewer resources, materials, and staff (Kozol, 2012). The academic impact of this funding system is so significant that “there exists an almost ironclad link between a child’s ZIP code and [their] chances of success” (Ireland, 2016).

Considering the race wealth gap (Weller & Roberts, 2021) and housing discrimination history (Woods, 2013) discussed earlier, it is unsurprising that such school funding disparities correlate with race, disproportionately burdening Black students

(Rothstein, 2017). Black students tend to attend high-poverty schools (Arbuthnot, 2011), which are likely to have “significantly less funding per pupil” (p. 35). Schools with greater numbers of students of color have fewer qualified teachers and offer fewer curriculum choices when compared with schools serving majority-White students (Darling-Hammond, 1998). Recognizing these disparities, critical race theorists have suggested that school funding policies represent one pillar upholding systemic racism in public education (Alemán, 2007; Ladson-Billings, 1998; 2009).

School Funding Disparities Impede Music Education Electives School funding disparities have obvious consequences for extracurricular programs. As elective courses, schools facing funding challenges may cut or reduce their music programs in order to balance their budgets (Burrack et al., 2014). Abril and Gault (2008) illustrated this phenomenon, finding that low-socioeconomic schools offer significantly fewer music courses than do high-socioeconomic schools. Because “Black students tend to go to high poverty...schools [which]...tend to have significantly less funding” (Arbuthnot, 2011, p. 35), this trend disproportionately impacts Black students. As The American Academy of Arts and Sciences (2021) pointed out, “the reliance on property taxes to fund school districts creates an uneven distribution of funding between wealthy and under-resourced neighborhoods that exacerbates racial disparities in student access to an arts education” (p. 1).

Such funding disparities contribute to the fact that Black students are half as likely to have access to arts education than are White students (Morrison et al., 2022). For those with access, schools in areas with higher minority populations report contending

with “inadequate or minimally adequate” (Costa-Giomi & Chappell, 2007, p. 22) music education resources. Meanwhile, schools in affluent, predominantly White communities enjoy music programs with robust tangible and personnel resources (Costa-Giomi & Chappell, 2007). Considering such potential consequences, the underrepresentation of Black students within public school music programs seems to be, in part, an obvious symptom of a school funding system which allocates financial resources along racial lines.

Costs of Instrumental Music Disproportionately Burden Black Students from Low-Income Households.

The costs associated with instrumental music education also contribute to the underrepresentation of Black student within instrumental music programs. Instrumental music students are often responsible for expenses such as purchasing or renting an instrument, maintenance materials, method books, transportation, and private lessons (Bates, 2012). Considering these expenses, it is no surprise that instrumental ensemble recruitment and retention are correlated with students’ socioeconomic status (Albert, 2006; Bergee, 2001; DeLorenzo, 2012; Elpus & Abril, 2019; McCarthy, 1980; Simon, 2013; Stewart, 1991; Sullivan, 1975; Wolfle, 1969). In fact, socioeconomic status is the strongest predictor of those likely to enroll and reenroll in school instrumental programs (Klinedinst, 1991). As a result, students from low-income households participate in instrumental music less frequently than do students from higher income households (Elpus & Abril, 2019; Stewart, 1991). Stewart (1991) explained, noting that students of lower-socioeconomic status “may not be able to afford the expense that may be necessary

for involvement in performance classes” (p. 139). Interestingly, Elpus and Abril (2019) proposed that perhaps choir enrollment had no significant correlation with student socioeconomic status because choir programs may have fewer financial demands than do instrumental ensembles. Recalling the disproportionate rates of poverty among Black students (Milner & Laughter, 2014), these costs associated with instrumental music may be disproportionately prohibitive for Black students (DeLorenzo & Silverman, 2016; Stewart, 1991; Wheelhouse, 2009), potentially contributing to the underrepresentation of Black students within instrumental ensembles.

Disparate Access to Applied Instrumental Lessons Significantly Undermines

Recruitment and Retention

Though any cost associated with instrumental music may be burdensome for students from low-income households, disparities in access to applied instrumental lessons may be particularly relevant to the underrepresentation of Black students in instrumental ensembles. Their cost, which “can run \$50 or more per hour...[constituting] approximately one-fifth of a weekly salary at minimum wage” (DeLorenzo, 2012, p. 41), is not only potentially prohibitive, but participation in applied instrumental lessons is also the most salient indicator of those most likely to enroll and reenroll in instrumental ensembles (Stewart, 1991), underscoring their significant impact on representation in instrumental ensembles. Despite their strong association with instrumental participation, the “economic oppressions that Black families face...contribute[s] to inequities in access to private music lessons” (Hamilton, 2021, p. 22).

Wheelhouse (2009) studied several music programs and their attempts to identify

and address the barriers which undermined the representation of students of color in their ensembles. One school district found that “many minority students [could not] afford private lessons” (p. 96). As a result, an independent audit concluded that this disparity amounted to “institutional racism in the music department that must be addressed” (p. 96). In response, the district began to offer complementary private lessons as one part of a comprehensive plan to confront institutional racism and improve representation.

Hess (2013) shared the experiences of a student whose financial limitations prohibited private, applied lessons, which ultimately interfered with his goal of attending a fine and performing arts school:

One of Susan’s former students had prepared and auditioned for an arts school the previous year. He was extremely musical but...his music lessons mostly took place in Susan’s class. However...the arts school sought students with private lessons. As a young Black student from a single-parent family, lessons were beyond the scope of possibility...He was a wonderful music student, but could not compete with students from a different socioeconomic demographic who had more musical opportunities available to them. (p. 272)

Considering that the costs of instrumental music are likely disproportionately prohibitive for Black students (DeLorenzo & Silverman, 2016; Hamilton, 2021) and the disadvantages instrumental music students face without access to applied instrumental lessons (Anderson, 2018), it does not require much imagination to understand the overwhelming challenge to flourish as an instrumental music student “in a system that [favors] wealth” (Bates, 2012, p. 34). Realizing such socioeconomic barriers, the

underrepresentation of Black students in instrumental ensembles (Elpus & Abril 2011; 2019) becomes somewhat clearer.

Yet, while the socioeconomic variables are significant barriers within the context of this phenomenon, they cannot account for the full scope of this problem. As Clauhs (2021) suggested, teachers may “attribute a lack of representation of Black students in ensembles settings to a lack of financial resources...[however] structural inequities and systems...may affect interest and participation” (p. 454). Wheelhouse’s (2009) study highlights the importance of such inquiry. Recall that the school district acknowledged that many students of color could not afford private lessons and subsequently organized free private lessons. Realizing this intervention might only address financial barriers, the district continued to practice race consciousness by questioning the efficacy of such an intervention if the students “do not see themselves reflected” (p. 96) in the repertoire studied within the private lessons. In this spirit, it is important to further investigate the potential epistemological barriers that may also reinforce this phenomenon. In the following section, I explicate epistemological barriers that may also contribute to the underrepresentation of Black students within school instrumental music programs.

Western Art Music Epistemology Dominates Music Education Curricula

In addition to potential socioeconomic barriers, critical race theorists are also interested in school curricula (Delgado & Stefancic, 2001). Generally defined, curricula are established norms, knowledge, and skills deemed necessary for a student’s education (Egan, 2003). However, an obvious conflict emerges upon confronting the question of *whose* norms, knowledge, and skills are worthy of curricular inclusion — a conflict

Murray (2018) described as an “epistemological battle” (p. 61). Swartz (1992) argued that the epistemological battle within public schools across the United States is one between the “constructed supremacy of Western cultural knowledge” (p. 341) and other epistemologies.

The significance of curricula to a critical race perspective is also illustrated by examining the power they wield in shaping the narratives to which students are introduced. Murray (2018) argued that students in the United States are often introduced to “incomplete narratives” (p. 61) which tend to favor the majoritarian perspective while “rendering African Americans as absent from the history of the United States or having only minimally contributed to larger American society” (p. 62). Brown (2010) similarly argued that students are introduced to narratives in which Black Americans’ experiences are “silenced, omitted, truncated, or inaccurately rendered” (p. 55). Such potential to racialize and distort the realities of history necessitates a critique of music education curricula for similar epistemological erasure.

An examination of the early development of music education curricula in the United States reveals the construction of a narrative promoting the aesthetic supremacy of Western art music while demeaning other genres (Gustafson, 2009). During the 1830s, music education visionaries sought to define proper musical taste and to establish the musical identity of the United States as it emerged as a new nation (Gustafson, 2009). Ultimately, philosophers highlighted Western art music as the “epitome of societal development” (Jorgensen, 2003, p. 2) due to the belief that it would “develop the more elite listener” (Gustafson, 2009, p. 107). While Western art music was celebrated as the

“most sublime artistic achievement” (Hein, 2022, p. 65), early music education texts presented other music as caricatures (Gustafson, 2009).

Surette and Mason (1907) presented music history as a chronological advancement originating from the “primitive sounds grouped together in rude patterns by savages” (p. 221) and culminating with Beethoven’s symphonies, whose work “must always remain among its most wonderful and perfect monuments” (p. 221). Surette and Mason (1907) included passages from Australia and Tongataboo in their textbook, which were categorized as “tunes of primitive savages” (p. 52). In their descriptions of these excerpts, the authors challenged the music’s monophonic, repetitive nature and purported that “all savage races are musically like children” (p. 10), incapable of performing or composing “more academic [polyphonic] music” (p. 52). Further, they described the war dances of Native Americans and cake-walks of African Americans as “rude dances” (p. 52). Burney (1789) demonstrated a similar bias, claiming that “there is a degree of refinement delicacy and invention which...the Asiatic [non-white is incapable of]” (as cited in Gustafson, 2009, p. 67). The narratives perpetuated the idea that the capacity for musical aptitude was influenced by one’s race.

These negative views fueled fears that children’s artistic innocence could be corrupted, which subsequently inspired calls to curate students’ musical consumption. In a paper read at the National Conference of Music Supervisors, Clark (1912) asserted that “it should be the duty of every [music education] supervisor...to safeguard the children from hearing and learning music of unworthy character” (p. 15). Similarly, while advances in recording technology facilitated the proliferation of music outside of the

Western art music canon, phonograph manufactures continued to call for curated exposure:

Negro spirituals and Native American motifs on [record players] included theories of children's grasp of rhythm and feeling. In these registers, appreciation tames the primitive and romanticizes it through a supervised exposure to musical knowledge appropriate to age level. (Gustafson, 2009, p. 114)

It is also worth noting that some elite Black voices and institutions upheld the aesthetic supremacy of Western art music while villainizing Black popular music, perhaps motivated by the belief that the “respectability afforded to [Western] art music offered African Americans a way to fight denigration by [W]hite people” (Thurman, 2021, p. 23). As Thurman explained, “Black elites argued that [ragtime] was undignified and called for [Black] Americans to move away from it” (p. 38). Such calls ultimately gained traction within prominent Black institutions which also echoed “hostilities towards Black popular music” (p. 38). During the late nineteenth and early twentieth centuries, historically Black colleges and universities refrained from offering courses on Black popular music and improvisation — music which was at odds with an objective to establish music conservatories in the image of New England Conservatory and Oberlin (Thurman, 2021). These attitudes were also expressed by writers in the *Negro Music Journal*. For example, in 1903, J. Hillary Taylor, the journal's editor, suggested that it was Western art music which offered Black Americans a respectable music education, declaring that the “day of low, trivial popular music should be cast aside forever” and that Black Americans deserved a “better art” (Taylor as cited in Thurman, 2021, p. 38).

Such attitudes exemplify elitist and exclusionary practices which critical race theorists seek to challenge (Leake, 2018). According to Battiste (1998), the centrality of Eurocentricity represents a “strategy of difference” (p. 22), which reinforces systemic racism. Gustafson (2009) likened the maintenance of such strict musical boundaries to America’s history of racial segregation, noting that “maintaining the boundaries between degenerate and elevated tastes, [music education curricula reinforced] dispositions that were linked to a way of thinking about music that mirrored the historical patterns of racial and ethnic segregation” (p. 71). In the following section, I introduce the academic and emotional consequences such sterility may have on music students of color.

Lack of Cultural Relevance Encourages Feelings of Marginalization among Black Students

Though music education texts have tamed their harsh tone towards non-Western art music, issues of representation persist (Bradley, 2015). Music education textbooks omit and distort non-Western art music (Bradley, 2015; Byrd, 2009; Ewell, 2021; Feay-Shaw, 2002; wa Mukuna, 1997). Within the seven most widely used music theory textbooks in the United States, only 1.67% of the musical excerpts are written by non-White composers (Ewell, 2021). Some Non-Western art music excerpts are revised to the point of “[losing] both their authenticity and their validity as cultural representations” (Feay-Shaw, 2002, p. 97). Meanwhile, Western art repertoire remains the focus within music education curricula in the United States (Bradley, 2015; Codjoe, 2001; Jorgensen, 2003; Koza, 2008; Seddon, 2004; Wheelhouse, 2009).

Scholars have aptly raised concerns, suggesting that such narrow representations

may not reflect the interests of a diverse student body (Jorgensen, 2003; Myers, 2008; Sullivan, 2003; Wheelhouse, 2009). Wheelhouse (2009) elaborated, noting that “minority students may not be interested in...Western-European [art] music literature” (p. 31). Fordham and Ogbu (1986) found that Black students perceived listening to Western art music as “white behavior” (p. 220). Sullivan (2003) studied patterns between students’ race and musical preferences and found that Black students are more likely to find rap music culturally affirming. The absence of cultural relevance within music education curricula can have serious social, psychological, and musical consequences (Good-Perkins, 2021; Hendry, 2023). Curricula centered on White, middle-class values may promote attitudes of cultural estrangement among students of color (Hartlep, 2009). Myers (2008) noted that “the absence of such relevance in music is perceived by students as implicit affirmations that they lack musical talents” (p. 4); further, they “assume the problem is theirs, and they may begin a lifetime of music education avoidance” (p. 4). Hendry (2023) found that Black music students in the United Kingdom who were enrolled in music programs emphasizing Western art music reported adverse psychological effects, including a sense of not belonging, adopting multiple identities in order to navigate marginalizing spaces, and self-censorship. Good-Perkins (2021) found that Black students exhibited “hesitancy and inhibition” (p. 114) towards singing in the bel canto style, which was “foreign to their conception of singing” (p. 114). Failing to understand and represent students’ diverse musical epistemologies may “[alienate students] from meaningful music-making and [strip] them of musical agency” (p. 91) — a concept Domínguez (2017) described as “ontological distance” (p. 228). Students with

similar alienating experiences do not avoid music altogether; rather, they avoid making music in music education classrooms committed to preserving traditions associated with Western art music (Myers, 2008).

Dominance of Western Standard Notation and Exclusion of Aural Epistemology

The ways in which musicians perform, transmit, and learn music differs between cultures. When it comes to Western art music, performing and composing music is facilitated by Western standard notation (WSN) (Brothers, 1997; Brown, 1973; Hess, 2018), a series of signs and symbols organized in a manner such that pitch, rhythm, dynamics, and articulation are dictated (Good-Perkins, 2021; Hess, 2018; Schroeder, 2016). Within this system, the composer is the executer, and the musician is the executor (Schroeder, 2016). The musician is expected to perform composers' music faithfully with few exceptions granted for improvisation (Belden et al., 2020). As Good-Perkins (2021) noted, "the value of musical literacy is incontestable" (p. 135) within Western art music. While Western art music prioritizes the eye, aural music prioritizes the ear (Brown, 1973; Brothers, 1997). In aural traditions, music is performed, transmitted, and learned through listening and repetition (Brown, 1973). Aural musicians do not rely on WSN (Brown, 1973; Burlin, 1918; Fletcher, 1894); rather, they develop an idiomatic musical intuition through affective, repetitive, immersive musical experiences. As Burlin (1918) noted, "[it is] 'felt' ... [It is] spontaneous and creative" (p. 21). Examples of traditionally aural music and cultures include Arabic and Indian art music (Akesson, 2012; Foster, 2004), Japanese folk and Thai classical court music (Shehan, 1987), jazz and gospel (Cusic, 1990; Marshall & Naumann, 2018; Soli et al., 2021), and many West African cultures (Brown,

1973).

Despite the fact that “non-literacy is the norm [in] most of the world’s musical cultures” (Small, 1987, p. 230), music education programs in the United States continue to emphasize WSN (Brothers, 1997; Hamilton, 2021). Hess (2018) went as far as to suggest that WSN “dominate[s] the discourse, curriculum, and pedagogy” (p. 331). Vaugeois (2009) suggested that this emphasis is “strongly rooted in class and race divisions” (p. 17) and forfeits opportunities to affirm musical talents and interests beyond those associated with the Western art music epistemology. Because “most forms of Black music are aural traditions,” (Hamilton, 2021, p. 24), Black students’ musical capital may be denied affirmation in the music classroom (Hendry; 2023). As Hamilton (2021) noted, “the Western classical music program can be an alienating space for Black students as it demands the development and use [of]...music notation” (p. 20). Hamilton (2021) continued, asserting that such programs often “[ignore] the aural musician skills — the community cultural wealth — that many Black students do possess as part of their identity from engaging in their cultural music” (p. 20). The consequences of neglecting aural music traditions are predictable. Hess (2018) suggested that students whose music-making preferences are absent from class may believe “that their musicking practices are of little value.... [or] find themselves relegated to periphractic space or the margins of music education” (p. 335). Students in similar situations may seek alternative opportunities outside of the music classroom to satisfy their aural preferences (Hendry, 2023).

Failure to Reconceptualize Method and Praxis of non-Western Art Music Genres

The growing racial diversity within American classrooms (Jorgensen, 2003; Sanders, 2020) has spurred an interest in multicultural music (Wasiak, 2009), yielding greater representation of non-Western art music within music education curricula (Bradley, 2015). However, though the inclusion of diverse genres reflects an attempt at culturally responsive pedagogy (Ladson-Billings, 1998), a “skewed emphasis on diversifying content and repertoire rather than addressing method and praxis” (Hendry, 2023, p. 27) may undermine attempts at diversification. For example, aural genres are often included in music education resources as WSN transcriptions (Hess, 2018), which may “reduce the cultural validity of the experience” (Shaw, 2012, p. 78). wa Mukuna (1997) argued that the transcription of aural genres divorces the music from its context, resulting in a “colonial-type” (p. 47) of music education. Shi et al. (2000) agreed, suggesting that, while “[scores] based on a transcription of a native performance attempt to be true to the model” (p. 24), they are limited in their ability to capture the nuance of aural music within a system bound to concepts of pitch and rhythm. Imposing WSN onto aural music may tacitly imply to students that the Western art music epistemology is universal (Good-Perkins, 2021), which wa Mukuna (1997) unequivocally rejected:

As more people [become] aware of this diversity, they realize that the cliché ‘music is a universal language’ continues to lose its validity. The world contains many musical ‘languages’, each of which has its own system with its own set of syntactical and semantic rules. (p. 50)

Brothers (1997) illustrated this conflict using the example of speech-like song — “the strongest musical marker of in-group identity among [Black] Americans” (p. 179). He explained that “because speechlike song is based on the casual inflections of speech...it is intrinsically bound to aurality...[and] cannot be learned and transmitted through notation” (p. 178). Shi et al. (2006) expanded on this argument, noting that WSN lacks symbols to capture aural music elements such as pulsations, surges, slides, ornaments, movement, and vocal timbre. While this practice may seem inconsequential, Shaw (2012) problematized this praxis by proposing the following hypothetical scenario:

Consider a teacher who selects a gospel piece in response to [Black] students who have grown up singing gospel at their church, where music is learned aurally. The teacher introduces the piece by handing out scores and asking the choir to sight-read from notation. While the repertoire choice may be responsive, the learning and performance styles emphasized in the rehearsal may not be synchronous with those emphasized in these particular students’ culture of reference. (p. 78)

Hendry’s (2023) findings give weight to Shaw’s (2012) concern. Hendry (2023) sought to investigate the attitudes of Black music students and musicians in the United Kingdom towards music education programs centered on Western art music. Hendry (2023) found that such biased music education curricula contributed to feelings of marginalization among participants. Subsequently, some participants sought sources of agency outside of school which bolstered their self-confidence and reaffirmed their identities as musicians. Making music in church and the community was “heavily reported” (p. 38) as one such source of agency. Further, within these settings, participants

became fluent in “skills absent from the music curriculum such as improvisation and playing by ear” (p. 38). Hendry’s findings reaffirm the notion that, though the inclusion of aural genres may be culturally responsive, the pedagogy through which they are taught should also be reconceptualized (Shaw, 2012).

Acknowledging Intersectionality

The relationship between race and musical preference is complex, necessitating careful and thoughtful reflection. Though the aforementioned studies found patterns between race and musical preferences, it is important to recognize that musical preferences vary widely *even within* racial and ethnic groups. As Delgado and Stefancic (2017) explained, “even within groups that are seemingly homogeneous, one finds attitudinal differences” (p. 62). In actuality, musical preferences are influenced by a multitude of variables, including geographic location, gender, and age *in addition to race* (Gilroy, 1993). And though this chapter employs the critical race lens as a tool for analysis, Delgado and Stefancic (2017) underscored the importance of considering intersectionality within critical race analyses in order “avoid oversimplifying [the] human experience[s]” (p. 63). Thus, as Gilroy (1993) explained, “[B]lack music cannot be reduced to a fixed dialogue between a thinking racial self and a stable racial community” (p. 110). Reducing preferred musical epistemologies solely to a matter of race may be limiting for those whose musical preferences differ from stereotypical expectations (Anderson, 2018).

Emancipatory Interventions

In response to the aforementioned systemic socioeconomic and epistemological barriers, scholars have called for stakeholders to intervene. Highlighting the connection between inadequate school funding policies and inequitable educational opportunities for Black students, Ladson-Billings (2009) called for a “commitment to redesign funding formulas” (p. 32) and warned that the failure to do so will “virtually guarantee the reproduction of the status quo” (p. 32). Bates (2012) echoed these calls, suggesting that, without intervention, students with socioeconomic barriers “will not be able to participate in school music as successfully or completely as middle-class or affluent students” (p. 34). Drawing attention to applied instrumental lessons, Simon (2013) insisted that “students [whose] families cannot afford lessons need a way to learn” (p. 114). Similarly, Anderson (2018) encouraged leaders to help dismantle the socioeconomic barriers for Black students with economic hardship and affirmed that private lessons “must be tangible options [for] minority students” (p. 124).

Bates (2012) recommended two possible solutions to overcome socioeconomic barriers. First, he suggested implementing cheaper, alternative instruments like the ukulele or electronic keyboard to mediate issues of cost. Though these instruments may be cheaper than traditional ensemble instruments, this proposal does not accommodate students who wish to play an instrument in a traditional ensemble despite their associated costs. His second recommendation is perhaps the most equitable when it comes to socioeconomic disparities. He suggested that fully funding instrumental programs would allow “all students [to] have access to high-quality musical instruments, private

instruction...[and] anything else that either is required or will significantly increase the likelihood of success in the music program” (p. 35). Though this ideal solution would drastically improve equity, considering the fact that public schools in the United States are underfunded by \$150 billion annually — a disproportionate amount of which serve majority Black students (The Century Foundation, 2020) — it is unlikely a feasible solution for many school districts.

Scholars have also called for curricular interventions in order to address epistemological barriers that may reinforce the underrepresentation of Black students in instrumental music programs. Vaugeois (2018) insisted that Western art music must be challenged in order to divorce the genre of its association with White bourgeois identity. Despite clarifying that her recommendation does not equate to an “invocation of censorship” (p. 62), some music teachers have abandoned Western art music repertoire altogether in favor of non-Western art music genres, which Hess (2017) warned may “exacerbate differences and cultural inequities already at a breaking point in society” (p. 177). She explained that this approach reinforces a binary between Western art music and ‘other’ music, which “does not necessarily function less hegemonically than the traditional canon” (p. 177). It may also be an example of fixed representation of culture — an oversimplified assumption about a culture or community’s experiences or values (Good-Perkins, 2021; Toncelli, 2021).

Koza (2008) underscored the role of music colleges’ audition requirements in perpetuating racial homogeneity. She challenged the “epistemic specificity” (p. 147) of their audition requirements, suggesting that the requirements are so deeply engrained

with Whiteness that they facilitate racial exclusion “without ever uttering the word ‘race’” (p. 152). As a result, Western art music traditions are reaffirmed throughout the program and subsequently inherited by the teacher candidates’ future students. In response, Koza called for all music educators to acknowledge these segregative practices and to refuse to affirm them, thus defunding them. Her sentiments reflect the disruptive nature of critical race theory, which proposes that “marginalizing social constructs are only dismantled through radical changes and upheaval” (Vereen, 2021, p 60) and that “minorities of color should not try to fit into a flawed...system, but [should] transform it” (as cited in Delgado & Stefancic, 2001, p. 62). This sentiment was also expressed by Delgado and Stefancic (2001) who insisted that “when we are tackling a structure as deeply embedded as race, radical measures are required. Everything must change at once, otherwise the system merely swallows up the small improvement one has made, and everything remains the same” (p. 57). However, Hess (2017) raised concerns with Koza’s implication. Insisting that our world “functions largely on cultural capital” (p. 183), Hess suggested that dismissing WSN and Western art music repertoire altogether may deny students the “currency they require to continue their music education” (p. 182), thus “reinscrib[ing] oppression” (p. 184) for those who wish to pursue music in college. Both points are valid, yet they represent the paradoxes that exist within anti-racist and anti-oppression pedagogy (Hess, 2017).

Narita and Green (2016) proposed informal learning practices in order to acknowledge differing epistemological values and recognize talents equally. Though informal learning practices are not specified or defined, they generally mimic those

employed among popular musicians. Narita and Green (2016) offered examples, including allowing students to choose their own repertoire, asking students to recreate music from recordings, encouraging student-led and peer-learning, and facilitating opportunities for composing and performing. The authors explained that informal learning may “counterbalance the dominance and the importance of [WSN] skills, allowing the participation of non-musical readers on a par with readers” (p. 306). Considering the historical significance of informal music practices within Black communities (May, 2005; Wiggins & Bey, 2022), informal learning practices may be effective remedies when it comes to underrepresentation of Black students in public school instrumental ensembles.

Impeding Emancipation

However, despite the aforementioned potential emancipatory interventions, several realities raise skepticism regarding the likelihood of their implementation. The field of music education is dominated by “primarily White” (Clauhs, 2021, p. 454) teachers who are “trained primarily if not exclusively in classical music” (Louth, 2015, p. 481). While informal music practices may increase access for students who prefer music outside the Western art music norm (Narita & Green, 2016), many music teachers report feeling unprepared to deviate from Western art music (Colquhoun, 2019). Even more concerning, some music teachers refuse to recognize systemic racism within the field (Bradley, 2015). While “many teachers embrace multicultural music education wholeheartedly” (p. 195), few abandon Western art music paradigms to do so (Good-Perkins, 2021), thus reinforcing the norms associated with Western art music (wa

Mukuna, 1997). As Shi et al. (2006) explained, it is challenging “to convince music teachers at large, who are used to the traditional Western [art] music education method, of the value of...alternative methods [for] learning [non-Western art] music” (p. 38). Given these obstacles, the prospects of implementing the changes necessary for systemic reform remain uncertain.

Reflecting on the notion of interest convergence, which suggests that systemic racism may persist when the majoritarian group lacks sufficient incentives to help eradicate it (Bell, 1980; Delgado & Stefancic, 2001), perhaps music education, as it currently stands, serves the interests of the majoritarian group, thus suppressing any incentive for change. And, if Bell’s (1980) theory is correct, correcting systemic racism within public school music education will be “dictated by the dominant group” (Hess, 2022, p. 131). Considering Koza’s (2008) observation that music education stakeholders exhibit an “apparent lack of incentive for change” (p. 153) when it comes to institutional racism and considering Hess’ (2022) concern that some universities, though they hold serious power when it comes to confronting systemic racism within music education, may pursue diversity, equity, and inclusion work in order to bolster their public image rather than to implement any serious reform, one ponders the incentives it will take to motivate the reforms required to disrupt this phenomenon.

However, despite this skepticism, another theory proposes an alternative avenue for potentially *immediate* emancipation, unobstructed by the interests of the majoritarian group. While a critical race perspective exposes socioeconomic and epistemological barriers that may disproportionately burden Black instrumental students, the theory of

disruptive innovation proposes an avenue through which to disrupt such barriers. Salient within both theories are themes of improving access for traditionally marginalized communities and challenging dominant paradigms (Christensen et al., 2008; Delgado & Stefancic, 2017). In the following section, I introduce a historical overview of disruptive innovation theory, compare its convergence with critical race literature, and discuss its potential application to the phenomenon of this study.

Theory of Disruptive Innovation

Christensen first proposed the theory of disruptive innovation in his book *The Innovator's Dilemma* (1997). Originally concerned with trends within the business sector, he studied noteworthy companies and the impacts of their business development strategies. The theory establishes a binary between two types of innovation: sustaining innovations and disruptive innovations. Sustaining innovations are characterized by incremental improvements to a company's services, products, or technologies, which typically cater to the needs and interests of customers who already enjoy such services, products, or technologies (Christensen et al., 2008): quieter washing machines, faster Internet connectivity, home appliances with greater energy efficiency, et cetera. Conversely, disruptive innovations do not focus on improvements in the traditional sense; rather, their value lies in increasing access for those who had previously been unable to consume the service, product, or technology whether due to cost, convenience, or other barriers (Christensen et al., 2008).

Disruptive Innovation in Education

While *disruptive innovation* is a broad term, within the field of education, the term typically refers to technology-based learning or distance education which “serve[s] students in circumstances where there was no alternative for learning” (Horn & Stalker, 2015, p. 3). Though the theory was originally concerned with phenomena in the business sector, its application to the field of education has since been realized, and its tenets have been the foundation of technology-based curricula across all content areas, including chemistry (Carnevale, 2003), business and languages (Duana & Vagner, 2020), and music theory and composition (Loeckx, 2015).

To illustrate what disruptive innovation looks like in practice, Horn and Staker (2015) highlighted the implementation of technology-based Advanced Placement courses throughout high schools in rural Alabama as an example. Former Alabama Governor Bob Riley acknowledged the educational disparities within his state. Though he expressed wanting to offer opportunities for advanced placement students, the state’s fiscal budget purportedly prevented hiring qualified teachers to meet the demand (Horn & Staker, 2015). Of sixteen southern states, Alabama ranked fourteenth in Advanced Placement course availability (Staker & Trotter, 2011). In response, Riley established a taskforce to identify budget-friendly online learning resources to meet the demand. The result was a technology-based learning curriculum that provided Advanced Placement courses for students who previously did not have access. Horn and Staker (2015) described its impact, noting that “the number of advanced placement test takers more than tripled; the number of [Black] advanced placement test takers increased by over ten times; and the

number of exam scores that qualified for college credits more than doubled” (p. 15).

In this example, technology-based learning was an effective disruptor for students attending underfunded schools — socioeconomic barriers. The innovation resulted in increased access to Advanced Placement courses, significantly increasing the number of Black Advanced Placement test takers. And, while a critical race perspective might point out that insufficient school funding was the root cause necessitating such disruption, the innovation disrupted nonconsumption, which “surely would be better than nothing” (Christensen, 2008, p. 86). Considering that Black students are half as likely to have access to arts electives than are White students (Morrison et al., 2022), one ponders the potential for technology to disrupt issues of access within the field of music education.

Targeting Disruption

Before exploring the potential to increase access to music education through the use of technology, it is important to reflect on what access means in relation to the phenomenon of this study. Recall that, for students facing socioeconomic and/or epistemological barriers, the mere presence of an instrumental music program does not necessarily equate to access. In the same sense, simply implementing a technology-based instrumental music program may not equate to access. Rather, disruptive innovation theory underscores an obligation to target *specific* barriers in order to increase access. As Hanson and Reich (2015) noted, “closing gaps with [disruptive innovations] requires targeting innovations” (p. 1247). In the following section, I introduce literature which highlights ways in which the targeted mediation of technology-based learning may disrupt socioeconomic and epistemological barriers exposed by the critical race lens.

Disrupting Epistemological Bias with Technology-Based Music Learning

As implementation of music technology grows within music education classrooms, researchers have explored the potential to disrupt epistemological dominance through technology-based music learning (Jones & Brenton, 2015; Louth, 2015; Shi et al., 2000; Webster, 2011). Though music programs have typically catered to students whose talents and skills reflect those associated with Western art music (Bradley, 2015; Hess, 2018), the expansion of technology presents an opportunity to affirm the identities of students whose musical interests do not align with those of a stereotypical music student (Louth, 2015).

Louth (2015) explored the "emancipatory potential" (p. 473) of music technology in a case study focused on Alex, a student composer with no formal music training. Louth highlighted Alex's constructivist use of music technology, which helped him to compose without "subjecting himself or his music to the values associated with the traditional Western art music canon" (p. 473). Louth speculated how a similar mediation of technology might be implemented by public school music teachers. He began with a familiar reminder — that the application of music technology alone does not automatically yield a "liberating pedagogy" (p. 475). In fact, the mediating effects of technology may just as well perpetuate epistemological biases which are often found within traditional music classes. For example, he suggested that this might happen if students are asked to compose music with notation software, which represents an epistemological bias for WSN, thus potentially "hamper[ing] the development of aural skills" (p. 477).

However, he argued that music technology, when mediated thoughtfully, could positively “influence the cause of social justice” (p. 475) and “challenge and transform traditional pedagogies” (p. 475). To support such a mediation of technology, Louth underscored Regelski’s (2012) notion that teachers should “promote free expression” (p. 291) by providing learning “options from which [students may] choose” (p. 291). Applying this approach, Louth (2015) proclaimed that “freedom of expression expands so long as technological mediation enables the expansion of musical options” (p. 478). He cited the use of programs like GarageBand as an example — computer software which enables students to compose using “preassembled fragments of sound” (p. 479). These fragments, known as Apple Loops, are available in many genres and cater to students without formal training, bypassing the need for WSN literacy. Louth suggested that students who prefer traditional notation should be allowed to use WSN, thus accommodating diverse preferences and learning styles. Such applications of technology represent the potential to “emancipate students” (p. 479) from the epistemological bias often found within public school music education programs.

Technology-based learning may also facilitate deeper context for lessons concerned with non-Western art music. Whitaker et al. (2014) explained that “technology [may] be used to provide experiences with music of cultures where context is so important” (p. 49). Similarly, Louth (2015) suggested that music technology may be mediated in order to “de-politicize musical meaning or better contextualize them” (p. 479). Raising concerns with the “errors that continue to be committed” (wa Mukuna, 1997, p. 49) within transcriptions of aural genres, wa Mukuna (1997) suggested that “if a

multicultural perspective in music is to be successful, new methods must be designed with these dilemmas in mind” (p. 49). Such an application was illustrated by Shi et al. (2006). After immersion among communities in South Africa, Japan, Hungary, Azerbaijan, and New Zealand, ethno-musicologists Goetze and Fern authored an asynchronous, technology-based music curriculum. Their program *Global Voices in Song* disrupted several barriers. The first, and perhaps most obvious, is distance. Shi et al. (2006) explained that “it is [likely] not possible for native artists to be invited to perform and teach the learners face-to-face in the classroom” (p. 36). Further, the program disrupted epistemological barriers. Shi et al. (2006) explained that “[*Global Voices in Song* facilitates] effective [aural] transmission of choral music from sources outside the European art music tradition” (p. 36). Rather than forcing aural music into a Western art music paradigm, the lessons — “[taught by] native artists rather than [by] the conductor or classroom teacher” (p. 36) — challenged students to engage with aural music as it is transmitted within the communities whence they came, thus challenging notions of the universality of Western art music paradigms.

A teacher who had employed *Global Voices in Song* with her fourth-grade students commented, “we discussed the fact that it doesn’t always sound ‘in-tune’ to our ears and why that might be. They came to understand that music doesn’t always have to be perfect according to our own beliefs” (p. 38). These comments encompass Louth’s (2015) assertion that technology-based learning may facilitate learning about “other musical cultures and practices and shatter stereotypical ideas” (p. 484). The teacher confronted the epistemological divide that existed between her students’ traditional

concepts of tonality and those of other cultures through the use of technology.

The themes within these examples converge with those expressed by both critical race and disruptive innovation theories. As Delgado Bernal and Villalpando (2023) noted, a critical race perspective in education is committed to challenging dominant epistemologies and the belief that “there is only one way of knowing” (p. 80). Similarly, Christensen et al. (2008) challenged the standardization of public education, noting that students who do well in a particular subject “do so largely because their intelligence happens to match the dominant paradigm in use in a particular classroom” (p. 35). As a result, he suggested, “many other students are excluded” (p. 37). Considering the dominance of Western art music in instrumental music education and its potential to marginalize students of color, the mediated use of technology/based learning resources in these examples indicates a potential to disrupt epistemological barriers for Black instrumental music students seeking to avoid the confines of a music classroom dominated by Western art music traditions.

Disrupting Socioeconomic Barriers with Technology-Based Music Learning

Disruptive innovations are also recognized as potential disruptors to socioeconomic barriers (Christensen, 1997), including within music education. Dammers (2009) found that online instrumental lessons facilitated an affordable alternative to traditional lessons. Dye (2016) echoed, noting that online lessons offer an “economical method of bringing together instructor and student” (p. 169). Online lessons also helped mediate the travel costs for those located in remote, rural areas (King et al., 2020). I illustrate such mediations in action in the following section, drawing attention to massive

open online courses and YouTube as examples.

Massive open online courses (MOOCs) are online courses available to an exceptionally large number of students — sometimes hundreds of thousands (Steels, 2015). They are typically offered “free of charge” (Sultan, 2019, p. 201) in order to expand access for “students with limited [financial] resources” (p. 208). For this reason, researchers have highlighted their role as potential disruptors of socioeconomic barriers (Steels, 2015; Sultan, 2019). Though early MOOCs catered to the sciences and technology, MOOCs in the field of fine and performing arts have since been published (Steels, 2015). Harvard University, Northwestern University, The Curtis Institute of Music, and Berklee College of Music all offer MOOCs on topics from instrumental lessons to songwriting. Berklee described their MOOCs as opportunities to “sample the Berklee experience for free” (Berklee, MOOCs, para. 1).

Citing the pressure to enroll in private lessons, Steels (2015) speculated that MOOCs might increase access for students whose parents cannot afford them. He explained, “many students who are eager to learn how to play instruments or participate in orchestras or bands are pushed towards private tutoring which their parents often cannot afford. Here[,] MOOCs can have a major beneficial impact by giving access to novel learning resources” (p. 18). Considering enrollment in applied lessons is the most salient indicator of those likely to enroll and reenroll in instrumental ensembles (Stewart, 1991), the potential mediating impact to increase access to applied lessons, despite socioeconomic barriers, is highly relevant to the phenomenon of this study.

YouTube has also been highlighted as a potential disruptive resource for students facing socioeconomic barriers. The site offers “free teaching resource[s]” (Burke & Snyder, 2008, p. 3), reflecting one of its values that “everyone should have easy, open access to information” (YouTube, 2022). Burke and Snyder (2008) suggested that its no-fee access is an “important consideration for educational budgets” (p. 2). Thorgersen (2020) framed this asset through an equity perspective, insisting that social media sites like YouTube might be particularly impactful for marginalized people seeking to “acquire...privileges that would otherwise be inaccessible to them” (p. 360). He elaborated, suggesting that free lessons on social media sites like YouTube may be emancipatory:

And when it comes to learning music, lessons on almost any instrument...can now be learned through free content online in user-generated video tutorials...[This] has without a doubt created a plethora of new ways for the less economically privileged to participate in musicking. The empowerment in this meaning is a kind of emancipation. (p 361)

However, despite the potential to overcome the prohibitive costs associated with applied lesson tuition with music technology, students may still face financial barriers when it comes to instrument acquisition. Nonetheless, recalling Anderson’s (2018) assertion that private lessons must be made accessible for students of color, the potential mediation of music technology to disrupt socioeconomic barriers is significant to the phenomenon of this study.

Conclusion

In this chapter, I discussed ways in which socioeconomic and epistemological barriers may collectively contribute to the underrepresentation of Black students within public school instrumental music education programs. Facing such barriers, Black music students may seek to have their musical identities validated in spaces outside of the music classroom (Hess, 2018), particularly in the community and/or in church (Carter, 1993; Hendry, 2023). Subsequently, I discussed the potential mediation of technology to disrupt socioeconomic and epistemological barriers traditionally associated with instrumental music education (Dye, 2016; Louth, 2015; Shi et al., 2000; Sultan, 2019). Given the potential emancipatory mediation of music technology (Louth, 2015), one considers the possibility that music technology might be an additional venue through which Black instrumental musicians seek to disrupt socioeconomic and epistemological barriers, specifically through YouTube. Several circumstantial factors allude to this possibility. First, consider that YouTube is a free resource (Burke & Snyder, 2008). The site has over 30 million visitors per day with 300 hours of video uploaded to the site each minute (Hanson, 2018). Because YouTube is “particularly rich in musical offerings...[from] many genres” (Schmidt-Jones, 2021, pp. 5-6), the site is “particularly popular with music learners” (p. 138). In fact, of all tutorial searches on YouTube in 2011, music tutorials were among the top 10 (Hanson, 2018). Lastly, the site is most popular among Black and Hispanic respondents (Rahmaturrizki & Sukmayadi, 2021). Of those surveyed, 79% of White respondents, 84% of Black respondents, and 85% of Hispanic respondents reported using YouTube (Auxier & Anderson, 2021). Therefore, the widespread

popularity of YouTube among Black users (Auxier & Anderson, 2021), its popularity among independent music learners (Hanson, 2018) coupled with technology's potential mediation to disrupt socioeconomic (Dye, 2016; Sultan, 2019) and epistemological barriers (Louth, 2015; Shi et al., 2000) unveiled by the critical race lens warrant exploratory investigation.

CHAPTER THREE: METHODS

This study is best characterized as a qualitative, exploratory research study. Swedberg (2020) described exploratory research as inquiry on a topic about which little is known. Considering the fact that music technology is, in general, “relatively underinvestigated” (Loeckx, 2015, p. 22), the emancipatory mediation of technology (Louth, 2015) is quite niche. This research study establishes a foundation from the convergence of critical race and disruptive innovation theories. The integration of these theories guided its methodological design, as they offer complementary insights regarding the phenomenon of interest to this study. This chapter outlines the research questions, research design, data collection tools, an explanation of the participant recruitment process, and data analysis techniques. The research questions are:

1. What barriers, if any, do Black instrumentalists seek to disrupt through the use of (a)synchronous online instrumental lessons?
2. What particular technological features of online lessons do participants find most impactful on their learning?

To address these research questions, I employed qualitative research methods. Qualitative methods have a strong historical correlation with critical race research (Parker, 2019) because of their effectiveness in humanizing and recognizing marginalized voices (Solórzano & Yosso, 2002). Qualitative inquiry within critical race methodology commonly results in the creation of narratives or counter-narratives (Hardy, 2018; Ikemoto, 1997; Solórzano & Yosso, 2002; Strauss & Corbin, 1990), which Solórzano and Yosso (2002) described as the “stories of people whose experiences are not often told”

(p. 26). The purpose of such narratives and counter-narratives is to use the “perspectives, experiences, and voices of non-dominant group members” (Gaztambide-Fernández et al., 2018, p. 8) to “challenge notions of superiority” (Hardy, 2018, p. 123). Such narratives provide insight into the realities of systemic racism, which may serve as a starting point for the pursuit of racial justice (Fernández et al., 2018).

Participant interviews served as the primary source of data for this research study due to their compatibility within both critical race and disruptive innovation methodology. Solórzano and Yosso (2002) noted that interviews facilitate the creation of narratives and counter-narratives. Portz et al. (2019) and Vogelsang et al. (2013) suggested that interviews allow participants to share their experiences with technology. As Galletta (2013) recommended incorporating theoretically driven questions into semi-structured interviews, the questions from these interviews are inspired by prominent themes within both critical race and disruptive innovation theories, the outlines of which may be found under Appendix B.

Technology Acceptance Model (TAM)

In addition to investigating potential epistemological and socioeconomic barriers that motivate participants’ interest in online lessons, I also sought to investigate how technology-specific factors (Vogelsang et al., 2013) affect participants’ decision to use online lessons. Addressing this research question is important because, while an online lesson might satisfy a user’s epistemological preference, users may avoid using that online lesson for technological reasons, such as if the online lesson platform is difficult to navigate (Davis et al., 1989; Davis, 1991). Because the Technology Acceptance Model

(TAM) is “among the most popular models” (Schmidhuber et al., 2020, p. 2) to assess users’ attitudes towards technology, this study integrates the TAM as a secondary source of data in order to achieve a more comprehensive understanding of the factors contributing to participants’ use of online lessons.

Though originally applied to research involving the use of email (Szajna, 1996), telemedicine (Hu et al., 1999), and online collaboration (Cheung & Vogel, 2013), the TAM has since been expanded to distance education research (Esteban-Millat et al., 2016; Iqbal et al., 2015; Landry et al., 2006; Masrom, 2007). In fact, Vogelsang et al. (2013) suggested that the model is universal and can be applied to any technology. The validity and reliability of this testing tool has been widely established (Adams et al., 1992; Davis & Venkatesh, 1996; Hendrickson et al., 1993).

The TAM is rooted in psychology research by Fishbein and Ajzen (1975), which suggests that human behavior is influenced by one’s attitudes towards a variable. Masrom (2007) explained that “behavioral intention is a function of an individual’s attitude toward the behavior and subjective norms surrounding the performance of the behavior” (p. 2). Applied to the context of this study, when it comes to deciding whether to use online lessons, a user’s attitudes towards online lessons play a decisive role. That is, if users’ attitudes towards the technology are favorable, they are more likely to actually use it (Davis et al., 1989; Davis, 1991).

Adapting the TAM

Several researchers have highlighted the shortcomings of the TAM in its original form (Ajibade, 2019; Bagozzi, 2007; Najmul Islam et al., 2014; Wynne et al., 2008). Vogelsang et al. (2013) challenged the “expressiveness” (p. 3) of the original TAM and suggested that it is not “suited for explaining [users’] complex decision processes” (p. 3). Vogelsang et al. (2013) pointed to TAM’s original “focus on quantitative research methods” (p. 1) as the culprit of this limitation, explaining that “the focus on quantitative questionnaire-based surveys may lead [researchers] to oversee relevant factors of influence” (p. 6). Davis (1993) conceded that, in addition to predicting users’ likelihood of accepting technology, researchers may also be interested in the specific technological features that contribute to user (dis)satisfaction, a sentiment which resonated with this research study. That is, I am uninterested in predicting *whether or not* participants will use adopt online lessons; they already have. Rather, I am interested in the technology-specific factors (Vogelsang et al., 2013) that influence the use of online lessons. Thus, an adaptation of the TAM is warranted.

To address this limitation, Davis (1993) proposed expanding the tool to investigate variables beyond the original model’s capability. Lee et al. (2003) suggested that a qualitative research method serves as a “natural extension” (p. 767) of the TAM and is a “more useful alternative to determine richer information with a small number of subjects” (p. 767). Researchers have since expanded the TAM with qualitative methods, investigating the technological variables that impact one’s technology use through the use of participant interviews (Vogelsang et al., 2013). Portz et al. (2019) applied qualitative

research methods to the TAM in order to identify the factors that contribute to patients' decision to either use or decline to use a patient portal application for the maintenance of one's health records. Di Serio et al. (2012) employed interviews to assess the influence of external barriers on students' intention to use augmented reality technology in art education. Similarly, this research study employs a qualitative adaptation of the original TAM, which assesses participants' attitudes towards online lessons "based on a topic-by-topic-guide" inspired by the original TAM (Quadahi, 2008, p. 204). This guide may be found under Appendix A.

Institutional Review Board, Sampling, and Recruitment

Prior to recruitment, the research proposal underwent a comprehensive review by the university's Institutional Review Board (IRB). The purpose of this review was to ensure that the study's design met the board's rigorous research and ethical standards. In this process, the board reviewed the study's summary, consent/assent agreements, recruitment materials, study procedures, data collection materials, a description of its potential risks and benefits, its plan to maintain participants' confidentiality, and the researcher's conflict of interest statement. In order to improve participant response rates (Bentley & Thacker, 2004), the application also included a request to offer a \$25.00 honorarium per participant upon the full completion of an interview. The IRB fully endorsed the study's application, which serves as a testament to the study's research and ethical soundness.

Upon receiving approval from the IRB, I proceeded with the recruitment process, recruiting potential participants from the Internet and public schools. Given the study's

focus on specific demographic characteristics, I employed purposive sampling methods. This sampling method yields minimal variances among participants and is appropriate “when sociocultural and other factors are expected to influence outcomes” (Andrare, 2021, p. 88). Specifically, participants of interest included Black instrumentalists who have participated in online lessons.

In order to recruit participants from public schools, I emailed superintendents, principals, and music teachers representing 55 school districts. In this email, I introduced myself as the researcher and presented the research opportunity. I offered to answer any follow up questions or concerns and subsequently requested that administrators forward the online pre-screener to their music faculty or directly to parents and students. I received four responses total with three expressing regrets that they could not accommodate my request — a barrier Harrell and Bradley (2009) characterized as gatekeeping. One superintendent replied that, though the research topic was timely and important, she could not send the screener to staff, parents, or students, and that I would need to apply with their IRB in order to receive approval. She also noted that she generally advises doctoral candidates to avoid student participants because there are often hurdles. She forwarded the contact information of the administrator in charge of the district’s IRB; however, my messages to this administrator and subsequent follow-up calls were unanswered.

Ultimately, this recruitment effort yielded 54 individual responses to the participant screener, which collected basic information, including potential participants’ name, age, grade, school, instrumental experience, and experience with online lessons.

Participants self-minoritized by stating their own race (Vereen, 2021) and reported their eligibility for free or reduced-price lunch. As eligibility in these programs is based on the federal income poverty guidelines (U.S. Department of Agriculture, 2019), this was an accurate measure of students' socioeconomic status. Though this variable was not a delimiting factor, it was collected as critical race methodology considers how variables such as socioeconomic status “intersect to affect the experiences of students of color” (Solórzano & Yosso, 2002, p. 24). Of the 54 individual completed screeners, I delimited applicants based on race and experience with online lessons; specifically, I invited applicants who self-identified as Black and had experience with online lessons to participate in the research study. Despite meeting these criteria, there were instances in which some qualified candidates did not respond to the invitation to partake in the study. Ultimately, three participants from public schools participated in the study to completion.

I also recruited participants from the Internet. Though researchers outlined the many websites through which online lessons may be accessed (Dye, 2016; Minting, 2015; Partti & Karlsen, 2010; Waldron, 2012), participants' use of such lessons is not always publicly observable, posing a unique challenge for recruitment. For example, it is impossible for the public to observe who watches lessons on [ViolinMasterclass.com](https://www.violinmasterclass.com), let alone contact them. In contrast, users post public comments on platforms like YouTube and TikTok, some of which are strong indications of usage. Further, both of these platforms allow users to contact one another.

Turning recruitment efforts to YouTube and TikTok, I searched a variety of online lessons. These searches encompassed diverse representations of pedagogical

styles, genres, and instruments, including those with and without the use of WSN.

Further, I made sure to review lessons taught by teachers of diverse racial, gender, and age demographics. Upon each search, I screened the comments for those which indicated users' use of the lesson. Some comments even hinted at users' interest in lessons taught beyond Western art music traditions. For example, one user commented on a YouTube video published by a Black violinist who performs and teaches popular music, "in college lol I was like wtf is Mozart I'm from southeast Georgia we dnt gets down with that until I heard that violin 🎻 omg it has changed my life."

I sent recruitment messages to users whose comments indicated their use. Similar to the message sent to school administrators, I introduced myself as the researcher and presented the research opportunity. I offered to answer any follow up questions or concerns and subsequently requested that, if interested, users complete the online pre-screener. I sent 213 messages and received 14 completed pre-screener responses. Of these pre-screeners, I delimited applicants based on race and experience with online lessons. Specifically, I invited those who self-identified as Black and indicated any experience with online lessons to participate in the research study. Despite meeting these criteria, there were instances in which some qualified candidates did not respond to the invitation to partake in the study. Ultimately, five participants participated in the study to completion.

While purposive sampling was suitable for this study's needs (Harrell & Bradley, 2009), the need for demographic specificity naturally led to a reduction of the number of obtained samples. Bakkalbasioglu (2020) explained that this is a common phenomenon,

noting that “non-response is higher for researchers with more rigid samples, such as the ones using purposive sampl[ing]” (p. 689). Despite the fewer response and completion rates, it is important to note that, in multiple-case qualitative research, the priority is to conduct in-depth investigations of several cases rather than making larger, empirical generalizations (Patton, 2002).

Interview Design and Protocols

I sent emails to qualified research participants to share consent/assent forms and to request that they register for a date and time for the first of their two interviews. I organized data collection efforts between two main sessions (initial interview and TAM interview) for two specific reasons. Firstly, collecting data over several sessions may help avoid respondent fatigue, a situation in which research participants provide less thoughtful responses due to lengthy interview sessions (O’Reilly-Shah, 2017). Secondly, this approach provided time for data analysis, enabling the subsequent TAM interview to begin with participants reviewing my notes and codes from the previous interview, ensuring the accuracy of participants’ ideas (Harrell & Bradley, 2009). After reviewing participants’ availability, each were sent a link to participate in an interview via a video conferencing platform (Leavy, 2014). Though Gall et al. (2007) suggested that online data collection methods may contribute to sampling bias as it requires access to the Internet, this concern was irrelevant considering that Internet users are within the exact homogeneous demographics of interest to this study. In order to review the interviews in depth during analysis, each interview began with a request to record the session (Saldaña, 2016). Upon receiving interviewees’ permission, I read the consent/assent forms, which

introduced the study, its potential benefits and risks, and gave participants the opportunity to ask clarifying questions (Vereen, 2021). Upon receiving verbal consent/assent, the interviews began with a personal introduction, the purpose of the research, and a reassurance of data safekeeping (Harrell & Bradley, 2009).

The interview questions followed a semi-structured design, which allowed for flexibility and follow up questions (Leavy, 2014). I asked questions with neutral vernacular as to not imply that participants should answer in a specific manner (Harrell & Bradley, 2009). I began questioning with broad inquiries designed to illustrate a general overview of participants' musical and social background and learning preferences. Harrell and Bradley (2009) characterized this initial inquiry as the *grand tour* and highlighted its value towards the beginning of an interview as it often encourages participants to speak. Upon exploring participants' broad musical and social experiences, the interview progressed with specific follow up questions. During this section of the interview, I aimed to expand on themes which emerged from the broad inquiry and to assess participants' specific experiences with instrument acquisition, school environment, applied lessons, attitudes towards music curriculum in school, economic resources, attitudes towards online lessons, and their preferred characteristics within online lessons. The initial interview lasted for approximately 60 minutes in length. Upon completion, I explained the next steps of the research process, noting that the video recording would be transcribed into text format and subsequently assessed for thematic analysis. During this time, we planned for follow a follow up video conferencing meeting in order for participants to answer the TAM interview.

During the subsequent TAM interview, participants reviewed three online lessons featuring the participant's self-identified major instrument. I chose the lessons based on their diverse application of technological characteristics, including multiple angles, imagery, video resolution quality, et cetera. After watching each online lesson, participants shared their overall impression (Ouadahi, 2008) of the lesson and responded to questions categorized within one of each of the TAM's main categories: perceived usefulness and perceived ease of use (Davis, 1991). *Perceived usefulness* refers to how much a user believes a technology will benefit one's routine while *perceived ease of use* refers to a user's perceived level of effort required to learn how to use the technology (Davis, 1991). When time permitted, I encouraged participants to share online lessons that they normally watch. I sent honoraria in the form of an online gift card via email and concluded the sessions by expressing my gratitude for their help.

Data Analysis

While Saldaña (2016) suggested that there is no standardized method for data analysis within qualitative research, I adopted qualitative analysis techniques recommended by Saldaña (2016), Gormley et al. (2019), and Riger and Sigurvinsdottir (2015). I began the data analysis process by transcribing the recorded interviews into text format. This was accomplished with Otter.ai transcription software — the result of which totaled approximately 322 pages. After transcribing the interviews, I became intimately familiar with the raw data by reading and re-reading the interview transcripts and TAM responses. Gormley et al. (2019) identify this step as data immersion. During this step, patterns between participants' responses and findings within the theoretical literature

began to emerge, giving meaning to the raw data (Saldaña, 2016). In order to organize these patterns, I assigned codes to the data according to topics. Gormley et al. (2019) described these codes as “segments of textual data...which [are] relevant to the research question” (p. 139). Each sentence composed one unit of analysis (Okoko et al., 2023). After completing the initial coding process, I compared and organized these codes by their similarities, a process commonly known as clustering. As Gormley et al. (2019) explained, “clustering [entails] assembling similar preliminary codes into representative groups” (p. 140). Subsequently, I organized clusters into a preliminary template on a word processor from which general themes were derived (Riger & Sigurvinsdottir, 2015). In total, I passed the interview transcripts through three stages of process coding over the course of approximately six months.

Validity

In order to establish validity, I employed several quality-control measures. Saldaña (2016) insisted that both a thorough literature review and sound methodological design are prerequisite steps to achieving validity. Heeding this notion, I began the research process by reviewing the writings of highly influential figures within each theoretical framework and synthesizing such works into a comprehensive literature review. I prioritized the consistency of the study’s methodological design, aligning its methods with those of previous research studies employing identical theoretical frameworks. In order to ensure that participants’ words and ideas were faithfully reflected, each participant confirmed the accuracy of their initial interview responses and the themes into which they were categorized (Harrell & Bradley, 2009; Johnson &

Christensen, 2010). To further validate the study's interpretations, I invited each participant to complete subsequent member checks of their TAM responses; however, no participants expressed interest. Further, the themes proposed within the study's findings are corroborated by "directly citing participants' words as evidence" (Okoroji & Oka, 2021, p. 458). Lastly, I solicited the feedback of several qualified peers reviewed as I worked through multiple drafts of the study (Johnson & Christensen, 2010). These measures collectively support the validity of this research study.

CHAPTER FOUR: RESEARCH FINDINGS

The purpose of this chapter is to introduce readers to the research participants and to report their responses to the interview questions. Having passed through multiple rounds of coding and corroborated by participants, I synthesized the research finding into a thematic analysis in order to answer the research questions. Though a more thorough discussion situating these findings within the context of the theoretical literature occurs in chapter five, I conclude each theme alluding to its theoretical relevance.

Participant Cases

As noted in chapter three, my recruitment efforts included sending recruitment materials to 213 online instrumental lesson users on YouTube and TikTok and 55 school districts. Of the 55 school districts contacted, 54 individual students completed the screener. Students who identified as Black and documented participating in some form of online instrumental lessons were invited to participate. Of eligible students, three successfully completed interviews. Of the 213 messages sent to instrumental musicians using online lessons on YouTube and/or TikTok, 14 responses were received, and five respondents successfully completed interviews. To maintain participants' confidentiality, I gave each participant a pseudonym.

Participant	Gender	Age	Race	Recruitment Site
Sanai	Female	25	Black	YouTube
Darius	Male	24	Black	YouTube
Simone	Female	19	Black	Public school
Vanessa	Female	12	Black	Public school
Jada	Female	12	Black	Public school
Everett	Male	34	Black	YouTube
Imani	Female	24	Black	YouTube
Jaylen	Male	36	Black	YouTube

Sanai

Sanai is a twenty-five-year-old Black female multi-instrumentalist with a primary focus on guitar. After reviewing comments on YouTube indicating her participation in online lessons, I recruited her to participate in this study. Sanai grew up and currently resides in the Washington, D.C. metropolitan region. After discovering the guitar as a child through popular television shows, she expressed her interest in learning the instrument. Her mother sought a local private teacher but was unsuccessful. Additionally, her school music program only offered lessons and ensembles for students studying traditional concert band instruments. Despite these barriers, she forged her own path with guitar lessons on YouTube.

Darius

Darius is a twenty-four-year-old Black male multi-instrumentalist who currently resides in Los Angeles. After reviewing his comments on YouTube indicating his engagement with online lessons, I invited Darius to participate in this research study. He attributes his childhood experiences experimenting with the piano as the catalyst for his life-long musical interests. However, these musical interests were, at times, unfulfilled by his experiences within public school music programs. The first school he attended during his middle school years had no opportunities for instrumental musicians. Upon transferring to a different school that did have a music program, he encountered a different challenge. Despite the presence of a music program, he lacked the necessary support to catch up with his peers who had been developing their technical skills for years. To make up for the lack of support, he started using asynchronous lessons on

YouTube as a part of his practice routine. In addition to fulfilling the expectations of the concert band, he also found he was also able to satisfy his own interest in styles and genres with asynchronous lessons on YouTube.

Simone

Simone is a nineteen-year-old Black female vocalist and instrumentalist from New Jersey. Though she participated in vocal music ensembles exclusively from elementary school through high school, she wanted to explore instrumental music to occupy her time during the COVID-19 lockdown. Although her high school offered concert band and orchestra, she was not interested in playing a traditional concert band or orchestral instrument. Instead, she wanted to learn the ukulele. Before transitioning to online learning for the remainder of her senior year, her high school choir teacher lent her a ukulele, which she used for practice. Facing financial and logistical barriers, she began learning the instrument with lessons on YouTube. Her success with these lessons motivated her interest in playing the guitar, which she continues to learn with lessons on YouTube.

Vanessa

Vanessa is a Black female instrumentalist in the sixth grade at a middle school in New Jersey. She began learning the clarinet in the fourth grade through group pull-out lessons, which were offered by her school. She is also a member of the middle school band. Prior to the COVID-19 pandemic, she had used online lessons electively; however, due to state-mandated school closures, she also used online lessons compulsory. Vanessa's experiences were unique because of the manner in which she engaged with

elective lessons compared with the manner in which she engaged with compulsory lessons. Electively, she used asynchronous lessons on YouTube to satisfy her preference for aural learning and learning music from popular repertoire. Compulsory, she participated in synchronous lessons with her band teacher which reinforced notational literacy and rudimentary exercises from her method book. The participant found that synchronous lessons were less reliable than elective asynchronous lessons due to her poor Internet connection. Having returned to in-person learning full time, she continues to watch asynchronous lessons on her own time.

Jada

Jada is a Black female instrumentalist in the seventh grade. She is twelve years old and attends a middle school in New Jersey. She plays the saxophone in the concert band and was inspired by her mother and brother, both of whom also play the saxophone. She began learning the instrument in the fourth grade and has weekly in-school group pull-out lessons for 30 minutes. Before the COVID-19 pandemic and the resulting state-mandated lockdowns, she attended traditional in-person classes and had not participated in any elective online learning. However, due to the lockdowns and the transition to online learning, the Internet became a disruptive space for Jada, who faced issues of access. She described her music learning experience as literacy-focused, which did not offer opportunities for aural learning. As a student who prefers Western sheet music and in-person learning, the transition to online learning was only disruptive because of issues of access posed by the pandemic.

Everett

Everett is a thirty-four-year-old Black male multi-instrumentalist and currently lives in Detroit, Michigan. I invited Everett to participate in this study after reviewing his comments on YouTube which indicated his participation in online lessons. His grandmother, a former church pianist, introduced him to music and he inherited her piano after she moved. As a musician who prefers aural learning and performing, he felt isolated in the middle school band. Despite his popularity among his peers, performing popular songs by ear upon request, his band teacher publicly shamed him for not being able to read music. He was also dissatisfied with the genre of music the director programmed. To overcome these challenges, he turned to YouTube lessons, which helped him to satisfy his aural preference and to study the genre of music he preferred most. He also found that online lessons were a viable option for him to overcome the additional financial and logistical barriers he faced.

Imani

Imani is a twenty-four-year-old Black female multi-instrumentalist and vocalist from New York state. I invited her to participate in this study after reviewing her comments on YouTube suggesting that she was actively using YouTube lessons to learn her instrument. Her earliest musical experience was learning the violin in middle school. She participated in lessons provided by her school and played in the school orchestra. These experiences solidified her passion for music. However, after graduating and transferring to a new school district, she lost access to her violin, which had been lent to her by her former school, and her new school did not have an orchestra program. Later,

she became interested in learning the guitar. She received an acoustic guitar from as a gift from her mother for her fourteenth birthday. She began taking private guitar lessons, but her mother's financial barriers prevented her from continuing. In order to continue learning the guitar, Imani turned to free guitar lessons on YouTube. In addition to disrupting her financial barriers, she found that online lessons also helped her to disrupt schedule barriers and to study the genre of music she most preferred, which she found more interesting than the genre of music she studied with her private teacher.

Jaylen

Jaylen is a thirty-six-year-old Black male instrumentalist from Virginia. He was invited to participate in this research study after reviewing his comments on YouTube which indicate his participation in online lessons. He started piano lessons at the age of six with his church pianist. He also built relationships with three other church keyboardists, each of whom introduced him to new chords and jazz scales in an aural learning process. While his musical activity outside of school emphasized aural learning and performing gospel music, his school experiences emphasized notational literacy and classical music. Despite these differences, he found the school repertoire simple enough to learn and memorize, overcoming the need to read music. During his final two years of high school, after reviewing music college audition requirements, he began focusing on his notational literacy skills and classical repertoire. The church musicians began to help him meet these requirements, but this new focus on Western music traditions prompted him to turn to YouTube lessons to continue satisfying his personal interests in aural learning and performing and gospel music.

Research Question One: Thematic Analysis

Research Question	Themes
RQ1. What barriers, if any, do Black instrumentalists seek to disrupt through the use of asynchronous online instrumental lessons?	<ul style="list-style-type: none"> • School music programs failed to satisfy participants' genre preferences • Financial barriers limited participants' options for lessons • School music programs emphasized learning and performing with Western standard notation • Participants had no other options for learning their instrument

School Music Programs Failed to Satisfy Participants' Genre Preferences

All participants who were/are members of a school ensemble shared feelings of dissatisfaction regarding the repertoire and/or style studied and performed within their music programs. Subsequently, they implemented online lessons as a way to satisfy their personal musical preferences. After transferring to a new high school in Maryland, Sanai was eager to join its guitar ensemble. She was originally satisfied with the repertoire, which she described as “old R&B,” but, as her musical preferences expanded, she felt the repertoire no longer reflected her interests. She explained, “further on, it kind of did [bother me]. I was at a point where I kind of didn't really want to play certain music anymore. I wanted to, kind of like, you know, branch out and do my own thing.” Instead, she was interested in performing contemporary R&B, gospel, and funk. For Sanai, studying diverse musical genres was especially important to support her goal of becoming a performer. Citing the importance of versatility, she explained, “being a guitar player, you have to know a lot of genres and be a versatile player to get where you want to go.” Subsequently, she watched asynchronous guitar lessons on YouTube through

which she was able to practice the genres beyond the scope of her high school guitar ensemble. The first song she learned was “Sweet Home Alabama” by Lynyrd Skynyrd. Though her school music program did not centralize Western art music, Sanai’s school ensemble did not support the versatility she wished to develop, motivating her to seek outside resources on the Internet.

As a student, Darius was inspired by the popular music he heard on the radio, which he wanted to explore on the flute. This interest was often at odds with the “straight classical” repertoire the school band prioritized. As he entered high school, he found that his interest in popular music remained incongruent with the “mostly classical [repertoire]” of the wind ensemble. Though he “[tried] to stay away from classical music,” he felt coerced into a relationship with classical music. He explained, “they were like, ‘oh, [you play] flute?’ Yeah, you need to learn these things.” To satisfy his genre and style interests beyond the scope of the school ensemble, he watched asynchronous lessons on YouTube. Upon discovering a beatboxing flautist, he recalled being inspired by extended flute techniques:

I used to watch this [teacher on YouTube] – the beatboxing flute guy, and he would do all that, like, vocalizing. And I was like, ‘Whoa, that is what I need to do.’ And, like, he posted some tutorial videos, like ‘this is how you beatbox [on the flute]’ [and] ‘this is how you sing [while playing]’ ... Then I was like, ‘Okay, this is a thing I can do.’

Despite his passion for the flute, Darius’ school music program left him uninspired, motivating him to avoid classical music altogether.

Prior to COVID-19-related school closures, Vanessa's school band traditionally performed Western art music for their winter concert and popular music for their spring concert. This satisfied her genre interests, and, at this point, she had not felt the need to seek additional resources outside of school. However, once her school transitioned to online learning, the compulsory online lessons taught by her teacher began to prioritize technique and etudes found within her method books. She explained, "since we're not doing concerts this year due to COVID[-19], we really just been working on...our warm-ups in the book." In the absence of a spring pops concert, Vanessa was motivated to satisfy her interests in popular music and elected to watch online lessons on YouTube during her own time.

Vanessa's case is particularly interesting because she was originally satisfied by the repertoire performed within her school band ensemble; however, once online learning was implemented, its mediation introduced a new barrier that had not previously existed — a focus on the culturally irrelevant repertoire published in her method book. Vanessa's online band lessons primarily revolved around a program developed by the publisher of her method book. In essence, the program transposed the content of the tangible method book into an online format. Because Vanessa was uninterested in the book's original iteration, its digital iteration was similarly disinteresting. This reflects Christensen et al.'s (2008) critique that "most products that...[education companies have] produced attempt to teach students in the same ways that subjects have been taught in the classroom" (p. 65). As a result, she began to watch lessons on YouTube electively to satisfy her interests. This case reaffirms the notion that it is the mediation of technology which

determines its disruptive potential — not technology itself (Christensen et al., 2008). Her teacher's mediation of technology also reflected Loeckx's (2015) finding that music teachers do not yet use technology to improve student learning.

Everett also expressed dissatisfaction regarding the repertoire of his high school band. He recalled having a Black band director, whom he described as “old school.” While his director did not focus on Western art music, Everett recalled being bored by the “old” and “church-y” songs his director programmed, citing Bill Withers' “Lean on Me” as an example. Everett explained, “I didn't really like too many of the songs they were playing...I [was] young, so I probably needed something more hip, more fun.” Instead, he was interested in playing modern R&B and rock songs from the radio. This difference caused him to “drift off” and contributed to his decision to permanently leave the school music program. Though he had stopped making music in school, he continued learning with asynchronous lessons on YouTube, which he found more accommodating for satisfying his preferences. He explained, “if you know what kind of genre you want to do, it's kind of easy to find that path [on YouTube].” For Everett, the differences between his own musical preferences and the repertoire performed in his high school band led him to abandon the school music program entirely and satisfy his interests with online lessons.

Imani began learning the guitar in high school. Though she enjoyed her lessons, she “didn't quite prefer the repertoire” the teacher assigned, which she found “a little boring.” She recalled learning from a method book, which mostly included “traditional folk songs.” As a high school student, she enjoyed listening to Motown and artists like Taylor Swift and Justin Bieber — music she would have preferred to learn “to spark [her]

interest.” After a few months, she stopped taking lessons and continued to learn the guitar with asynchronous lessons on YouTube. She appreciated the diversity of genres available on YouTube lessons, which supported her goal to perform popular music. She explained, “when I was learning on my own on YouTube...I enjoyed it more when it was what I wanted to learn as opposed to just learning out of the book.” Reflecting on her high school experiences, she said she would have been more motivated from her lessons if the teacher had implemented popular music.

Jaylen’s musical preferences also differed from the repertoire prioritized in his school ensemble. He began studying the piano with the pianist at his church at only six years old. By middle school, he began accompanying church services and continued to do so through high school. During this time, he benefited from the guidance of two additional church musicians, each of whom introduced him to new skills and styles of music. These experiences cultivated his passion for jazz and gospel music; however, his school music and post-secondary music programs required different skills.

Jaylen played mallet percussion in the high school concert band. He described the repertoire as “mostly classical.” During his final two years of high school, he began to prepare for college. Planning to pursue a career in music entertainment, he reviewed college audition requirements, which also prioritized Western art music standards. In order to satisfy the Western art music-centric audition requirements, he and the church musicians modified the objectives of his lessons to build techniques associated with Western art music. Jaylen’s discovery of the obligation to develop technique associated with Western art music is reminiscent of Hess’ (2017) assertion that students of color

who are not experienced with Western art music may face a “close[d] door to higher education and a career in music” (p. 183). He recalled, “I didn’t have, like, any classical experience, so [the church musicians] just worked with me on the material I needed to learn to get through an audition to get into college.”

Though he had a successful audition, he described his experiences working to catch up with his peers who had spent their lives focused on Western art music:

Once I got into college...I was just catching up. I was waking up at 5:00 AM to hit the practice rooms to sort of catch up to all those other guys ‘cause college is really more classical, and I didn’t have a classical background...My first year...was me catching up to a lot of other musicians who have been studying classical and performance for their whole lives and I was studying more like church music and like improv.

Though Jaylen had assimilated in order to satisfy college audition requirements, he remained interested in the jazz and gospel music he originally discovered in church. Living on-campus and away from his church community, he sought other avenues to satisfy these interests, eventually discovering lessons on YouTube. Contrasting his musical experiences, he noted that his college music curriculum is composed of “lessons and trainings that the instructor chooses” while “YouTube lessons are...trainings and learnings that [he] choose.” He watched piano and organ lessons to satisfy his interests in jazz and gospel and eventually started exploring composition, arranging, and music production lessons. He cited an exhaustive list of YouTube musicians from whom he “learn[ed] a little from each” and touted the many opportunities to learn music from

online sources. He continued, “there’s so much [learning] opportunity [online].”

Subjected to the traditional expectations of his college music program, Jaylen found his interests reaffirmed with online lessons.

The collective experiences of these participants reinforce the notion that students are marginalized by school music programs which fail reflect the diverse interests of its members (Jorgensen, 2003; Myers, 2008; Sullivan, 2003; Wheelhouse, 2009). Their experiences further suggest that online lessons can be a valuable resource for musicians who wish to perform musical genres overlooked by their school ensembles. While Jorgensen (2003) suggested that students of color may be particularly marginalized by the dominance of Western art music repertoire within school music ensembles, it is interesting to note that, though this was true for several participants, two participants expressed dissatisfaction with R&B repertoire, which Sonnett (2020) found to be a genre highly preferred among Black listeners. For example, though Sanai’s band teacher programmed R&B music, she wanted to “branch out” from older R&B music. Instead, she preferred contemporary R&B. Similarly, Everett was not interested in the repertoire programmed by his “old-school” band director. Though his director programmed R&B music from the 1980s, Everett described the repertoire as “old songs” and preferred “something more hip.” As a result, both Sanai and Everett sought lessons on modern songs within those genres on YouTube. These findings suggest that musicians’ perception of musical relevance is likely influenced by both cultural *and* generational characteristics and reaffirm sentiment that teachers should avoid fixed representations of culture (Good-Perkins, 2021).

Financial Barriers Limited Participants' Options for Lessons

In addition to satisfying their genre interests, participants also sought to disrupt financial barriers through the use of online lessons. Such barriers had a considerable impact on Darius and his music education, even affecting the instrument he played. He shared, "I asked my dad for a saxophone. Next day, he comes home with a flute because he was like, 'it's cheaper.'" Though he could afford to purchase the school-required method books, the costs of private lessons were prohibitive. In the absence of school-provided lessons, Darius sought resources online. Eventually, he began watching free, asynchronous flute lessons on YouTube in order to accommodate his financial limitations, explaining that "YouTube was [definitely] an affordable alternative."

Simone's music education was similarly impacted by her socioeconomic status. She was introduced to the ukulele and guitar in high school. However, her school did not provide ensembles or lessons for students interested in these instruments. Deterred by the potential costs, she refrained from seeking private lessons because they "would probably be too expensive." Like Darius, she searched for online resources and began watching free, asynchronous lessons on YouTube, which she used to learn both instruments. In addition to YouTube lessons, she also enjoyed guitar lessons on Simply Guitar, a phone application which offers applied lessons for free. For expanded lesson features, users can upgrade to a paid membership. Simone noted that even the upgraded membership, which costs \$89.99 annually, is a more affordable option for lessons when compared with the recurrent costs of a private teacher.

Everett sought comfort through music following an emotional heartbreak. He thought learning an instrument would be a cathartic experience and help him recover. He found a guitar while browsing the local pawn shop and, though its condition needed repair, he purchased the guitar to keep his mind occupied. Though he could afford to purchase the guitar, paying for private lessons was not an option. Everett explained, “I had too much going on in my life to actually pay for real lessons.” Citing costs as a barrier, he searched for free lessons online, which he found were “easy to get your hands on.” As he became acquainted with YouTube teachers’ pedagogical styles, he developed an appreciation for one particular teacher. In addition to the free lessons the teacher published on her YouTube channel in an asynchronous format, she also offered synchronous online lessons for a fee. However, in response to the 2020 protests sparked by the murder of George Floyd, a forty-six-year-old Black man who was murdered by police in Minneapolis, the YouTube teacher offered scholarships for her free, synchronous online lessons. Everett reflected on the teacher’s initiative:

[She did it] for morale — letting people of color — letting them know that they’re being seen, especially when it comes to talent...I think [it’s just about] being seen, period. You know, with everything going on, [this is] a positive note — having something done for us. That made me feel happy because there’s some crazy times.

Despite receiving a scholarship, his busy schedule made participating in the synchronous lessons impossible. He explained, “she offered free lessons, and I was actually chosen, but I actually wasn’t able to attend [them] because I was working so much around the

time. I couldn't take the classes at all." Instead, he continued to watch her and others' lessons on YouTube in an asynchronous format.

Imani enjoyed the benefits of a well-resourced public school music program. Her middle school offered weekly pull-out lessons and boasted a large inventory of instruments, which they lent to students who needed. Imani joined the orchestra in the sixth grade as a violinist. She spent her entire middle school career with the orchestra, recalling that "those three years were amazing." However, upon graduating from the eighth grade and moving to a new school district, her musical goals were undermined by financial barriers. She had to return her school-issued violin, which her mother was unable to replace. She explained, "at that time, my mom didn't have enough financially to get me my own violin even though I did want to pursue it." By her fourteenth birthday, her family's financial situation had improved, and she was gifted a guitar. Though her high school music program did not offer applied instrumental lessons, she was able to enroll in lessons with a private teacher. After a few months, she had to withdraw due to financial barriers. She explained, "[after] three to four months...my mom said, financially, we couldn't afford it, but I didn't let that stop me from pursuing guitar." Like the other participants, Imani was determined to continue learning her instrument and sought lesson resources online. Upon discovering free lessons on YouTube, she recalled her excitement, saying, "free lessons — you don't find a lot of people that do free lessons [in-person]...so it's amazing that I came across [the instructor's YouTube] page." She explained that she "pursued [guitar] with YouTube videos" and "[taught herself] new melodies, making up chords." Despite financial adversity, Imani's passion for music left

her determined to continue learning music online.

For these participants, financial restrictions interfered with the possibility of traditional music lessons. This finding aligns with prior research which suggested that the financial obligations associated with instrumental music lessons are disproportionately burdensome for those from lower socioeconomic status (Stewart, 1991). For context, Darius, Simone, and Imani were all enrolled in the free or reduced-price lunch program during the time of their online lesson use, indicating their family's at- or near-poverty status (U.S. Department of Agriculture, 2019). Everett's participation in the free and reduced-price lunch program was unclear. These findings further reinforce the notion that online lessons provide an economic alternative to traditional lessons (Dye, 2016).

School Music Programs Emphasized Learning and Performing with Western Standard Notation

The expectation to read WSN within their school music ensembles was also a common motivator of participants' use of online lessons. For those with strong aural learning preferences, this expectation was a source of epistemological tension. While participants read WSN as a compulsory requirement within their school music programs, some watched online lessons in order to satisfy their preference for aural learning or the use of an alternative notation system.

Sanai joined concert band in high school. For members of the ensemble, WSN literacy was compulsory. Though she "had to learn how to read [Western standard] sheet music," she recalled her discomfort. She explained that, though she could read WSN, she was "no pro at that" and that it is "not [her] strong suit." Rather, she "[wrote] the letters

on top of the notes” while performing her band music. While her experiences in band required WSN literacy, she found that lessons on YouTube “helped [her] more,” citing their use of tablature and aural pedagogy. She described watching the lessons repeatedly and “trying to mock” them to learn the guitar solos. She explained that she used YouTube lessons to learn from memory and tabs, which “really, really helped.” For Sanai, YouTube lessons presented an opportunity to satisfy her aural learning preferences and avoid WSN.

Darius had a similar experience. After receiving his first flute around the age of 11, he was extremely excited to learn. He recalled listening to the radio and learning to play through repetition. Upon entering the seventh grade, he joined the school band as a beginner. Though he enjoyed learning and performing aurally, the band required WSN literacy. He recalled his frustration, explaining that “not everyone is trying to actually read [Western standard notation]...I just [wanted] to play the flute.” He described struggling in band, saying “when I was learning, I was like, ‘I can’t read music yet, like just give me the [letter names].’” Though he continued to play in the school band, he continued to satisfy his aural learning preference with lessons on YouTube.

Simone was introduced to WSN in her general music classes. She described her WSN literacy skills, saying “I can kind of read sheet music. It [takes] me a little bit longer to figure out.” Eventually she became interested in the ukulele and guitar and began watching lessons on YouTube. In these lessons, discovered tablature, which she found “much easier for [her] to figure out” than WSN. She also watched lessons on Simply Guitar, which taught chords with a numbering finger system. She described both

tablature and the numbering system as “very helpful.” Simone found these lessons “motivating” as they helped her learn more quickly.

From his earliest musical experiences, Everett learned and performed music “strictly by ear.” Throughout his time in the school band, he had experience with a variety of instruments, including the French horn, flute, and trumpet, all of which he learned and performed aurally. He was popular among his classmates in band, who made song requests for popular songs from the radio, which he performed by ear with ease. When asked how he navigated his aural learning and performing preference within the school’s literacy-centric band, he explained, “in class, I could hear it, and so I just made my flute sound like what they were playing.” As an aural musician within a literacy-centric ensemble, he experienced tension with his band teacher. Despite being able to perform the assigned repertoire by ear, the band teacher expressed frustration with Everett. He recalled, “my music teacher was always mad at me because I never actually learned [to read Western standard notation].” Everett said he was shamed in front of his peers after the band teacher “caught on.” He explained, “I was always playing by ear, so when he asked me, ‘Can you [read this]? Can you [read this]?’ I was like, ‘No, but I can make a sound.’”

This tension eventually caused Everett to leave the school band. Subsequently, he began watching lessons on YouTube, which he used to continue learning, avoiding the use of WSN altogether. He described learning strictly by ear and through observation. He explained, “I just [watched] what people do with the guitar and...make [those hand] shape[s].” He found guitar tablature simpler to read than WSN. Reflecting on his

experiences in the school band, though he was “kind of sad about it,” he takes pride in having learned by independently on YouTube. He explained, “nobody actually helped me [learn]. It [was] just me watching YouTube.” For Everett, his experiences with school music left him feeling shamed while he takes prides in having learned on his own terms.

Jaylen also experienced tension between his aural preference and the notational demands of his high school and college music programs. As a young pianist, he studied jazz and gospel music with musicians at his church, both genres of which he learned and performed by ear:

For church, it was all mostly by ear...you don't really have that sheet music. You just listen to [the songs you want to learn] on the radio or buy the CD and play it back a hundred times and start learning the chords, so a lot of my strengths are picking things up by ear.

Upon entering high school, he joined the band as a mallet percussionist. Having developed a strong ear, he recalled overcoming the band's literacy-centrism by memorizing the music. He explained, “a lot of [the band] music wasn't too complex...It's usually one or two notes at the same time...What I would do is pretty much memorize the music.” Though he was able to navigate his high school music career learning and performing by rote, his college music program demanded assimilation to WSN literacy, which he described as a “musical culture shock.” He recalled his astonishment watching his peers during an accompaniment class, questioning ““How can [they] sit there and play this thing like [they've] been playing it [their] whole [lives]? Like, [they] haven't seen it [before]. This is the first time they put [the sheet music] in front of [them].” Though he

remained in the college music program to completion, he satisfied his aural learning preferences elsewhere. He cited lessons on YouTube as a favorite source because it “offer[ed] both audio and visual non-sheet music learning.” Visual learning was an important variable in his learning style. He explained, “I really need the visuals, like, I need to see what they’re doing.” This need was satisfied with online lessons, which allowed him to “look at a player’s hands” and observe “the chords and [keys] that they play.” For Jaylen, YouTube was a resource to continue developing the aural skills he began developing as a child, which, unfortunately were not as valuable within his literacy-centric high school and college ensembles.

For Sanai, Darius, Simone, Everett, and Jaylen, the centrality of WSN within their school music ensembles represented a “disjuncture between school- and life-based musical activity” (Kelly-McHale & Abril, 2016, p. 163). In the absence of informal learning practices, which would have balanced participants’ preference for aural learning with the dominance of notational skills (Narita & Green, 2016), participants’ school music programs may have reinforced the narrative that those who “read musical notation are considered brighter or more musical than those who do not read music” (p. 306). These findings reinforce the notion that school ensembles which centralize WSN may be marginalizing for students of color (Hamilton, 2021; Hess, 2018). Having subsequently satisfied their aural and informal music learning preferences through the use of online lessons, these findings further support the notion that technology may support students who seek to avoid the use of traditional WSN (Louth, 2015).

Participants had no other Options for Learning their Instruments

Perhaps one of the most obvious barriers to instrumental music education students may face is attending a school in which there is no instrumental music program. Considering that, since the mid-1980s, “[Black] students have experienced reductions in arts education of 49 percent” (American Academy of Arts and Sciences, 2021, p. 7) and that Black students are half as likely to have access to arts education than are White students (Morrison et al., 2022), the representation of this theme among participants in this research study is no surprise. For participants who had no other options, online lessons were a valuable resource for learning one’s instrument.

Sanai was gifted a guitar for Christmas but had no local resources for learning how to play the instrument. Her middle school offered neither guitar lessons nor an ensemble in which she could participate as a guitarist. Her mother sought to enroll her in lessons with a private teacher, but she “wasn’t able to find a guitar teacher at the time period.” Left with no other options, she began to watch guitar lessons on YouTube. She explained, “I turned to YouTube because I felt like that was honestly the only thing that I would’ve been able to use [to learn to play the guitar]...I kind of honestly took it upon myself to try to find the best, you know, alternative route that I could to kind of really get to where I wanted to go.” She said YouTube lessons helped her “[learn] so quickly.” With no other resources, Sanai pursued her musical goals with lessons on YouTube.

Darius attended a middle school in Florida. Though he was interested in music, he “didn’t have a music program” during the first two years of his middle school career. Upon finishing his second year of middle school, his family moved to New York. While

his new school had a concert band, the new school did not offer lessons. He explained, “we didn’t have individual lessons back then. It was more like we were rehearsing in band and [we were expected to] go home and, like, learn the rest of it.” As a beginner in an ensemble with others who had played for several years, he noticed a difference between their abilities. He recalled, “[others were] already doing...All-County [Band]...[I was] just trying to learn a scale.” Though he characterized his skills as “on the lower side,” he was inspired by his peers’ success, motivating him to catch up. In the absence of an applied lesson program, he started watching lessons online. He identified two resources which had a significant impact on his growth as a flautist: YouTube, which he described as his “main source” for lessons, and 8notes, a website he used to find supplemental music theory resources.

Later in high school, Darius met a teacher who had previously played flute. Upon sharing his interest in auditioning for a performing arts high school, the teacher agreed to meet with him to give him some tips. This was his first experience with a live flute lesson. He said this was the “first time I actually had like a one-on-one [lesson] with someone.” Because this lesson was only a “one [time] encounter” rather than a long-term commitment, he described the lesson as an opportunity to discover where his weaknesses were so that he could improve with the lessons he found on YouTube and 8notes:

Having that like one-on-one thing, I was like, ‘Okay, this is what I should actually be learning,’ which I...took that back to my room like, ‘Okay, let me look up like *what is a bass clef? What is a treble clef?*’ You know, trying to like learn the whole thing [independently] after having like that one encounter of like what I

needed to work on.

Simone was briefly introduced to the ukulele in her high school choir class, which inspired her interest in the instrument. Though she was interested in learning to play the ukulele, the school offered neither lessons nor an ensemble in which she could participate as a ukulelist. Instead, the school offered concert band and orchestra programs. In the absence of other lesson options, she borrowed a ukulele from the school and searched for asynchronous lessons on YouTube. She recalled her determination, explaining, “I [knew] nothing — hadn’t played any string instruments. The only instrument I ever played in my life was like a recorder in elementary school, but I was...gonna try to learn this...I just looked up ukulele tutorials.” Using her phone and laptop, she searched for introductory lessons on YouTube which covered the basics — tuning, the instrument hold, and finger and hand placement. Eventually, she found a tutorial for “Lemonade,” the Jeremy Passion song which inspired her original interest. Upon meeting her original goal, her self-efficacy improved, which further motivated her use of YouTube lessons. She explained, “I was like, ‘Oh, I like this. I could do this. I could learn some more, you know, figure out more songs...[Learning that first song] made me look for more songs that could possibly be played on the ukulele.’”

The experiences of these participants reflect the notion that Black students are likely to attend schools with fewer musical opportunities (Costa-Giomi & Chappell, 2007). For these participants, online lessons provided an alternative for learning their instrument in the absence of other opportunities, supporting previous findings by Dye (2016), Hanson (2018), and Waldron (2012).

Summary

Online lessons were valuable disruptive innovations for participants, particularly when their school music programs could not satisfy their genre preferences, financial limitations restricted their lesson options, their school music programs emphasized WSN, or when no other learning options were available. For these participants, online lessons facilitated the flexibility of learning through their preferred genre, which some noted increased their motivation and interest. Online lessons also mitigated financial barriers and helped students with aural and informal music learning preferences learn on their own terms. Lastly, whether because a private teacher was unavailable or because their schools did not offer resources for learning their preferred instrument, some participants simply had no other opportunities for learning their instruments. For participants in this situation, online lessons provided a learning opportunity when no other option existed.

Research Question Two: Thematic Analysis

The previous section explored the barriers which motivated participants' use of online lessons. While the preceding themes had explicit intersections with critical race literature, the themes addressing Research Question Two do not share such racialized connections. However, the value of this ancillary question has implications for those producing online lessons. No matter online lessons' disruptive potential, users are less likely to adopt such innovations if they yield poor user experience (Davis et al., 1989; Davis, 1991). In the following section, I investigate the specific features of online lessons which impact participants' actual use. In response to Research Question Two, the following themes emerged:

Research Question	Themes
RQ2. What specific features of online lessons do participants find most impactful on one’s learning?	<ul style="list-style-type: none"> • Detailed views and multiple angles • Visual aids and digital effects • Use of a student model • Interactive communities • Asynchronicity

Detailed Views and Multiple Angles

As participants watched online lessons on laptops and phones with a screen only a fraction the size of a live person, it is no surprise that many participants identified detailed views and multiple angles as important features of online lessons. Upon reviewing a flute lesson, Darius found fault with its distant view. The teacher occupied a limited portion of the screen (see Figure 1), which prevented him from observing the technique in detail. Rather, he would have preferred if it were recorded “a little bit more up close to the flute.” The lesson was recorded from a front-facing angle for its duration, which he said might be adequate for “a flute player who already knew the fingerings;” for those who do not, the distant, single, front-facing angle did not allow users to clearly observe which keys were being used.

Figure 1*Asynchronous Online Flute Lesson with Distant View*

Note. From *Your First Flute Lesson* [YouTube video], by The Flute Channel, 2019, YouTube (<https://youtu.be/Jn8fQ-ZmvBE?si=2HNCQfokbrAZw1DE>)

Simone experienced the opposite problem. While reviewing a guitar lesson (see Figure 2), she found the lesson was filmed with a view so close that it prevented her from seeing all of the frets on the guitar fingerboard. Moreover, the closeness cropped the right hand from full view, preventing her from observing the strumming patterns. Simone suggested that this problem could have been rectified with the use of multi-angle shots (see Figure 3). She proposed, “[they] would help — seeing maybe one [angle] with, like, her fingers, and then another one with, like the strumming pattern.” The angle was also “a little low,” which prevented her from observing the proper finger placement. She explained, “[I want] to be able to see the tops of her fingers more to see exactly, like, to make sure her fingers aren’t pressing on any other [strings].” On a positive note, she found the view of the second tutorial (see Figure 4) satisfactory and commented, “I like how close the video was.”

Figure 2

Asynchronous Online Guitar Lesson with Near View



Note. From *John Legend – All of Me (Beginners') Guitar Lesson* [YouTube video], by

JUNO The Artist, 2014, YouTube

(<https://youtu.be/UxkGA8MoRQo?si=iVgT2VPmPaTzpDsD>)

Figure 3

Asynchronous Online Guitar Lesson with Multiple Views



Note. From *This Should Be Everyone's First Guitar Lesson* [YouTube video], by The-

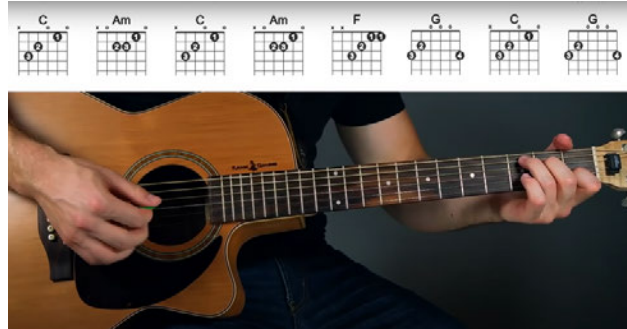
Art-of-Guitar, 2019, YouTube ([https://youtu.be/w4a2ge9N31E?si=aq2D-](https://youtu.be/w4a2ge9N31E?si=aq2D-YCTJWk0pjeM)

[YCTJWk0pjeM](https://youtu.be/w4a2ge9N31E?si=aq2D-YCTJWk0pjeM))

Figure 4*Asynchronous Online Guitar Lesson*

Note. From *How to Play You Got it By Vedo [R&B Guitar Tutorial]* [YouTube video], by Kerry “2 Smooth” Marshall, 2021, YouTube (<https://youtu.be/h6sofGeYLQs?si=LtT88-e2Z5cyXR6Y>)

Everett was highly critical of online lessons’ views and angles after an ambiguous view led him to learn a song incorrectly. He recalled, “there’s been times where I seen...videos and I didn’t know that my finger was, like, down a little bit further than [the teacher] really was.” Imani wished to see more correlation between the guitar teacher’s finger placement and the chord charts, which she believed was impeded by its distant view (see Figure 5). She explained, “he could have used the camera angles more to his advantage, like, zoom in on his fingers while the chord [chart] was there.” Despite the distant view, she was satisfied with the lesson’s use of multi-angle shots, affirming, “I do prefer the split screen.”

Figure 5*Asynchronous Online Guitar Lesson with Distant View*

Note. From *Hallelujah Guitar Tutorial (Jeff Buckley) Easy Chords Guitar Lesson*

[YouTube video], by 5 Minute Guitar – Kurt Berg, 2017, YouTube

(<https://youtu.be/DZCYaEU0Dnk?si=rpmzrHk237iXaCa0>)

While assessing an online piano lesson, Jaylen critiqued its substantial unused space, which he believed was an opportunity to include multiple angles. He explained, “[there was] a lot of space on the left side... [He could have used] that [space] for another thing — some type of another angle — maybe another camera image, maybe a shot further out.” In addition to being a practical necessity, Jaylen said detailed views and multiple angles also increase his engagement. He offered an analogy and explained, “if you watch a movie and the camera just stays in the same spot for two hours, you’re not going to sit through the two-hour movie — same with a ten-minute YouTube clip... Having the different cuts and angles — I like that.” For these participants, the detailed views and multiple shots of an online lesson were important factors when determining their likely use. Some found that distant views or single-angle shots did not allow opportunities for clear observation of the teacher’s technique. Others experienced

difficulty observing necessary details in lessons with angles which were too close. Multiple angles provided a comprehensive view of technique and helped to keep participants engaged in the lesson.

Visual Aids and Digital Effects

Video editing software has allowed media producers to apply digital effects in ways that best support the purposes of their videos. Many online lesson creators have realized their educational value and have since included visual aids and digital effects to reinforce the objectives within their lessons. For participants, online lessons with visual aids and digital effects were valuable resources.

Darius expressed a preference for online lessons which include a live fingering chart (see Figure 6). He explained, “you know, when you get rudiment books and they show you just, like, the holes, and, like, they have certain [keys] shaded? I would prefer that.” In such lessons, users need not pause the lesson to reference a fingering chart; rather, a fingering chart is provided and changes in real-time according to the notes required within a song. Vanessa also enjoyed lessons with live fingering charts. She explained, “[when] it shows the [fingering chart], it would help me figure out which notes is which.” She found this especially helpful for notes which require keys on the side or back of the clarinet, which she could not clearly observe by the video alone.

Figure 6

Asynchronous Online Flute Lesson with Live Fingering Chart



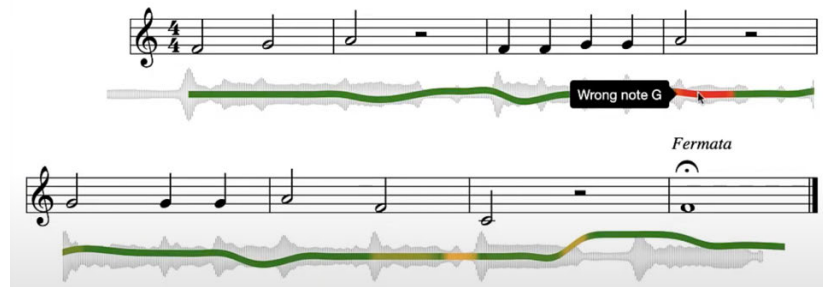
Note. From *How to Play Lovely ft. Khalid by Billie Eilish on Flute (Tutorial)* [YouTube video], by EasyMusicLesson, 2018, YouTube

(<https://youtu.be/ICrGA1HoFFM?si=imwIEFux119zVX4->)

Visual aids can also provide feedback. Recall that asynchronous lessons characteristically lack live instructors. Innately, this format makes it difficult for users to receive feedback. For Vanessa, visual aids and digital effects subsidized an opportunity for feedback, which helped her improve her intonation (see Figure 7). She explained, “when you have to play the note with it, that’s really cool, and...it’ll tell you if you’re too high or too low.” In this lesson (see Figure 7), intonation accuracy was represented by color. Green represented good intonation; yellow represented mediocre intonation; red represented poor intonation.

Figure 7

Noteflight Learn with Soundcheck™

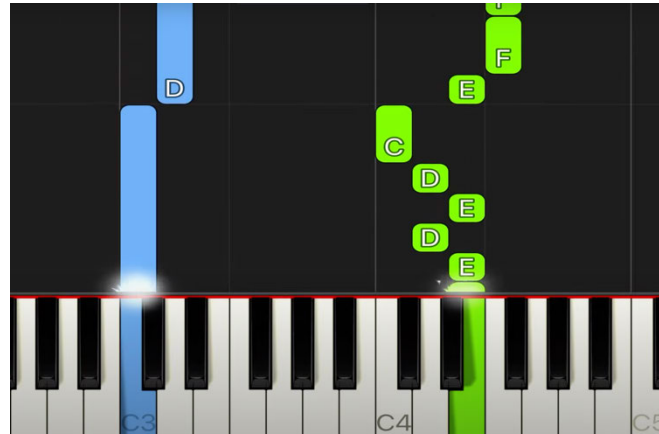


Note. From *Soundcheck™ Powered by MatchMySound* [Website], by Noteflight Learn, n.d., Noteflight (<https://www.noteflight.com/soundcheck>)

Vanessa found visual effects also helped her to reinforce her rhythmic accuracy. She explained, “when it shows you the keys, it also [represents] how long you hold it, or you just keep it regular, like one [beat].” Imani compared some online lessons to the popular video game *Guitar Hero*. In this game, using a guitar remote control, users employ hand-eye coordination skills to anticipate the arrival of the next note. Though the keys on the faux guitar controller do not accurately reflect the skills required for tone production on a real guitar, players’ rhythmic skills are exercised. Some online lesson creators have employed this aspect of the game into their online lessons (see Figure 8), which is a format Imani enjoyed. She explained, “I love *Guitar Hero*, the game, so I like that format...[It makes learning] a little more interactive and fun.” In Figure 8, the duration of the bass note is clearly far longer than the duration of the treble notes, all of which are represented by length.

Figure 8

Asynchronous Online Piano Lesson with Visual Representations of Note Duration



Note. From Bruno Mars – When I Was Your Man | SLOW EASY Piano Tutorial

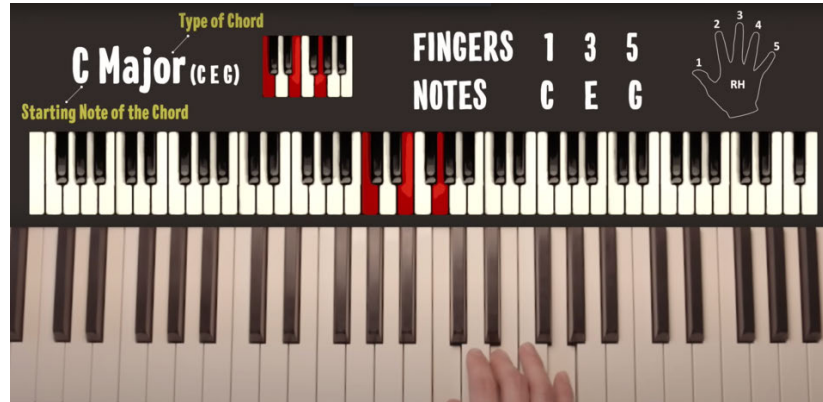
[YouTube video], by PHianonize, 2020, YouTube

(<https://youtu.be/Q20qXt3Yfqo?si=yohlXOvloAWTbNPV>)

Jaylen celebrated visual aids and digital effects as tools to increase engagement and satisfy diverse learning preferences. This was important to Jaylen, who described his learning preferences as ever changing. He explained, “sometimes, it’s like, ‘I want to see everything’...It just varies, and I think people learn differently.” When seeking to satisfy his visual learning preferences, he sought piano lessons with keys that light up in response to notes being used in a song. He explained, “sometimes, I’m like, ‘Yeah, just show me the piano and the keys lit up’” (see Figure 9). For visual learners like Jaylen, the highlighted keys were a clear representation of those on his own piano and organ.

Figure 9

Asynchronous Online Piano Lesson with Multiple Visual Aids



Note. From *How to Start Playing Piano or Keyboard // Complete Beginner Tutorial – Basic Technique and Exercises* [YouTube video], by Piano From Scratch, 2020, YouTube (https://youtu.be/a_kVafB-0C4?si=ESDL_bTCtahGSPIE)

For Darius, Vanessa, Imani, and Jaylen, video aids and digital effects were perceived as valuable features in online lessons. Such aids and digital effects served purposes such as clarifying fingerings, providing feedback on intonation and rhythm, increasing engagement, and reinforcing objectives for learners with diverse learning preferences.

Use of a Student Model

Some online lessons featured an instructor only while others also included a student model. In examples of the latter, the instructors introduced an objective and worked with the student model to accomplish the objective. While some participants found this format helpful, others found it distracting. Simone found lessons with student models “help a lot.” She said that observing instructors work with student models allows

her to assess the lessons' potential effectiveness. She explained, "I know that [the teacher's] a pro, but can [they] really help someone that's sitting right next to [them]?" She also enjoyed "seeing someone who's almost at [the] same level, kind of, and seeing [the teacher] work with them." Vanessa also found lessons with student models helpful. She cited their potential to increase her motivation, explaining, "[I'd] be like, 'Oh, if this student can do it, I can do it too.'" On the other hand, Sanai had also watched lessons with student models but found them distracting. She expressed, "I have watched tutorials with a student model, but I feel like it's not really helpful [because] you have other people that are trying to learn, and they don't really know exactly what they're trying to do." Jaylen similarly found the use of a student model distracting. He remarked, "It almost doubles the watch time because [the teachers] have to teach it and then they're helping someone do it on the spot." Everett's attitude towards a student model was conditional. For lessons with objectives complementary to his current skill level, he preferred online lessons without a student model; however, he saw value in the inclusion of a student model for lessons with advanced objectives or in the context of lessons taught by teachers who tend to "[move] a little too fast."

Participants' attitudes regarding this specific feature were quite mixed. While some found the use of a student model helpful, others found it distracting. Further compounding theme, some participants' attitudes towards the use of a student model depended on the exact content and skill level of the lesson.

Interactive Communities

All participants watched online lessons in an asynchronous format. A reminder, lessons in this format lack a live instructor, which, consequentially limits opportunities to ask clarifying questions or seek feedback in real time. Despite this limitation, participants found online lesson platforms with interactive communities helpful for facilitating feedback. After learning a song from an asynchronous online lesson, Darius recorded his progress. He posted his performance to YouTube, prompting others to respond with feedback. He recounted, “I would...record a video myself and [users would] comment, like,... ‘You’re super quiet...play out more.’” This feedback subsequently guided his practice routines and performance objectives.

Though users may comment on video lessons to seek feedback from teachers directly, some participants found that teachers were less responsive than peer users. Particularly in these cases, participants found interactivity facilitated prompt feedback. Imani sought teacher feedback regarding the technique introduced in an online lesson. Though the teacher “eventually got back to [her],” she found that the interactivity with peer users expedited her inquiry. She explained, “the YouTube community was a little more responsive than the teacher.” Jaylen also shared that he, sometimes, “can’t get in touch with [the teacher].” Instead, he sought feedback from peer users. In these cases, interactivity among online lesson users promoted clarity and formative feedback.

Having watched lessons on GuitarTuna, which does not support user interactivity and YouTube, which does support user interactivity, Everett compared his experiences. He raised concerns with GuitarTuna’s lack of interactivity, citing the potential to develop

unhealthy technique in the absence of feedback. He explained, “When you play guitar, you don’t want those strings to buzz. [If they do,] you’re obviously doing something wrong. A lot of people might not know that.” Conversely, the community interactivity on YouTube allowed him to seek and provide feedback. The experiences of these participants unanimously identified interactivity within online lesson platforms as positively impactful, particularly when seeking feedback and clarification.

Asynchronicity

Participants expressed several benefits of online lessons in an asynchronous format, including accommodating their limited availability, the benefit of unlimited review, and satisfying their pacing preferences. In addition to facing financial limitations, Simone’s limited availability made synchronous lessons impossible. She explained, “I [don’t] have time to meet with somebody face-to-face [for lessons].” Rather, her use of asynchronous online lessons accommodated her schedule, which sometimes only allowed for practicing in the middle of the night. She shared, “I can use [asynchronous lessons] whenever...I can just do it in my free time...like at 2:00 AM.” Imani and Jaylen also found asynchronous lessons valuable in accommodating their schedule. In addition to financial barriers, Imani expressed, “time [was] one of the biggest [motivators]” for her use of asynchronous lessons. She explained, “time is very valuable and these YouTubers that do online lessons are so helpful.” Jaylen is a frequent traveler and appreciates that online lessons accommodate his schedule. He shared that asynchronous lessons are “more convenient” and that he can “save time” watching lessons as he travels. He explained, “I could download a [lesson] offline and...be on a plane or something...[and] learn that

way.” These accounts reflect the benefits of YouTube lessons highlighted by Hanson (2018), who found that online lessons offer “24/7 access” (p. 140).

Participants also enjoyed that asynchronous lessons facilitated opportunities for unlimited review and satisfied one’s pacing preference. Simone compared her synchronous learning in school with asynchronous learning in online lessons. She said that, in school, the pace of classroom lessons depended on the progress of her peers. Conversely, with asynchronous lessons, she contrasted, “I would learn [songs] more quickly through YouTube just because I can go at my own pace, fast-forward through the parts where I’m like, ‘alright, I already know how to do this. I got this. Let me just work on this one section that I don’t know.’” Jaylen and Imani shared similar sentiments. Jaylen shared, “[I can] work at my own pace.” Imani suggested that asynchronicity allowed her to target specific parts of lessons where she may need more practice. She explained, “that’s what helps me...being able to pause and then go back.” Sanai echoed, stating that “If I didn’t get it [at first], I went back and watched the video until I actually got it.” Christensen et al. (2008) alluded to these benefits, asserting that online learning “accommodates different paces of learning” (p. 91).

Conclusion

The findings associated with Research Question Two indicate that online lessons’ technological features play a crucial role in shaping users’ perceived usefulness and their subsequent utilization. Specifically, participants expressed their attitudes towards detailed views and multiple angles, visual aids and digital effects, the use of a student model, and the capacity for interactive community features, and asynchronicity. Some participants

expressed that detailed views and multiple angles facilitated opportunities for clear observation. Conversely, when such a standard was lacking, some participants shared that poor angles had the potential to undermine their learning process. Multiple angles were also valued as features which improved engagement. Online lessons which included visual aids and digital effects, such as a live fingering chart or intonation gauges, supported participants' diverse learning styles and provided additional tools for clarity. Similar features were generally perceived to have a positive impact on one's learning. While participants nearly unanimously cited the use of detailed views, multiple angles, and visual aids and digital effects as having a positive impact on one's learning, participants' attitudes towards the use of a student model were mixed. While some found this feature positively impactful, others found this distracting. For some, the use of a student model was perceived to be positively impactful when watching an online lesson in which the teacher's skill was perceived to be advanced or in the context of a teacher whose pacing was too quick. Some described this feature as negatively impactful if the content of the lesson was complementary to the participant's current skill level. Of respondents who mentioned interactivity within online lesson platforms, this feature was celebrated for its role in facilitating feedback, whether from teachers themselves or peer users. Lastly, some participants noted that the convenience of lessons in an asynchronous format provided opportunities for unlimited review and satisfied pacing preferences.

CHAPTER FIVE: ANALYSIS

In the previous chapter, the findings suggested that participants sought to disrupt epistemological and socioeconomic barriers through the use of online lessons. Their use of technology in this manner represents the emancipatory mediation of technology discussed by Louth (2015) and suggests that, in addition to the church and community (Carter, 1993; Hendry, 2023) Black music students experiencing marginalization within the music classroom might also find their musical interests validated through technology. In the following section, I explicate these research findings within the context of the theoretical literature.

Online Lessons Support Musicians Interested in Learning Genres Beyond Western Art Music Repertoire

The most salient reason participants cited for seeking disruption with online lessons was dissatisfaction with the repertoire emphasized within their school ensemble. For example, Darius shared his desire to “stay away from classical music.” Similarly, Jaylen, who had focused on gospel music prior to participating in school music, described being surrounded by peers who had been “studying classical [music]...their whole lives” as a “musical culture shock.” Imani described the repertoire in her method book as “boring.” For similar students whose interests are at odds with standardized curricula, Christensen et al. (2008) suggested that disruptive innovation in the form of online learning may be manifested in order to “customize...education to match the way each child learns best” (p. 10). Participants’ use of online lessons to customize the repertoire through which they learned their instruments reflect this mediation of technology.

Considering the diversity of genres available within lessons posted on YouTube (Schmidt-Jones, 2021), it is no surprise that participants were able to customize their learning and satisfy their interests on YouTube. As Everett explained, “if you know what kind of genre you want to do, it’s kind of easy to find that path [on YouTube].” Jaylen compared his experience in the school band as “trainings and learnings that the instructor chooses [while] YouTube lessons are more trainings and learnings that I choose.” Imani also appreciated the ability to customize the genre through which she learned the guitar. While her private lessons followed a method book curriculum composed of etudes and folk songs, she watched lessons on YouTube to learn songs by Taylor Swift and Justin Bieber. She explained, “when I was learning on my own on YouTube...I enjoyed it more when it was what I wanted to learn as opposed to just learning out of the book [with my teacher].” Darius similarly used online lessons to satisfy his genre interests. As a musician who “[tries] to stay away from classical music [and] gravitates...towards contemporary [music],” he was uninterested in the “straight classical” repertoire performed by his school band. As a result, he began watching lessons on YouTube. After learning to play songs by Adele, he began to use YouTube lessons routinely. He exclaimed, “I was all about YouTube. That was like my main source of like [learning].” These data reflect Louth’s (2015) vision that technology is a useful tool for musicians who seek to learn and make music without having to subject oneself to traditional Western art music.

Online Lessons Support Musicians Seeking to Learn their Instruments without Western Standard Notation

In addition to satisfying one's genre preferences, participants also used online lessons in order to satisfy their preferences for informal music making and learning, including aural and observational learning. This preference was often left unsatisfied by their school ensembles, which generally prioritized WSN. For example, Darius explained that, although his band teacher emphasized WSN literacy, "not everyone [shares the goal] to actually read music." Sanai also "had to learn how to read [Western standard notation]" in band, which was "not [her] strong suit." Everett shared that his band teacher was "always mad" at him because he "never actually learned [to read Western standard notation]." Their experiences reflect the notion that, despite the fact that musicians who prefer popular music genres "rarely use music notation" (Green et al., 2017, p. 29), notational literacy is prioritized school music ensembles in the United States (Brothers, 1997).

Instead, participants commonly preferred to learn through observation or aurally — learning through "listening and repetition" (Brown, 1973, p. 15). This finding reflects Hanson's (2018) assertion that YouTube "facilitate[s] communities of aural and observational learning" (Hanson, 2018, p. 139). Darius recalled watching YouTube tutorials "to mock and see how they were able to do the solos." Vanessa described learning songs with YouTube tutorials "listen[ing] to the song over and over again." She explained, "I was just playing the notes trying to find out which one goes with the song." Everett used YouTube videos to "watch what people do with the guitar and...make [those

hand] shape[s].” Jaylen, who excels at “picking things up by ear,” celebrated the aural and visual music lessons on YouTube, exclaiming, “YouTube offers both audio and visual non-sheet music learning. I can look at a player’s hands if there’s a camera on their piano or hands.” These accounts reflect Bolton’s (2008) suggestion that “[technology] allows musical concepts to be easily accessible, visually and aurally, without the need for...music notation” (p. 44).

It is important to clarify that, although the use of the verb “watch” in this context naturally precedes engagement with online lessons, it does not strictly imply purely visual learning. In reality, applied instrumental lessons in video format often employ aural learning methods (Hess, 2020; Kruse & Veblen, 2012; Waldron, 2012). Kruse and Veblen (2012) found that, of the YouTube lessons they analyzed, “100 percent of the videos included some form of aural reinforcement or modelling” (p. 83). Further, they found that many instructors employed aural repetition “as the predominant tool for teaching” (p. 83). Hess (2020) solidified this point, noting that “video sites such as YouTube take informal learning to the next level” (p. 446) and that “learning by imitation in this manner aligns with aural approaches to music learning” (p. 446).

While most participants shared a preference for learning and performing without the use of WSN, some preferred an alternative notation system instead. Sanai shared that “learning tabs really, really helped” her learn guitar. Everett compared guitar tablature with WSN, explaining, “It’s not the traditional line-by-line. They have dots to make it a lot easier.” Simone said, despite being able to read WSN, “it would take [her] a little longer to figure out” and that “chord tabs [are] easier” for her to use when learning new

pieces. All three participants used YouTube lessons with guitar tablature to learn. These data reaffirm the idea that online lessons hold the potential to “emancipate students from...the theoretical rules of Western art music by avoiding the issue of notation altogether” (Louth, 2015, p. 479).

Online Lessons help Musicians Overcome Nonconsumption

Christensen et al. (2008) coined the term *nonconsumption* to refer to situations in which students experience a lack of access to education. While the compulsory nature of public schools in the United States may lead one to believe that nonconsumption is a non-issue, Christensen et al. (2008) suggested that nonconsumption typically occurs in “nice-to-have courses” (p. 93) like art and music due to their elective nature. For students in similar situations, Christensen et al. (2008) proposed that online learning may help students overcome nonconsumption. For participants in this study, nonconsumption resulted from either socioeconomic factors or due to attending a school without access to a music program and/or private lessons. In either case, online lessons helped these participants overcome nonconsumption.

Several participants cited the costs of private lessons as a key factor contributing to their nonconsumption. For example, Simone shared that private lessons would “probably be too expensive” while Everett “had too much going on...to actually pay for real lessons.” Imani had unenrolled in private lessons after her mother “couldn’t afford it.” Recognizing that the costs of private lessons pose “an array of added expenses that could contribute to unequal access” (Bates, 2012, p. 34), music education researchers have expanded on the notion originally put forth by Christensen et al. (2008), suggesting

that online lessons represent an “accessible and economical method of bringing together instructor and student” (Dye, 2016, p. 169). Cayari (2019) highlighted YouTube as one such resource, noting that lessons are “available for free in tutorials on YouTube” (p. 224). Thus, YouTube is an especially useful online lesson resource when “socioeconomic restrictions would make it difficult to find a suitable instructor otherwise” (Rudolph & Frankel, 2009, p. 15). These notions were realized by participants within this study who overcame nonconsumption through the use of online lessons despite their socioeconomic barriers. As Imani explained, “you don’t find a lot of people that do free lessons [in person],...so it’s amazing that I came across [the instructor’s YouTube] page.” The participants’ use of online lessons reaffirms previous research suggesting that online lessons may help rectify nonconsumption due to socioeconomic barriers (Dye, 2016; Hanson, 2018).

An additional reason participants cited for nonconsumption was due to attending a school without a music program and/or private lessons. For example, before moving to New York, the middle school Darius attended in Florida “didn’t have a music program.” Simone’s school offered band and choir classes; however, she was interested in learning the ukulele and guitar. Similarly, Everett wanted to learn to play the guitar, but his school only offered concert band and choir. Sanai described her family’s socioeconomic status as a privileged, explaining that her family “had a little bit of money;” however, she attended a school without a music program and “wasn’t able to find a [private] guitar teacher at the time period.” Recognizing the “diminishing supply” (Christensen et al., 2008, p. 93) of arts electives, Christensen et al. (2008) suggested that online learning is a

“solution when the alternative is to forgo learning the subject altogether” (p. 93). For these participants, online lessons were the *only* resource for meeting their personal learning goals. As Sanai explained, “I kind of feel like the only reason why I turned to YouTube was because I felt like that was honestly the only thing that I would have been able to use...to really...get myself where I wanted to go.” Similarly, Darius explained that YouTube was his “main source” of learning during his first few middle school years. Everett attributed his skills solely to his experiences with online lessons. He explained, “nobody actually [taught] me guitar — just YouTube.” Recognizing YouTube’s popularity among musicians interested in learning the ukulele (Davis et al., 2019) and guitar (Hong et al., 2016), Simone overcame nonconsumption with online lessons. These accounts reaffirm the notion that online lessons are valuable resources for students experiencing nonconsumption due to lack of availability.

Conclusion

While the participants enjoyed the emancipatory potential of technology, these research findings should not be mistaken as a solution which absolves music education stakeholders and policy makers of the obligation to remedy an unjust system. Though some policy makers in the United States have suggested replacing live teachers with online learning resources (Ujifusa, 2016), even Clayton Christensen, the originator of disruptive innovation theory, insisted that online education should not be viewed as a replacement for high-quality, live instruction (Christensen et al., 2008).

Instead, while musicians satisfy their own interests through the use of online lessons, music education stakeholders must enter an era of transition, working to make

music classrooms more accessible for all students. To invoke the concept of interest convergence, the COVID-19 pandemic has resulted in fewer financial and personnel resources, leading to cuts and reductions to music education classes (Barusch, 2020; Biasutti et al., 2022). Bluntly, common sense suggests such volatility may also undermine job security. However, advocating for the sustainability of music education may be much simpler if music education classrooms were more representative of the interests of all our students. As Talbot (2017) aptly explained, “advocacy for our field would not be necessary if the broader population felt the work we did as music teachers represented and reflected their identities and daily lives” (p. 6). This context highlights the converging interests among all music education stakeholders in committing to more equitable, representative music education curricula.

CHAPTER SIX: CONCLUSION

The phenomenon of interest in this study was the underrepresentation of Black students within public school instrumental music programs and the subsequent uses of disruptive innovation to disrupt the epistemological and socioeconomic barriers which reinforce this phenomenon. Through a critical race perspective, several likely contributing variables emerged, including the disproportional burden of poverty within Black communities juxtaposed with the financial demands of participating in instrumental music, the potential incongruence between students' musical preferences and the emphasis on Western art music within school music programs, and an emphasis on WSN literacy. Building on this understanding, I employed the theory of disruptive innovation in order to investigate the potential to disrupt such barriers through the use of technology. The purpose of this study was to investigate what barriers, if any, Black instrumentalists sought to disrupt through the use of (a)synchronous, online lessons and which specific features of online lessons Black instrumentalists find most impactful on one's learning.

The findings of this study suggest that technology has been an effective disruptor for Black instrumental students who seek to overcome socioeconomic and/or epistemological barriers present within their school music programs. Specifically, participants were able to study their preferred musical genres, overcome financial barriers and schedule limitations, satisfy a preference for aural learning, and create opportunities for learning their instrument when no other opportunities existed. Regarding participants' preferences for technological characteristics, participants found online lessons with

detailed views and multiple angles, visual aids and digital effects, the use of a student model, and interactivity important characteristics most impactful one their learning.

Such findings make important contributions to critical race and disruptive innovation literature within the field of music education. They corroborate prior knowledge and expand upon the current body of literature by providing new insights regarding the intersection of race, technology innovation, and music education. These findings have implications regarding future curricular and pedagogical policies as they relate to race and equity. In the following section, I discuss the significance of this study as a contribution to critical race and disruptive innovation literature and introduce the potential application of its findings and limitations and proposes recommendations for future research.

Contribution to Critical Race Literature

As there has been “very little” written regarding the “[absence of] African American students from music programs” (Gustafson, 2009, p. xii), this study contributes to filling that gap. Because it may be difficult to advocate for marginalized students when research on such topics is sparse (Bulgozdy, 2020), contributing to filling this gap serves the more profound purpose of supporting the pursuit of a more equitable music education system. In other words, understanding *why* students may be absent from instrumental music programs supports understanding *how* to address the issue. This study reveals interesting insights regarding the *why*.

Through the practice of counter-storytelling — a central tenet of critical race theory which “[desilences] marginalized individuals” (DeCuir & Dixson, 2004, p. 27)

and “[helps] us understand what life is like for others” (Delgado & Stefancic, 2001, p. 41) — this study highlights experiences of Black musicians who experienced social, socioeconomic, and cultural barriers within public school instrumental music programs, which, for some, contributed to their absence from school music programs. Such perspectives corroborate prior critical race research which found that pedagogy, curriculum (Brown, 2010; Murray, 2018), and education funding (Ireland, 2016; Ladson-Billings, 2009) are all variables which have the potential contribute to the marginalization of Black students (Ledesma & Calderón, 2015).

Scholars have suggested that marginalized communities should strive for greater representation in all areas of society, including within education (Delgado, 2009). Despite such calls, the experiences of participants within this study suggest that systemic barriers in public school music education programs persist, which undermines the potential for such increased representation. In order to support increased representation in instrumental music programs among marginalized communities, the findings from this study may be used to develop more equitable, race-conscious (Banks et al., 2005) music education curricula. Such curricula might prioritize the inclusion of culturally relevant repertoire (Bulgozdy, 2020), increased opportunities for informal learning experiences (May, 2005; Wiggins & Bey, 2022), including aural learning and performing opportunities (Bradley, 2015, p. 197), the establishment of diverse instrumental ensembles (Powell, 2021), increased access to lessons (Anderson, 2018), and equitable policies designed to ease the financial burdens associated with instrumental study (Kinney, 2010).

While this study focused on ways in which Black instrumentalists satisfied their

musical needs through online lessons, it is important to note that some have just as well accomplished the same in other spaces, such as in church or at home. One participant, for example, was able to satisfy his musical needs in church as well as through online lessons. Future research may investigate other spaces in which traditionally marginalized students seek musical liberation, their motivation for doing so, and the implications such findings have on making public school music education curricula more accessible for all students.

Contribution to Disruptive Innovation Literature

This study also contributes to disruptive innovation literature. The findings corroborate prior disruptive innovation literature which suggest that, through the use of technology, users may overcome practical barriers such as affordability (Christensen et al., 2008) or lack of availability (Horn & Staker, 2015). This study also expands upon disruptive innovation literature by demonstrating that, in addition to disrupting practical barriers, users may also disrupt complex social and cultural barriers through the use of technology. Considering that online learning, in general, is “relatively underinvestigated” (Loeckx, 2015, p. 22), this specific research topic — technology and its potential to disrupt social and cultural barriers within music education — is quite niche. While Louth (2015) suggested that technology may support music students who wish to emancipate themselves from the paradigms associated with Western art music, comprehensive studies detailing the accounts of musicians who have done so have not yet adequately permeated music education literature. As this specific area of research remains underinvestigated, further research should focus on how technology may support other

traditionally marginalized groups in similar ways.

A secondary objective of this study was to investigate the characteristics of online lessons which are most impactful on one's learning. This information is important because such findings may be used as a framework to develop more effective online lesson curricula. For those who wish to pursue such a task, perhaps it may be best to incorporate the findings from both research questions into the design of online lessons. In other words, effective online lessons might not only include impactful characteristics but should also reflect students' diverse epistemological needs. For example, such online lessons might enable a plethora of technological features which may be activated or deactivated as if turning subtitles on a movie.

Despite these exciting findings, we must confront an obvious issue: Access to technology is a prerequisite for those who wish to enjoy its benefits. Unfortunately, those who stand to benefit most from technology's disruptive potential are also those least likely to have access to it (Auxier & Anderson, 2020). As such, it is important to not only acknowledge technology's disruptive potential, but also to advocate for increasing access to technology. Future research may contribute to this cause by continuing to examine technology and Internet access as it compares to race and socioeconomic status. Such data will be powerful statistics when advocating for increased access.

Limitations

Despite careful methodological design, this study is limited by its minimal sample size. Due to the highly specified population required and the potential for sociocultural variables to influence the outcomes of the study, I employed purposive sampling methods

(Andrade, 2021). However, its use typically yields fewer sample sizes (Bakkalbasioglu, 2020). Due to such limitations, the results of this study should not be generalized to a larger population. Perhaps further research should be designed with methods which may be generalizable to assess statistical patterns of such marginalization.

Implications for Stakeholders

Though the participants within this study had successfully disrupted socioeconomic and epistemological barriers through the use of online lessons, it is important to reflect on the implications the research findings have for music education stakeholders. The following section discusses the implications such findings have for music education stakeholders and proposes potential changes in both policy and practice which may help to rectify the educational inequities explicated within this study.

Implications for Public Policy Makers

While socioeconomic barriers motivated some participants to seek free, online lessons, an interesting implication emerges upon analyzing the experiences of those whose low socioeconomic status *did not* necessitate disruption through online lessons. Consider Vanessa and Jada for example. Both participate in the free and reduced-price lunch program, which indicates they are at- or near-poverty status (U.S. Department of Agriculture, 2019). Both also reside in a New Jersey city where residents experience poverty at 33.6% (U.S. Census Bureau, 2022). Despite these socioeconomic conditions — which prior researchers suggested undermine the likelihood of having access to a music program and/or private lessons (Elpus & Abril, 2019; Hamilton, 2021; Stewart, 1991) — neither Vanessa nor Jada cited financial barriers as a reason for using online

lessons. In fact, both have access to weekly small-group lessons and are lent a school-issued instrument.

To understand this discrepancy, it is important to consider the 1985 New Jersey Supreme Court case *Abbott v. Burke* (Tractenberg, 2013). In this case, referred to as “the most important education litigation for poor and minority schoolchildren since *Brown v. Board of Education*,” (Arocho, 2012, para. 2), plaintiffs argued that the state’s education funding model was unconstitutional. Specifically, they argued that “low-income, mostly minority urban students...[received] less funding for their educations than students, typically more educationally advantaged and mostly white, in the suburbs” (Tractenberg, 2013, p. 197). The court ultimately ruled in the plaintiffs’ favor and ordered the New Jersey State Legislature to rectify school funding legislation in order to adequately serve the 28 school districts cited in the case. Vanessa and Jada’s school district is one of these original 28 school districts. This reinforces the notion that equitable school funding is one important variable when it comes to reducing the impact socioeconomic status has on educational opportunities (Kozol, 2012). For Vanessa and Jada, equitable school funding ensured their access to lessons, thus avoiding the need to disrupt financial barriers. Public policy makers can help soften the academic impact of poverty by advocating for legislation which seeks to accomplish equitable school funding.

Implications for Music Educators

Although participants have indeed disrupted epistemological barriers through technology, it is essential to acknowledge that technology itself is a neutral educational tool (Cuban, 2001). Online lessons may just as well contribute to feelings of

marginalization among music students. As Louth (2015) explained, the potential of music technology to either empower students or to reinforce inequities depends on the curricula such technologies embody. Rather, it is the *mediation* of technology which determines its emancipatory potential (Louth, 2015).

This nuance is important because, upon assessing participants' use of technology, it becomes evident that the curricula sought by participants within online lessons mirror the recommendations made by researchers for music educators seeking to improve equity and accessibility within their classrooms. For example, many participants used online lessons in order to satisfy their genre and/or aural/observational learning preferences, which mirrors the informal learning practices proposed by Narita and Green (2016). The authors explained that informal learning differs from "authoritarian models" (p. 305) by encouraging students to "take an active role in controlling their own musical practices and learning processes" (p. 305). They suggested that one way this may be accomplished is by allowing students to choose the repertoire through which they learn and counterbalancing "the dominance...of musical notation skills" (p. 306) with "oral-aural learning" (p. 306). This observation indicates that music educators might prevent the very epistemological barriers that motivated participants to seek disruption in the first place by reconceptualizing their pedagogical content and methods, aligning them more closely with the needs and preferences of the students they serve.

Implication for Music Education Researchers

As technology permeates music education, I am concerned by researchers' calls for sterility and careful curation of online lessons. Hanson (2018) warned of "both valid and invalid [online resources]" (p. 140). Whitaker et al. (2014) suggested that teachers should "[closely examine] the [online] instructional content and methods prior to students being exposed." More boldly, these researchers suggested that music teachers may want to "control the content of the majority of [YouTube's music education] video postings" (p. 56). While these suggestions may be well-intentioned, it is important to acknowledge that assessing the validity of an online lessons through the epistemological standards traditionally associated with Western art music may unintentionally reinforce barriers for self-motivated music learners (Schmidt-Jones, 2021). We must be cautious that warnings of musical invalidity (Bradley, 2015) do not become the 21st century digital version of 20th century assertions of the need to "safeguard the children from hearing and learning music of unworthy character" (Giddings, 1912, p. 15). Given the field's history of disparaging non-Western art music epistemologies, we should be cautious not to colonize online spaces. After all, some musicians have turned to these spaces precisely because their musical needs were unmet within formal music education spaces (Dye, 2016; Partti & Karlsen, 2010).

Implications for College of Music Education Administrators

It is important to acknowledge the power higher education institutions hold in (de)legitimizing knowledge and shaping the norms within our society. As Williams (1973) explained, colleges and universities are "the main agencies of the transmission of

an effective dominant culture” (p. 9). The same is true of music teacher education programs; however, researchers suggested that their curricula and admission requirements perpetuate the cyclical hegemony we observe within public school music education programs today. Wang and Humphries (2009) found that, because “Western art music...predominate[s] in American music teacher education programs” (p. 25), music teacher candidates receive “limited training...regarding the musical practices and traditions of cultures outside Western [art music] traditions” (p. 14). In fact, Wang and Humphries (2009) found that music education candidates in one music teacher education program spent nearly 93% of their studies focused on Western art music styles. As a result, some music teachers report feeling “unprepared to teach students whose racial identities differ from their own” (VanDeusen, 2021, p. 122). Koza (2008) asserted that music colleges’ audition requirements are so inherently connected to Whiteness that their audition requirements yield racial discrimination by default. As discussed earlier, both aural and notated music making and learning have deep racial and ethnic connections (Brothers, 1997), yet music college audition requirements typically “discount genres having deep roots in non-White musical traditions” (Koza, 2008, p. 149). For example, Hess (2018) explained, “a postsecondary music [program]...will not accept an aspiring Gospel singer with [fifteen] years of experience singing at a local church unless that singer can also demonstrate mastery of Western classical styles and notation” (p. 332). Shaw (2012) similarly warned that, without WSN literacy, students may be denied access to college music programs. This scenario was a reality for Jaylen, who, in order to prepare for college audition requirements, began to focus on WSN despite dedicating his

entire adolescent years to learning and performing gospel music aurally and informally in church. Such requirements and sterilized curricula reinforce our current admission system in which “Black prospective music education majors face inordinate obstacles to college admission” (Elpus, 2015, p. 318).

Though music teacher education programs have typically perpetuated Western art musical norms, it is also possible for such programs to wield their influence in order to disrupt the epistemological bias that disproportionately burden Black music students and prospective Black music education majors (Talbot, 2017). As Kindall-Smith et al. (2018) explained, “it is possible to begin to rectify the omission of significant cultural voices in music education through pre-service music teacher preparation” (p. 381). One way this may be accomplished is by auditing audition requirements for epistemological bias. For example, Koza (2008) pointed out that music college audition requirements typically require vocalists to audition in the *bel canto* style. In fact, one college of music’s audition requirements read, “do not audition with jazz, pop, rock, folk or other musical theatre repertoire” (p. 148). Diversifying college audition requirements and curricula may create additional avenues for prospective music education candidates of color who are disinterested in becoming orchestral performers, opera singers, or conductors (Clements, 2009).

Researchers have also suggested that higher music education institutions may also combat hegemony and increase accessibility by committing to diversifying the racial demographics of its faculty (Clements, 2009). While this may be an important step, there is important nuance to consider. I argue that pursuing diversity *for diversity’s sake alone*

may not achieve the emancipatory goals of its purported value. To illustrate this point, consider the experiences of Mahalia Jackson, an esteemed Black American gospel singer:

One night in 1932...[I went] to see Professor DuBois about some singing lessons. Professor DuBois was a great Negro tenor who had a music salon on the South Side. He was a tall, light-skinned Negro who had a very grand way about him. He was very proud of his career as a concert and operatic singer and it didn't take me long to find out that he didn't think much of my way of singing a song. First off, he had me sing the spiritual "Standing in the Need of Prayer." I had such a rhythm inside of me that I kept picking up the beat and out of the corner of my eye I could see the Professor frowning. He held up his hand [and said], 'That's no way to sing that song...You've got to stop hollering. It will take time to build up your voice. The way you sing is not a credit to the Negro race. You've got to learn to sing songs so that white people can understand them'...It was a battle within me to sing a song in a formal way. I felt it was too polished and I didn't feel good about it. I handed over my four dollars to the Professor and left...I don't want to sing none of his high-class music! (Jackson, 1967, p. 58)

In this account, it was a Black professor who dismissed Jackson's talents and insisted on the epistemological values associated with Western art music traditions. Jackson's story may embody Freire's (2018) notion that, sometimes, "the oppressed, instead of striving for liberation, tend themselves to become oppressors" (p. 45). Or, perhaps Jackson's professor believed that the "respectability afforded to [Western] art music offered African Americans a way to fight denigration by [W]hite people"

(Thurman, 2021, p. 23). No matter the professor's motivation, he had reinscribed oppression. In sum, while employing faculty of diverse racial demographics is important, it should not be assumed that such an intervention is automatically emancipatory.

Closing Remarks

Though the findings from this study inspire exciting new possibilities regarding technology and its potential to support anti-racist education, the findings are equally quite concerning. The fact that some students had to seek online resources in order to satisfy their musical needs highlights serious issues within our field's pedagogical and curricular design. The fact that some students did not find their musical needs satisfied within the traditional music education system should motivate us all to critique our own curricular and pedagogical practices in order to prevent other students from having to do the same. Just as orchestras around the world are evolving to satisfy the interests of new generations of concertgoers, all stakeholders within the public-school music education system must similarly adapt to maintain their relevance and commit to creating a more just and equitable music education system.

APPENDIX A: Online, (A)synchronous, Applied Instrumental Lessons Technology

Acceptance Model Questionnaire

<p>Online, (A)synchronous, Applied Instrumental Lessons Technology Acceptance Model Questionnaire</p>		Strongly Disagree	Quite Disagree	Somewhat Disagree	NA or Neutral	Somewhat Agree	Quite Agree	Strongly Agree
		Disagree			Agree			
PU1	This asynchronous online lesson allows me to perform the technique in the video							
PU2	This asynchronous online lesson allows me to review content if I forget how to do it							
PU3	This asynchronous online lesson allows me to improve my ability on my instrument							
PU4	This asynchronous online lesson allows me to accomplish my objective							
PU5	This asynchronous online lesson allows me to improve my performance							
PU6	This asynchronous online lesson helps me increase my productivity							
PU7	This asynchronous online lesson is useful in my work							
PU8	The videos in the asynchronous online lesson were close enough for me to see the technique in detail							
PU9	The repertoire in the asynchronous online lesson was interesting to me							
PU10	I would prefer if the teacher in the asynchronous online lesson used a student model							

Perceived Ease of Use (PEU)							
PEU1	Learning to navigate this asynchronous online lesson has been easy for me						
PEU2	I find it easy to locate asynchronous online lessons on topics I want to learn about						
PEU3	It is easy for me to become skillful at using asynchronous online lessons						
PEU4	I find it easy to use asynchronous online lessons						
PEU5	There were no internet connection problems as I watched this asynchronous online lesson						
Social Influence (SI)							
SI1	I am required to use this specific online lesson						
Facilitating Conditions (FC)							
FC1	I have access to the Internet through a smartphone						
FC2	I have access to the Internet through a laptop						
FC3	I have access to an instrument on which to practice						
FC4	The website I needed to access this lesson was not blocked by the school district						
FC5	I have a reliable Internet connection						
FC6	My Internet speed is appropriate for streaming this online lesson						
FC7	I experienced lag very infrequently or never when streaming this online lesson						
FC8	I know how to use the website where this online lesson is found						

User Acceptance (UA)								
UA1	I currently use asynchronous online lessons more often to learn more about my instrument							
UA2	I plan to use asynchronous online lessons more often to learn more about my instrument							

APPENDIX B: Semi-Structured Interview Outline

Opening segment

- I. Introduction
 - a. Ask for recorded dictation consent
 - b. Introduction
 - c. Purpose of study
 - d. A thank you for participating
- II. Broad probe
 - a. How old are you and what grade are you in?
 - b. Do you currently participate in the free or reduced-price breakfast/lunch program at school?
 - c. Did you participate in the free or reduced-price breakfast/lunch program at school before 2019?
 - d. Can you tell me what inspired you to want to learn your instrument?
 - e. At what age did you first acquire your instrument?
 - f. Did your school music teacher give you lessons?
 - i. If so, how often were they and for how long?
 - g. What genre of music did you perform in school concerts?
 - h. What genre of music was in your lesson books?
 - i. Have you ever learned a song by rote?
 - i. Describe your experience performing music with sheet music
 - j. Have you ever used Web sites like YouTube to help you learn your instrument?
 - k. What was the learning format of your school in 2019-2020 (in-person, online only, hybrid, et cetera)?
 - l. What was the learning format of your school in 2020-2021 (in-person, online only, hybrid, et cetera)?
 - m. In either 2019-2020 or 2020-2021, did your music teacher ask you to participate in asynchronous online lessons?
 - i. If so, can you describe these lessons?

Middle segment

- I. Specific follow-ups
 - a. How did you acquire your instrument? (borrowed, purchased, rented, et cetera)?
 - i. Did you incur other expenses as a part of learning your instrument? If so, what were they?
 - ii. Were you ever unable to pay for these expenses?
 - b. Have you ever taken private lessons outside of school?
 - i. If so, for how long?
 - ii. If you stopped, can you explain the reason you stopped?
 - iii. If you did not take private lessons outside of school, was there a hindrance or was it a lack of interest?

- c. Would you say you were satisfied with the genre of music you performed for learning your instrument and the repertoire you performed at concerts?
 - i. If not, what changes would you like to have seen?
- d. If any of your learning during the 2019-2020 or 2020-2021 school year occurred online, would you describe your experiences?
 - i. Do you believe your technological infrastructure was adequate?
 - 1. On which device did you usually participate in online learning?
 - 2. If not, which variables were barriers for you (Internet connection, connection reliability, device reliability, et cetera)?
 - 3. If so, did you enjoy learning in this format?
 - ii. Describe how you continued to learn your instrument in an online format?
 - 1. What were normal activities in your instrumental class/ensemble?
 - a. Were lessons maintained?
 - i. If so, describe
 - 1. Were Web sites like YouTube, Facebook, TikTok, MOOCs, ViolinMasterclass, et cetera, used for lessons?
 - a. If so, describe
 - i. Quality of repertoire?
 - ii. Quality of video?
 - iii. Use of student models?
 - b. If so, how would you describe their effect on your proficiency?
 - i. How would you describe your confidence level in using these lessons to learn more about your personal interest on your instruments with the use of lessons on these platforms?
 - c. If so, would you describe the pros/cons of learning in this medium?

- d. If so, what advice would you give to the producers of these asynchronous online lessons?
 - ii. If not, did you attempt to learn more about your instrument in an alternative way?

Concluding segment

- I. Wrapping up
 - a. Mention the interview is nearly finished
- II. Confront any possible contradictions
- III. Are there any other relevant points you would like to make relevant to the topics we discussed?
- IV. Thank participant for their contribution to the study

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Vita

