HIGH SCHOOL STUDENTS’ MUSICAL ACHIEVEMENT AND IMPROVISATION ON THE STEEL DRUM

by

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A thesis submitted to the Faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Master of Music

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ABSTRACT

The purpose of this study was to investigate relationships between high school students’ musical achievement and improvisation on the steel drum. Research questions guiding this inquiry were: (1) What effect does audiation-based instruction in improvisation have on students’ ability to improvise (a) melodically, (b) harmonically, and (c) rhythmically on the steel drum? (2) What is the relationship between students’ performance of steel drum repertoire and their ability to improvise? and (3) How do students describe audiation-based instruction using the steel drum? Using an explanatory mixed methods design, I (a) instructed beginning steel band students (N = 11) from a mid-Atlantic United States high school, using a curriculum comprised of audiation-based instruction in aural learning and improvisation, (b) recorded participants’ performances of repertoire and improvisation, (c) facilitated a focus groups (n = 3) to document students’ descriptions of audiation-based instruction in improvisation, and (d) used qualitative findings to explain quantitative results. I concluded that (a) improvisation is a viable part of a comprehensive music education; (b) aural learning is important in developing students’ musical vocabularies; and (c) regardless of students’ prior experience in music, the steel band can be an inclusive ensemble.
Chapter 1

INTRODUCTION

Improvisation is a necessary component in developing well-rounded musicians (Gordon, 2012). According to the National Core Arts Standards for Music Education, children should be improvising across all strands of instrumental music instruction (National Association for Music Education, 2014). The sooner children engage in music improvisation, the more likely their developmental music aptitude may increase (Whitcomb, 2013). Scholars suggest that engaging in improvisation is necessary for developing audiation, and reading and writing skills (Azzara, 1993; Gordon, 2012; Guilbault, 2009; McPherson, 1993; Snell, 2006). The act of improvising also provides students a sense of ownership in their musical endeavors by allowing them to express musical ideas similar to how they express thoughts with language (Bluestine, 2000; Gordon 2012).

Although researchers have documented improved musicianship in students who have learned to improvise, teachers reported that they (a) do not feel confident teaching improvisation (Bernhard, 2013); (b) lack time to teach improvisation skills in the traditional school band, orchestra, or choir (Bell, 2003); and (c) do not feel it is necessary (Byo, 1999). While teachers of jazz bands and non-traditional school ensembles have indicated that they teach improvisation to their students as part of the culture of the ensemble (Byo, 1999; Ward-Steinman, 2007), Gordon (2012) suggested
teaching improvisation in all ensembles, regardless of improvisation’s traditional role in the ensemble’s culture.

There is a growing trend for including non-traditional ensembles in music education (Green, 2006; Rusinke, 2008; Tanner, 2006; Williams, 2008). Rock bands, steel bands, music technology ensembles, and other non-traditional groups are appearing more frequently in schools. Students indicate a higher level of interest in nontraditional ensembles in comparison to traditional school ensembles such as choir, band, and orchestra. Teachers and researchers agree that the popularity of nontraditional ensembles benefits school music programs because these ensembles are inclusive, accessible, financially sustainable, and enjoyable for students (Green, 2006; Rusinke, 2008).

Steel bands are growing in popularity in American schools (Haskett 2012; Tanner, 2006). Experts attribute this growth to the unique perception of the ensemble (Miller, 2006). Unlike traditional ensembles, steel band is accessible to a broad range of students. Students in high school can participate as novices with little difficulty while those same students would be years behind their peers in a more traditional school instrumental ensemble. The steel band is also an accessible tool for young students and students with academic and social problems (Tanner, 2006; Williams, 2008). It is not necessary to read notation or spend years developing technique in order to produce a quality sound. A leader can teach a tune to a group of beginners in limited time (Miller, 2006). Because it is easy to teach executive skills, steel band ensembles are an ideal environment for teaching improvisation.
Steel Band Background

Smith (2012) wrote a comprehensive history of the development of the steel band. Following is a summary to provide context for the modern steel band.

Slavery

The origin of the steel drum dates back to the early settlement of Trinidad and Tobago. In the 1700s, Spanish and French elite immigrated to the islands, along with a large population of West African slaves. Music was an integral part of the African life cycle, marking changing of seasons, harvesting of crops, hunting expeditions, celebrations, religious ceremonies, and various milestones. West African slaves considered music as important as eating, breathing, and sleeping; it was an essential part of their being (Brereton, 2002; Smith, 2012). Yet when the West African slaves came to Trinidad, drums and other percussion instruments were difficult to obtain. Materials to make drums were a rarity, and existing instruments were prohibitively expensive (Smith, 2012).

Working conditions for the slaves were treacherous, requiring long hours in a variety of harsh weather conditions (Smith, 2012). On rare occasions such as the Christian holiday seasons of Advent and Lent, slave masters would afford their slaves some freedoms, allowing them the opportunity celebrate with drumming (Smith, 2012; Stuempfle, 1996). Officials were concerned, however, that the slaves would abuse the freedom. In the late 1700s, the government enacted a law requiring all free men to enlist in the army or militia as a preventative measure to avoid potential conflict (Brereton, 2002; Smith, 2012).
During the Advent season, French, Spanish, and English settlers in Trinidad celebrated the holiday by dressing in colorful clothing and parading the streets. They had festive flags and banners (Brereton, 2002). Military musicians accompanied the festivities. The Africans were accustomed to similar celebrations from their native land. Although slaves were not permitted to participate in the European celebration, they held their own surreptitious celebrations (Brereton, 2002; Smith, 2012; Stuempfle, 1996). They copied many of the European traditions, but used their own costumes, music, and drumming (Smith, 2012). These events were the precursor to Carnival in Trinidad.

**Carnival**

The earliest Carnival celebration in Trinidad, modeled after the French tradition, occurred before the Lent season in the mid 1780s. Street celebrations took place during the day. European immigrants from France, Spain, and England would dress in costumes and masquerade through the streets. In the evenings, plantation owners would host elite balls (Smith, 2012). Slaves celebrated by holding their own Carnival in their backyards and dwellings. They used it as an opportunity to celebrate their culture and mock the slave owners. Most importantly, Carnival provided the Africans a chance to make music and use their beloved drums (Smith, 2012).

In the early 1800s, tensions flared between the Africans and Europeans. Fights frequently occurred, often resulting in severe injury (Brereton, 2002). Many Europeans believed that the only solution to end the fighting was to ban all African drumming (Smith, 2012). Slave owners viewed the Africans as savage and morally
degenerate; they connected this behavior to drumming. Slave owners and European elite in Trinidad believed that removing drumming would be the most appropriate way to control their actions (Smith, 2012). At this time, the Roman Catholic Church had political authority in Trinidad. Officials in the Church, who had spent years attempting to convert the slaves to Catholicism, agreed that removal of the drumming was best interest of the community (Smith, 2012).

**Emancipation**

On July 31, 1834, slavery in Trinidad and Tobago ended. Although the government prohibited it, slaves quietly maintained their African culture, just as they had before emancipation. For example, during canboulay (from the French *cannes brulées*, meaning burnt cane and associated with burning sugar crops) slaves owners would force slaves to march to the fields to extinguish fires. In their march to the fields, the slaves would carry torches, sing, and use drums to provide a working rhythm (Buff, 2001; Smith, 2012). After emancipation, the canboulay marches transformed into a celebratory procession, signifying freedom. The former slaves marched through the streets, carrying torches and playing rhythms on bamboo. This event became known as the Canboulay Procession, and was incorporated into Carnival in the 1840s (Smith, 2012).

Even after emancipation, life remained difficult for the former slaves. Slave owners refused give even the smallest parcels of land to their freed slaves (Smith, 2012). Many emancipated slaves moved to unoccupied lands and built dwellings. The government required all freed slaves over the age of six to participate in mandatory
unpaid apprenticeships. On August 1, 1838, the government lifted the mandatory apprenticeships, and real freedom began. (Brereton, 1996; Smith, 2012).

**Kalinda**

Throughout the mid-1800s, former slaves organized into stick fighting groups called Kalinda bands. Kalinda was originally intended as a source of entertainment. Many small communities throughout Trinidad hosted Kalinda bands (Dudley, 2007). Stick fighters would compete against neighboring bands. Although the original intent was entertainment, the matches often turned bloody. Eventually, Kalinda bands became more violent and developed as dangerous gangs (Smith, 2012).

African traditions, Kalinda, and Camboulay made their way into the Carnival celebration, leading to a public uproar in the 1870s. Government officials and authorities wanted to reform the Carnival practice and eliminate Kalinda gangs. In 1880, authorities forced Carnival participants to surrender their sticks, torches, and drums. The people were dismayed, but they agreed to the surrender (Smith, 2012).

The surrender did not last long. In 1881, the Kalinda gangs returned to Carnival with the intent to fight back to authorities. Arthur Baker, Trinidadian police chief, was intent on ending Kalinda and Camboulay practices from Carnival. He deemed the practices as a “threat to public order” (Smith, 2012, p. 26) Baker led 150 policemen to attack the Carnival roisterers. The rebels fought the police, resulting in the injury of over 30 police officers. These events became known as the Canboulay riots (Cowley, 1999; Smith, 2012).
The French Creoles bestowed an outpouring of support upon the Africans. They were outraged by the treatment of the African community members, and saw the riots as an attack on the French Carnival tradition. The Creole men joined the festivities in support (Smith, 2012).

In 1882, Carnival was peaceful. However, additional violence arose in 1883. The government enacted a law abolishing the Canboulay festival (Buff, 2001; Smith, 2012). By abolishing the festival, the law provided for a short celebration to begin at dawn on the Monday before Ash Wednesday. The law also restricted the use of drums. This celebration was known as J’ouvert, meaning “daybreak” (Smith, 2012).

The new restriction on drumming also caused difficulties for the West Indian immigrants. The West Indian immigrants practiced the Muslim faith and had their own drumming traditions. After the government enacted additional drumming laws in 1884, the Indians petitioned the sanctions in perseverance of religious practice (Smith, 2012). Authorities denied the petition, causing a rebellion. Muslim practitioners crowded the streets in observance of Hosay. The celebrations included masqueraders parading to the beat of tassa drums to commemorate the martyrdoms of Hussain and Hassan, the grandsons of Muhammed, prophet of Islam (Buff, 2001; Smith, 2012). Policemen fired on the procession, leaving many dead and wounded.

**Tamboo Bamboo**

In 1883, the ban that outlawed all drumming did not deter the Africans or Indians. In many cases, drumming went underground. Many people refused to give into the government ban and renounce their religious practices. Even with threats of
punishment for practicing “black magic,” many people persisted. They decided to find a way around the drumming ban by creating rhythms without the use of skinned drums (Smith, 2012).

Inspired by Kalinda stick fighting, the Africans began to experiment with bamboo as a medium for percussive sounds (Dudley, 2007). They quickly discovered that hollowed bamboo cut to varying lengths could produce a variety of pitches when struck by a stick or hit against the ground (Cowley, 1999). With the influence of African singing practices, the people created musical voices (high to low) using the bamboo. Along with the development of the new musical practice, musicians organized into bands called Tamboo Bamboo (Dudley 2007; Smith 2012). The word Tamboo emanated from the French word for drum, tambour. Therefore, the name translated into “bamboo drum” (Smith, 2012).

Tamboo Bamboo bands flourished from the mid-1880s through the 1890s. The ensembles formed in many neighborhoods throughout Trinidad, and often associated with Kalinda bands. They performed in the same yards as the Kalinda fighters, and provided background music during the fights. Tamboo Bamboo bands also performed at wakes, weddings, christenings, and holiday celebrations. By the early 1900s, Tamboo Bamboo musicians were the primary source of music during the Carnival season. Brass and string bands would often play alongside the Tamboo Bamboo musicians during Carnival (Smith, 2012).

For over 50 years, Tamboo Bamboo thrived. Nearly every district in Trinidad had a Tamboo Bamboo band, and many of those ensembles preceded the modern steel
bands (Dudley, 2007; Smith, 2012). The Tamboo Bamboo bands performed in competitions. At times, competitions would result in violence. Some players sharpened their bamboo sticks and used them both as a musical tool and a weapon. The violence was likely influenced by the bands’ connections to Kalinda gangs (Smith, 2012).

If bamboo sticks broke during a parade or competition, the player would substitute a metal object, usually a break drum, trashcan lid, or cracker tin (Dudley, 2007; Smith, 2012; Stuempfle, 1996). In 1934, the British government banned Tamboo Bamboo bands because of an increase in the illegal harvesting of bamboo (Dudley, 2007). By the late 1930s, Tamboo Bamboo players began substituting metal objects, because they found them more durable and able to produce a wider variety of sounds than the bamboo. Many historians credit the use of metal objects in Tamboo Bamboo to the creation of the modern steel band (Brereton, 1996; Dudley, 2007; Smith, 2012; Stuempfle, 2006).

**Steel Pan**

In 1939, the United States Navy arrived at the naval base on the island of Trinidad in response to the onset of World War II. As was common practice, the Navy discarded used oil drums. Former Tamboo Bamboo players used the oil drums as percussive instruments, partially in reaction to the banning of Tamboo Bamboo. A young man, Winston Simon, loaned his oil drum to a friend. When Simon’s friend returned the drum, it had several dents. Simon attempted to return the drum to its original shape by pounding the underneath of the drum. Although he could not fashion
it back to its original form, Simon learned that by striking the bottom of the drum, he could create different pitches (Thomas, 2002). Simon produced a four-note drum, thus beginning the transformation into the modern day steel pan (Dudley, 2007; Thomas, 1992; Smith, 2012).

**The Modern Steel Band**

Simon’s discovery inspired rapid developments, leading to the complex instrument known as today’s steel pan. In Trinidad, the modern steel drum ensemble can have over one hundred players on a variety of instruments. The most common instruments are the tenor pan, double tenors, double seconds, guitars, cellos, and basses. Additionally, most ensembles will include several percussionists known as the *engine room*. The engine room players use a variety of percussion instruments, including drum set.

Price (2012) documented the traditional method of teaching steel drum by rote. According to Price, a leader stands in front of the ensemble, plays a portion of the tune, and the players repeat the material back to the leader. This process repeats until all performers are familiar with their parts. Price encouraged teachers to use this method, writing that “pan players in Trinidad may have the very best ears in the world” because they learn the material aurally (p. 140). Additionally, Price recommended teachers not “be afraid” to teach the initial lessons by rote as students will catch on to music reading easily after developing listening skills (p. 140).

The modern steel band comprises soprano, alto, tenor, and bass voices. The soprano section incorporates the tenor pan, also referred to as the lead pan, and the
double tenor pan. Lead pans are the most common steel drum. The range of a lead pan is D4 to F6. Performers of lead pan are responsible for one drum, and typically play melodic lines. The double tenor pan is comprised of two drums. It encompasses a range of approximately 2.5 octaves from F3 to B-flat5. Double tenor players often play the melody or counter melody, and sometimes perform strumming patterns. The lead pan and double tenor pans are pictured in Figures 1 and 2 respectively.

![Figure 1 Tenor Pan](image1.jpg) ![Figure 2 Double Tenor](image2.jpg)

Double second performers provide the alto voice in the steel band. The double second pan, pictured in Figure 3, includes two pans, each comprised of whole tone scales. It mostly functions as a harmony instrument, typically performing strumming patterns or other harmonic patterns. However, composers use the double second pans in a versatile fashion; and often, double second players are afforded the melody. The range of the double second pan is F-sharp3 to C-sharp6, although some manufacturers make the pan with a low E.
The double guitar and triple guitar, also known as triple cello, make up the tenor voice in the steel band. Pictured in Figure 4, the double guitar pan is fashioned similarly to the double second, each pan containing a whole tone scale. The range of the double guitar pan is primarily in the bass clef, from C#3 to Eb4. Because of the three-pan design, the cello pan is able to extend further into each clef with a range from B2 to C#5. The cello pans each contain a diminished chord, making moving between the drums functional for the performer. Both the double guitar and triple cello function as harmony instruments; performers typically provide strumming patterns and other harmonic accompaniment.
The lowest voice in the common steel drum ensemble is the bass pan. There are several options when selecting a configuration for the bass pans. Pictured in Figure 6, the most common configuration in school ensembles is comprised of six pans. Each pan contains three pitches from Bb1 to Eb3. Bass pan performers are responsible for the bass line.

![Bass Pans](image)

**Figure 6** Bass Pans

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**Steel Band in Education**

Steel drum instruction is growing in popularity in music education (Haskett, 2012). In American schools, steel drum ensembles typically range from 15 to 30 players on five basic instruments: tenor pan, double tenors, double seconds, guitars/cellos, and basses. The five instruments cover over two chromatic octaves. This creates a full ensemble from soprano to bass.

In the late twentieth century, music educators in America began incorporating non-Western music into their classrooms. During this time, steel drum ensembles rapidly gained prominence. In 1980, only three college and university programs
reported having a steel drum ensemble. By 2001, over 650 college and universities reported having a steel drum ensemble (Williams, 2008). In 2012, Haskett noted the continued growth of the steel pan ensemble, documenting an increase in K-12 steel bands from approximately 20 groups in 1990 to over 60 in 2009.

There is no formal research documenting the reason for the rapid growth of steel drum bands in American schools. Scholars have speculated that immigrants from Trinidad, combined with the affordability and accessibility of the instruments, may be driving the spread of steel drum ensembles (Haskett, 2012; Williams, 2008; Tanner, 2006). Additionally, because steel drum ensembles are capable of performing a variety of musical genres, teachers are able to introduce students to a multitude of international styles and rhythms (Williams, 2008).

Because of the aural background and teaching methods of the steel drum ensemble, students with little or no musical background can successfully access the instrument. Students do not need to be able to read notation to be successful, and may experience immediate success with limited technical skills. Because steel drums are so accessible to students with little or no previous instrumental experience, they appear to provide an ideal environment for fostering improvisation.

**Improvisation**

Azzara (2002) defined improvisation as “a manifestation of musical thought” (p. 172). For students to be successful musicians, they must be able to converse through musical syntax similar to how they converse in language (Gordon, 2012; Guilbault, 2009). Gordon (2012) cited improvisation as a necessary musical
vocabulary that one must develop in preparation for instrumental music. Regarding audiation-based improvisation, Gordon claimed,

Students who can sing and chant tonal patterns and rhythm patterns in response to different patterns are in an enviable position not only to learn to play a music instrument but to listen to and understand what others are performing. They will have a more than a modicum of understanding of what they are hearing (p. 28).

Gordon (2012) explained that improvisation is a necessary component in developing an audiation vocabulary. To develop this vocabulary, one must provide students with a multitude of tonal and rhythm patterns in familiar and unfamiliar order, in a variety of tonalities and meters. By doing so, children gain the ability to create and improvise patterns of their own. Gordon noted that improvisation is a necessary process in cultivating audiation. In comparison to learning language, Gordon said, “It would be unconscionable not to expect children to develop a thinking vocabulary. However, it appears to be acceptable for persons to go through life without developing an audiation vocabulary” (p. 126).

A steel drum ensemble offers a plethora of improvisational opportunities. Because of the nature of the instrument, steel drum performers can improvise tonally, rhythmically, and harmonically. With most acoustic instruments, players can only improvise rhythmically and tonally because they are only able to produce one sound at a time. The steel drum presents a unique opportunity to produce two pitches simultaneously. According to Gordon (2012), students often lack the readiness to
improvise harmonically. Teachers typically mistake the inability to improvise harmonically as a tonal error, when in fact students are unable to discriminate the rhythm in which the harmonic structure is changing (p. 305).

Teaching improvisation is a tool to promote good musicianship in students. The aural tradition of the steel drum ensemble provides a venue for conveying the skills necessary for students to be successful with improvisation.

**Statement of the Problem**

Despite the benefits of teaching improvisation, teachers do not typically prioritize improvisation in the non-jazz instrumental music classroom. Researchers speculate that this is due to lack of teacher preparedness for teaching students to improvise (Bernhard, 2012; Byo, 1999). If music educators use non-traditional ensembles, such as steel band, to convey improvisation using a rote-style teaching method (removing the necessity to explain improvisation theoretically through musical notation), then students may attain increased musicianship through a medium that appeals to their interests (Green, 2006; Rusinke, 2008; Tanner, 2006; Williams, 2008).

Prior experience in music is not necessary to learn steel drum. Students of differing musical abilities and backgrounds can participate in the same ensemble. Teachers can teach music by rote, limiting the necessity to read and understand notation (Lopatin, 1994). The ease of steel band technique combined with the aural tradition of teaching the steel drum ensemble provides a framework for teaching improvisation.
There is little research documenting the use of steel band as a means for teaching music. There is a limited body of research on teaching improvisation in high school ensembles outside of jazz band. Further, there are no studies that link improvisation to steel drums. Considering the aural nature of the steel band and the aural skills necessary to improvise, it would be beneficial to research the link between improvisation and steel band.

**Purpose of the Study**

The purpose of this study was to investigate relationships between high school students’ musical achievement and improvisation on the steel drum. This research contributed to literature on improvisation in instrumental music education and use of steel drum band as a medium for instrumental music education.

**Research Questions**

The questions guiding this study were:

1. What effect does audiation-based instruction in improvisation have on students’ ability to (a) improvise rhythmically; (b) improvise melodically; and (c) improvise harmonically on steel drum?

2. What is the relationship between students’ performance of steel drum repertoire and their ability to improvise?

3. How do students describe audiation-based instruction using the steel drum?

**Role of the Researcher**

As the teacher-researcher, I (a) developed weekly improvisation lessons in cooperation with the teacher participant; (b) instructed students in a manner consistent
with the purpose of the study; (c) developed the assessment; (e) interviewed students; and (f) collected and analyzed data. In order to ensure the success and accuracy of the study, I collaborated with professional musicians who are experienced in teaching improvisation, teaching steel band, and teaching high school students. At the conclusion of the quantitative phase, I conducted a focus group with three students to document their experiences with audiation-based improvisation using the steel drum. I collected and analyzed data, and provided recommendations for future researchers.

**Limitations of the Study**

The participants were high school students in the mid-Atlantic region of the United States enrolled in a steel drum course. They possessed a variety of music abilities and backgrounds. The classroom teacher reported that several students had no previous formal musical training, while several students had extensive musical backgrounds. Because of the small sample size, results from this study are not generalizable.

**Significance of the Study**

There is limited research on both improvisation in the instrumental classroom—with exception of jazz—and the use of steel drums in music education. Through investigation of improvisation and steel drum instruction, it is possible that this study will lead instrumental music educators to consider incorporating both into their music programs. Additionally, findings from this study may inspire more teachers to incorporate improvisation into their program.
Chapter 2

REVIEW OF LITERATURE

In this literature review, I explore research that relates to teaching improvisation and the use of non-traditional ensembles in music education. Topics I address include: (a) audiation and rote learning, (b) improvisation, and (c) non-traditional ensembles in education. I will use the research questions that frame this study as a guide:

1. What effect does audiation-based instruction in improvisation have on students’ ability to (a) improvise melodically, (b) improvise harmonically, and (c) improvise rhythmically on steel drum?

2. What is the relationship between students’ performance of steel drum repertoire and their ability to improvise?

3. How do students describe audiation-based instruction using the steel drum?

Audiation and Rote Learning

Gordon (2012) defined audiation as “the hearing of music in one’s mind when the sound is not physically present.” (p. 34). Through research, Gordon found that children move through stages of audiation progressively, beginning with a period of preparatory audiation (Gordon, 1985). Preparatory audiation involves children experiencing music babble, music emersion, and music play. Beyond preparatory
audiation, children begin to sequentially emerge in all stages of audiation. Gordon divided audiation into six stages:

1. Momentary retention;
2. Recognizing a tonal center and macrobeats in a variety of tonalities and meters, and audiating and recreating tonal patterns and rhythm patterns;
3. Establishing tonality and meter objectively or subjectively;
4. Purposefully retaining in audiation organized tonal and rhythm patterns;
5. Consciously recalling patterns in other pieces of music;

Gordon claimed that immersing children in each stage of audiation is imperative to musical development. Regarding omitting stages, Gordon claimed that it is “less than ideal” and that “moving forward and backward in this complex circular sequence is preparation for audiation required in other stages” (p. 19). In other words, teaching children to audiate leads to success in all facets of musicianship.

**Research on Audiation**

Palmer (1976) investigated the concept of audiation as it relates to effectiveness of rhythm reading in fourth-grade students. Palmer tested six classes ($N = 136$) of fourth-grade students from three elementary schools in Orange County, Florida. The two control classes ($n = 38$) met in the same school. Palmer randomly assigned the remaining two schools as either the Gordon experimental group ($n = 50$) or the Richard experimental group ($n = 48$). To measure musical aptitude, the researcher administered the *Musical Aptitude Profile* (Gordon, 1965).
Before and throughout the study, the teachers instructed students using the assigned method. A traditional series of music books was the primary source for instruction. The researcher measured the students’ (a) response to meter; (b) imitation of rhythmic patterns; and (c) ability to read rhythmic notation. At the conclusion of the treatment period, the researcher tested the students using the *Music Achievement Test I* (MAT; Colwell, 1968); the Auditory Discrimination in Music, Subtest B from the *Music Achievement Test II* (MAT II; Colwell, 1968); and Rhythmic Concepts: Reading Recognition from Gordon’s *Iowa Test of Music Literacy I* (ITML; Gordon, 1970). A panel of five elementary music specialists rated students’ performances using a researcher-designed rating scale.

Students in the Gordon group and the Richard group scored significantly higher ($M = 47.6$ and 46.1) on the written and performance evaluations than their peers in the control group ($M = 42.8$). The researcher found no significant differences between the Gordon and Richard group in terms of musical writing or reading achievement. However, the subjects in the audiation-based Gordon group scored significantly higher in performance achievement than the subjects in the Richard and control groups ($F = 2.6772$, $p < .0001$).

Regarding the tonal aspect of music, Grutzmacher (1987) researched the effect of tonal pattern instruction on first-year instrumental students’ ability to perceive music aurally, read notation, and sight-read unfamiliar notation. The researcher divided first year instrumental students ($N = 48$) from the same school district into two groups. The control group learned strictly from notation, emphasizing executive skill
development and visual perception of notation. In the experimental group, the researcher aurally exposed the participants to several specific series of organized tonal patterns. Students in the experimental group experienced singing and vocalizing the patterns, as well as performing them on their respective instruments. The researcher taught each lesson for both the experimental and control groups. Lessons lasted for 30 minutes and occurred weekly for 14 successive weeks.

At the conclusion of the treatment period, the researcher administered the ITML to both groups. The researcher found a significant difference between the mean scores of the control and experimental groups \((p < .001)\). Students in the experimental group were better able to aurally identify major and minor tonalities \((M = 56.50)\) than students in the control group \((M = 46.82)\). Furthermore, students in the experimental group sight-read better \((M = 128.11)\) than the students in the control group \((M = 90.55)\). Additional data analysis revealed that the developmental music aptitude of students’ in the experimental group improved over the course of the study.

MacKnight (1975) combined tonal and rhythmic aspects of music by testing the achievement of fourth grade students \((N = 90)\) who were beginning instrumental instruction. MacKnight divided subjects equally between both groups based on their scores on the Music Aptitude Profile (MAP; Gordon, 1965). Both groups learned the same material. The control group teacher introduced the students to the material using letter names, fingerings, and sound. The experimental group teacher aurally introduced students to the material through a series of tonal and rhythm patterns.
At the conclusion of the study, the researcher tested both groups using the *Music Achievement Test* (MAT; Colwell, 1968), the *Watkins-Farnum Performance Skill Test* (Watkins & Farnum, 1957), and the *Minnesota Teacher Attitude Inventory* (Cook, Leeds, & Callis, 1951). Results indicated that instruction emphasizing musical patterns, active listening, singing and chanting with meaningful syllables, and organized reading material that included familiar and unfamiliar material created a higher level of musicianship and musical understanding in students \(F = 18.76, p < .05\). Students in the control group scored a composite average of 25.95 on the *WFPS*, while students in the experimental group scored a composite average of 38.73. Additionally, the researcher determined that although children with high musical aptitude performed well under both conditions, children with low and average music aptitude made greater progress using the experimental method \(F = 11.74, p < .05\).

**Rote Learning**

While some scholars question the value of rote learning (e.g., Mayer, 2002), others claim it is critical to learning. Gordon (2012) encouraged educators to use rote learning as a stepping-stone in the development of students’ ability to audiate, by explaining that rote learning coupled with purposeful audiation leads to musical understanding.

Grunow, Gordon, and Azzara (2001) encouraged teachers to use rote teaching to assist students in creating important musical connections. During this period in the students’ learning process, they suggest that the teacher present information without
notation. By instructing the students without notation, they suggest that students will retain information through audiation.

**Research on Rote Learning**

Bebeau (1982) tested the effects of traditional and rote-like approaches to music reading. To accurately determine the effectiveness of the method, Bebeau gathered data from two separate experiments. In the first experiment, the researcher studied 27 third-grade children who attended a private school in Phoenix, Arizona. The teacher had previous experience using the speech-cue method to teach rhythm reading. The researcher pretested the students using a 23-item rhythm-reading test. The mean score for children in the traditional group was 10.52 ($SD = 53.94$). The mean score for children in the speech-cue group was 11.46 ($SD = 24.35$). Bebeau noted that the large standard deviation accounted for prior instruction of some students in the group.

The teacher in both groups taught the same material. However, the method in which the teacher presented the material varied. The traditional group learned rhythm reading through numbers, fractions, and counting. The speech-cue group learned rhythm reading by associating words with note values and rhythms. For example, students in the traditional group learned to value a whole note as four beats, while children in the experimental group used the word “wat-er-mel-on” to constitute the value of a whole note.

At the end of the treatment period, Bebeau administered a 23-item rhythm-reading test. After data analysis, the researcher determined that children in the
experimental group performed better on the test \( (M = 100.15; SD = 7.58) \) than the students in the traditional group \( (M = 78.12; SD = 24.49) \). Moreover, the researcher noticed more improvement in the experimental group between pretest and posttest \( (t = 14.84, p < .01) \) than the traditional group \( (t = 11.26; p < .01) \).

Bebeau repeated the experiment with 80 third-grade students from a suburban public school in Phoenix, Arizona. Unlike the teacher in the first experiment, the teacher did not have previous experience with the speech cue method. The researcher provided the teacher one hour of training prior to the onset of the treatment period. The procedures in the second experiment were identical to the procedures in the first experiment.

The speech-cue students scored 8.12 points higher on the posttest than the students in the traditional group \( (t = 1.59; p < .10) \). The result was not statistically significant. However, the speech-cue gain score was significantly greater \( (M = 56.36; t = 2.3; p < .05) \) than the gain score for the traditional group \( (M = 46.47) \). Based on the results from both experiments, the researcher determined that students in the speech-cue groups sight-read better and were more likely to accurately maintain individual rhythmic parts in an ensemble setting.

In this section, I demonstrated support for an audiation-based curriculum by reviewing research that highlighted the positive influences of audiation on students’ musicianship. Students who learned through audiation-based pattern instruction performed better than their peers in similar tasks (Palmer, 1976; Grutzmacher, 1987; MacKnight, 1985). Gordon (2012) cited rote learning as a tool for leading students’
audiation. Like audiation-based instruction, rote learning aided students’ ability to retain and reproduce patterns (Bebeau, 1982). Students who learned using rote-instruction sight-read and maintained individual musical lines better than their peers (Bebeau, 1982). These researchers affirmed that children who learn using an audiation-based approach are likely to achieve more than students who do not receive audiation-based instruction.

**Improvisation**

Gordon (2012) believed that creativity and improvisation are necessary components in the journey to theoretical understanding (p. 145). Moreover, Gordon posited that improvisation is a skill that can potentially improve a person’s ability to read notation (p. 129). Although many educators often exclude improvisation in their music curriculum, improvisation is necessary to lead children to a full understanding of musical notation.

**Research on Improvisation**

Azzara (1993) examined the link between improvisation and elementary instrumental students’ music achievement. Participants ($N = 66$) were students from two elementary schools. Both schools housed a control group and an experimental group. Before the treatment period, the researcher administered the *Musical Aptitude Profile* (MAP; Gordon, 1995) to all student participants. Students in both groups received instruction from the method book *Jump Right In: The Instrumental Series* (Grunow & Gordon, 1989). The teacher emphasized sound-before-sight instruction and encouraged students to practice with the cassette tape that accompanied the book.
All students performed without notation before performing with notation. Singing and movement activities were regularly included in instruction.

The researcher randomly assigned students to the control group or experimental group. Instruction for both groups was the same in regards to tonal and rhythm patterns. The experimental group received 10-15 minutes of instruction in improvisatory activities during their 30-minute weekly lesson. Improvisation activities encompassed “(a) learning selected repertoire of songs by ear; (b) developing a vocabulary of tonal syllables and rhythm syllables; (c) improvising with their voices and instruments tonic, dominant, and subdominant patters within the context of major tonality; and (d) improvising with their voices and instruments macrobeat, microbeat, division, elongation, and rest rhythm patterns within the context of duple meter” (p. 335). The treatment lasted for 27 school weeks.

At the end of the treatment period, each student performed three etudes. The students prepared the first etude with no assistance from the teacher, the second etude with instruction from the teacher, and sight-read the third etude. Through data analysis, the researcher learned that students who received instruction in improvisation scored significantly higher on etude performance ($M = 3.51$) than students who did not receive instruction in improvisation ($M = 2.90$). The researcher determined an overall high inter-judge reliability ($\alpha = .90$). Additionally, students who received instruction in improvisation had higher performance achievement and sight-read ($M = 3.36$) better than the students who did not receive instruction in improvisation ($M = 2.68$).
Snell (2006) documented the achievement and perceptions of junior high instrumental music students who received instruction using an audiation-based improvisation curriculum, and the relationship between their achievement and aptitude. The participants were 45 seventh and eight-grade instrumental students from a small school in western New York State. The researcher served as the teacher in the study. At the beginning of the study, the researcher administered the *Musical Aptitude Profile* (MAP; Gordon, 1995) to all student participants. At the conclusion of the study, the researcher correlated students’ music aptitude and achievement.

Snell based the curriculum on *Developing Musicianship through Improvisation* (DMTI; Azzara & Grunow, 2006). Students learned two tunes aurally over the course of eight small group lessons. The teacher reinforced the tunes during full ensemble rehearsals. During the learning process, students (a) sang and played the melodies by ear, (b) learned bass lines, (c) participated in tonal and rhythm pattern instruction, and (d) engaged in improvisation using familiar and unfamiliar tonal patterns.

Once students possessed a vocabulary of tonal and rhythm patterns, the teacher led them through seven improvisation skills documented in DMTI. The teacher instructed students to (a) improvise rhythmically on the bass line of the tune, (b) perform four parts of the harmonic functions within the tune, (c) sing and play the harmonic rhythm of the tune, (d) improvise rhythm patterns to the harmonic progression using a neutral syllable, (e) improvise tonal patterns using marmoebeats to the harmonic progression, (f) improvise tonal and rhythm patterns that fit within the harmonic progression, and (g) embellish the melodic material (p. 21).
At the end of the treatment period, the researcher recorded students performing and improvising on the two familiar tunes. Four judges listened to each performance, and evaluated students’ achievement. Inter-judge reliability was high ($\alpha = .83 - .97$). The researcher noted that, with the exception of musical sensitivity ($r = .28$) student achievement and stabilized music aptitude were highly correlated ($r = .45 - .89$).

During student interviews, participants reported enjoying the process of learning to improvise. While students did not enjoy singing as part of the instrumental curriculum, they noted it improved their musicianship. Students did not identify any specific activities as most enjoyable or difficult. The researcher suggested that this might have meant that all activities were age appropriate.

McPherson (1993) tested 101 Australian high school students’ ability to improvise. The researcher randomly selected subjects from the pool of clarinet and trumpet players participating in the Australian Music Examinations Board assessment. The researcher designed an evaluation called *Test of Ability to Improvise* (TAI) in order to assess students’ instrumental fluency, musical syntax, creativity, and musical qualities while improvising. According to the results, the TAI had a high inter-judge reliability with correlations ranging from .71 to .94 for the separate evaluative criteria and from .89 to .97 for the composite material. Furthermore, the Cronbach alpha showed an internal consistency for the TAI at .90.

For data analysis, the researcher split participants into two groups. Group 1 contained all participants ages 12 through 15. Group 2 contained all participants ages 15 through 18. The researcher found that performance proficiency was more
commonly related to improvisational ability for Group 2 (.47) than for Group 1 (.18). Using an ANOVA procedure, the researcher found that Group 1 showed significant differences between improvisational ability and instrument choice ($F_{1,51} = 9.84, p < .005$) and report of regularity of improvising ($F_{2,50} = 4.59, p < .05$). Expending the same ANOVA procedure, the researcher determined significant differences between improvisational ability and learning other instruments ($F_{1,30} = 16.69, p < .001$), incidence of singing ($F_{2,45} = 4.69, p < .05$), improvising ($F_{2,45} = 3.83, p < .05$), and mental rehearsal ($F_{2,45} = 4.65, p < .05$).

The researcher concluded that improvisation seemed to have little impact on the ability of instrumentalists in the early portion of their development. However, as students continued to study, improvisational ability and performance proficiency were highly correlated. The researcher attributed this to the nature of improvisatory performance, where the player is required to mentally rehearse and “to participate in various forms of singing activities…to strengthen an ability to ‘think in sound’ and thereby to improvise musically” (p. 19).

In another study, Guilbault (2009) investigated if harmonic accompaniment would have an impact on the success of the tonal improvisations of first through sixth grade students by examining Michigan public school students’ ($N = 419$) achievement in improvisational activities. The researcher used Gordon’s (2012) music learning theory as a guide for instruction for both groups. Prior to the treatment period, both groups took the tonal and rhythm portions of the *Primary Measures of Music Audiation* (PMMA; Gordon, 1979). Both groups received instruction in tonal and
rhythm patterns, identifying tonalities and meters, identifying tonal and rhythm pattern functions, tonal and rhythmic improvisation, singing and chanting, moving, and playing a variety of instruments (p. 84). The treatment and control groups participated in improvisation activities such as (a) exploration; (b) changing the ending to a familiar song; (c) same and different activities; (d) “conversational improvisation” by exchanging patterns between the student and the teacher; and (e) improvising over harmonic functions of familiar songs in major and harmonic minor tonality (p. 84).

In the treatment group, the teacher performed a root melody accompaniment with approximately 80 percent of the rote songs learned during instruction. To control for the potential effects of tonal modeling, the teacher performed the root melody on a variety of instruments. The control group did not receive root melodies; they performed all singing a cappella.

At the completion of the study, the researcher tested each student’s ability to improvise an ending to an unfamiliar tune in major tonality and duple meter. The researcher recorded the performances and solicited three qualified judges to review them. The judges reviewed the tests and rated each student using Gordon’s (1998) Improvisation Rating Scale. By examining the results of the PMMA, the researcher learned that there were no significant differences in aptitude between the control and treatment groups (α = .05). The researcher calculated inter-judge reliability using the Pearson correlation coefficients (r = .80, .81, and .81). Students in the experimental group scored significantly higher on the improvisation rating scale than students in the control group (F_{1,407} = 62.8, p = .0001) (p. 86). Moreover, there was no statistical
significance for the main effect of grade level ($F_{5, 407} = 1.79, p = .12$) and the treatment by grade interaction ($F_{5, 407} = 1.18, p = .32$).

Students in the experimental group performed notably better than students who did not receive improvisation instruction with a root melody. Based on the results, the researcher concluded that hearing a root melody in a variety of tonalities is an important factor in developing students’ improvisational skills. The researcher suggested that teachers should include at least some song instruction with a root melody in their curriculum.

**Teacher Confidence**

Although many researchers suggest that improvisation is an integral part of the music curriculum, many teachers do not feel adequately prepared to teach students to improvise (Bernhard, 2012). Bernhard conducted a survey to describe future teachers’ confidence in their ability to teach improvisation. Bernhard surveyed 196 undergraduate music education majors at a public university.

The survey consisted of 15 items. The researcher asked the participants to rate their confidence in teaching a variety of improvisation activities according to the National Standards for Music Education (Consortium of National Arts Education Associations, 1994). The first 11 items on the questionnaire used the language directly from the improvisation achievement standards for each grade level. The participants rated their confidence using a 5-point rating scale: “(1) no confidence at all; (2) almost no confidence; (3) slight confidence; (4) moderate confidence; (5) great confidence” (p. 67).
The researcher distributed the survey electronically. Of the original 335 possible participants, 176 students responded. To account for the possibility of a differing response from non-participants, the researcher randomly contacted 20 non-participants and asked them to complete the survey. The researcher found no significant difference in non-participants and participants answers \( (p > .05) \). Because there was no significant difference, the researcher included the non-participants answers into the final data \( (n = 196, 58.51\% \text{ of 335}) \).

Participants reported “moderate confidence” for teaching K-4 standards of improvisation \( (M = 3.94) \), “slight to moderate confidence” for teaching 5-8 standards \( (M = 3.66) \), and “slight confidence” for teaching 9-12 standards \( (M = 3.27) \) (p. 69). The researcher found statistically significant difference among the means for all grade levels \( (F = 111.91; df = 1.79, 346.7; p < .01; \text{ partial } n^2 = .37) \). Therefore, on average, participants reported more confidence in the lower grades and less confidence in the higher grades. Additionally, the participants indicated “slight” to “moderate confidence” in their own ability to improvise \( (M = 3.55) \) and “moderate” to “great interest” in learning more about teaching improvisation \( (M = 4.55) \) (p. 69).

In an exploratory study, Bell (2003) encountered similar findings regarding confidence in teaching improvisation. The participants were 14 in-service music teachers from New York City and neighboring counties, representing all grade levels of music teachers. Additionally, the participants represented a variety of teaching duties from elementary general music to high school gospel choir, and each came from a different undergraduate preparation program.
Over the course of one semester, the teachers studied documents pertaining to the National Standards for Music Education (Consortium of National Arts Education Associations, 1994). In group settings, the teachers discussed the standards, identified issues, completed weekly journal assignments, and reflected on their own process of implementing the standards into their classroom. In small groups, the teachers prepared demonstrations from Strategies for Teaching (Music Educators National Conference, 1997), one of the books the participants studied. After the demonstrations, participants made modifications to suggested strategies to make them more feasible for their classrooms. At the end of the semester, each teacher presented an original strategy that integrated two content areas. During the final meeting, the researches distributed a questionnaire to gauge the participants’ reactions to the National Standards.

The researchers learned that prior to their semester long workshop, 79 percent of teachers reported having some level of exposure to the National Standards. However, 21 percent of participants admitted no previous awareness. Furthermore, the researchers found that 21 percent of participants stated that the National Standards played no role in the development of their lesson plans and classroom activities. Specifically concerning improvisation, 21 percent of participants reported they would like more training in teaching improvisation. Elementary teachers stated that improvisation with young children was “attainable but not sustainable” and they believed that students did not possess the “hand-eye coordination and the skills necessary to accomplish such complex tasks” (p. 37). One middle school teacher
reflected, “I am not sure how to achieve this with students that have never had the experience” (p. 37). Another middle school teacher admitted that improvisation is a weakness. Overall, teachers agreed that they need more training and resources to successfully teaching improvisation.

The literature I reviewed suggested that improvisation is an important part of teaching music. Students who learned to improvise performed better than their peers in a variety of contexts (Guilbault, 2009; McPherson, 1993). Students also noted the benefits of learning to improvise to their overall musicianship (Snell, 2006). However, some teachers reported a lack of confidence in their ability to teach improvisation. Teachers who reported a lack of confidence also indicated the desire for additional training and resources regarding teaching improvisation (Bell, 2003; Bernhard, 2012). Teaching students to improvise increases musicianship skills and should be included all music teachers’ curriculums.

**Nontraditional Ensembles in Education**

Rusinke (2008) sought to understand why students who are disengaged in most subject areas seem to engage with music. In a case study, the researcher investigated the (a) characteristics of the teaching strategies used in music classes that were effective with disengaged learners; (b) how the teacher’s teaching strategies were developed; and (c) what caused the learners to show effort in music class.

The researcher selected a secondary public school music teacher and a class of students with behavioral and learning problems. The school was located in a small industrial town in the Valencia region of Spain. The class that participated in the study
received 130 written reprimands for misbehavior over the course of the school year. Rusinke traveled to the school four times over the span of six months to collect data. In an initial interview the teacher stated, “Many children would drop out [of school] but are obliged to stay until they are 16. Few things engage them, and music is one of those things. To see what they can do, that they can perform in a concert, that they do it well, that they are applauded…is very motivating for them” (p. 10).

The students were part of an Orff ensemble led by the teacher. They performed up to 10 concerts a year programmed with a variety of classical, folk, and popular music. Despite their documented behavioral problems in other classes, the students showed respect and enthusiasm during music class and performance. The researcher documented the students’ professionalism and enthusiasm during a concert noting,

They are all prepared to play. The teacher is not with them, but near me on the side of the stage. They play a classic piece extracted from Mozart’s *The Magic Flute*. There are rhythmic problems, but they continue, concentrating. End of the first piece and applause. They change positions with an organization that has little to do with the descriptions in the reprimand notes I read (p. 12).

The researcher continued to detail the contrast in behavior, as the students performed a variety of popular tunes and Spanish songs. According to the researcher, the students showed a remarkable difference in behavior between their typical classroom atmosphere and the music classroom atmosphere.

Through interviews with the students and teacher, the researcher found five themes that connected learners to the excitement of music class: (a) motivation for all
students, (b) short term goals, (c) a feeling of learner agency, (d) the expectation of success, and (e) responsibility as part of the social nature of music (p. 16). The researcher concluded that students’ behavioral improvements in music are due to the ‘visible goal’ that is compulsory with music instruction. Additionally, the researcher documented that the students enjoyed performing “real music, and not just school music” (p. 14). By approaching the content through popular music, the teacher did not exclude students who were unable to study music privately outside of school. Using this pedagogy, the teacher incorporated all students regardless of musical background and training. Students anticipated music class and concerts with excitement. This excitement created a positive school music environment.

In another case study, Oare (2008) described the ways in which traditional instrumental music programs are limited by investigating a non-traditional Celtic string ensemble. The ensemble, the Chelsea House Orchestra (CHO), was part of a larger music program at a high school in Michigan. Students in the ensemble memorized music, learned folk instruments, and performed often. Two main questions guided the researcher: (a) how does the value of CHO relate to the school’s music program; and (b) what are the practical issues involved with the development and implementation of a nontraditional ensemble (p. 65).

The research took place from July 2005 to November 2005. During that time, the researcher observed rehearsals, attended performances, interviewed the ensemble director, led focus group discussions, and gathered information from the CHO website. After data collection, the researcher transcribed interviews and field notes.
The researcher coded the data into three categories: teacher, students, and classroom.

From the analysis, four themes were established: “(a) social music making; (b) evolving authenticity; (c) the balance between classical and folk music education; and (d) the creolization of musical transmission” (p. 69).

The researcher noted that students enjoyed the social aspects of being part of the CHO. A student mentioned, “It doesn’t seem like a teacher class sort of setting like orchestra is. It’s more like we just get together with friends and play something” (p. 70). Similarly, students acknowledged their delight at being part of a group where they are free to learn new instruments, sing, dance, improvise, and write new music. The students take ownership in the group, and feel connected to each other.

The teacher explained that there was no concern about making the ensemble completely authentic. Rather, the focus of the group was to have fun and make music that is different from traditional Western music. The teacher used the group as a motivator. Students enjoyed being part of the CHO, thus they became more connected to music making in general.

Notation was not an important factor in the CHO. A student stated, “We get music to look at and we’ll usually like read that for a day, and then we have to memorize it or we’ll forget it anyways and then we’ll have to learn it by ear…Sometimes we kind of just make things up by ear and add it to it. That’s how everyone learns it” (p. 74). Other students made note of notation hindering performance. The CHO members focused on learning aurally and improvising.
The researcher concluded that multicultural ensembles in music education could enhance traditional school ensembles. Students felt more confident in their playing abilities because of the aural and improvisatory nature of the Celtic ensemble. These qualities translated into the traditional orchestra setting. However, because of the lack of teacher training, world music ensembles are limited in public schools. The researcher suggested that teachers take the time to educate themselves in world music opportunities that could enhance their own programs.

Non-traditional ensembles appeal to a wider range of students than traditional ensembles such as band, orchestra, and choir. Providing opportunities for different ensembles increases participation in school music programs. Furthermore, non-traditional ensembles tend to motivate students to engage in music and improve the school’s music community (Rusinke, 2008). Students who are involved in non-traditional ensembles report feelings of accomplishment, camaraderie, and freedom to make musical decisions (Oare, 2008; Rusinke, 2008).

**Summary**

The literature I reviewed highlighted the importance of audiation-based instruction and improvisation and the inclusion of non-traditional ensembles in music education. Non-traditional ensembles can provide a venue for creativity and improvisation (Oare, 2008). Teaching students to improvise is important in developing student musicianship.

Further research is necessary to evaluate the inclusion of audiation-based improvisation at the high school level. While researchers suggested that students
possessed the freedom to create and improvise within the context of a non-traditional ensemble setting, no formal research exists to document the connection between improvisation and non-traditional ensembles. Additional research is necessary to examine the link between non-traditional settings and improvisation.

Similarly, scholars have suggested that the aural nature of the steel band leads to above-average aural skills (Price, 2012). Aural learning is a necessary component in audiation-based instruction in improvisation. Scholars have also suggested the growing popularity of the steel drum band in American public schools (Tanner, 2006; Williams, 2008). However, no formal research exists using steel band as a medium for music instruction. Research is necessary to document a link between steel band, aural learning, and improvisation.
Chapter 3

METHODOLOGY

Overview

In this study, I investigated the effect of audiation-based instruction in improvisation on students’ ability to improvise (a) melodically, (b) harmonically, and (c) rhythmically on the steel drum. I also explored the relationship between students’ performance of steel drum repertoire and their ability to improvise, and students’ description of audiation-based instruction using the steel drum. I elected to utilize a comprehensive mixed methods design due to the lack of research in both teaching improvisation to students outside of jazz band and incorporating non-traditional ensembles into the instrumental music program. I began the study by instructing students in a 6-week audiation-based improvisation curriculum. At the end of the instructional period, I recorded each participant performing two tunes and improvisations. I recruited a panel of four judges, with backgrounds in music education and steel drum, to review and rate each recording. After collecting the data, I completed quantitative analysis by calculating the correlation between students’ performance achievement and improvisation achievement. I then conducted a focus group comprised of three student participants.
In this chapter, I outline the methodology for this study. I will present information about the participants, role of the teacher-researcher, data collection and analysis, theoretical framework, and conceptual framework.

**Rationale for a Mixed Methods Design**

Mixed-methods is a comprehensive research design that encompasses both quantitative and qualitative research practices. Creswell (2011) defined mixed-methods research as:

an approach to inquiry that combines or associates both qualitative and quantitative forms. It involves philosophical assumptions, the use of qualitative and quantitative approaches, and the mixing of both approaches in a study. Thus, it is more than simply collecting and analyzing both kids of data; it also involves the use of both approaches in tandem so that the overall strength of a study is greater than either qualitative or quantitative research (p. 4).

There is limited research concerning teaching improvisation in a high school instrumental setting outside of jazz band and the use of steel band as a medium for instrumental music education. Due to lack of research literature in both areas, I elected to utilize a comprehensive methodology to sufficiently answer my research questions. Creswell (2011) recommended using mixed-methods research when topics are under researched and/or results are surprising and demand additional explanation (p. 211).

Creswell (2011) defined two mixed-methods approaches: sequential and concurrent. A researcher may select a concurrent design when he or she wishes to
collect both qualitative and quantitative data simultaneously. If a researcher desires to collect data separately, he or she may select to utilize a sequential design.

There are two types of sequential designs: exploratory and explanatory. A researcher elects to use an exploratory design when he or she collects qualitative and quantitative data separately, and uses qualitative data to build on the results from the quantitative data. In a sequential explanatory design, the researcher typically uses qualitative data to explain and elaborate quantitative data (Creswell, 2011, p. 211).

I elected to use a sequential explanatory design. This strategy allowed me to develop themes in the qualitative phase that helped to elaborate quantitative data. In Figure 7, I present a visual of my mixed methods design.

<table>
<thead>
<tr>
<th>Pre-Phase</th>
<th>Phase I</th>
<th>Phase II</th>
<th>Phase III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional Period</td>
<td><em>Quan</em></td>
<td><em>qual</em></td>
<td>Interpretation of entire analysis</td>
</tr>
<tr>
<td>QUAN → QUAN</td>
<td>collection → analysis</td>
<td>qual → qual</td>
<td>collection → analysis</td>
</tr>
</tbody>
</table>

Figure 7  Sequential explanatory mixed methods design  (Creswell, 201)

**Participants**

Sixteen high school students were enrolled in a beginning steel band class at a high school in the mid-Atlantic region of the United States; 11 elected to participate in my study. I recruited participants by visiting the class, explaining the study, and distributing a letter addressed to parents and students. Students elected to participate by returning parental consent forms and student assent forms. Two participants who
were over the age of 18 provided personal consent. The participants’ year in school is documented in Table 1.

The participants possessed a variety of musical backgrounds. The classroom teacher provided a report on the students’ prior musical endeavors. As documented in Table 2, only two students played steel drums before the semester began. Seven students had previous experience in school ensembles. One student had a background in both vocal and instrumental music. The two students with previous steel band experience also participated in band. Additionally, several students reported no prior formal musical training.

Table 1

*Participants’ year in school*

<table>
<thead>
<tr>
<th></th>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of participants</td>
<td>0</td>
<td>7</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 2

*Participants’ previous experience with in-school music*

<table>
<thead>
<tr>
<th></th>
<th>None</th>
<th>Band</th>
<th>Choir</th>
<th>Steel Band</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of participants</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

**Teacher-Researcher**

To ensure consistency of instruction, I was the teacher-researcher in this study. I assumed this role as a second-year graduate student at an accredited institution in the
mid-Atlantic region of the United States, and had two years of full-time teaching experience in instrumental music. I held a Bachelor of Music in Music Education from an accredited institution in the state of South Carolina and had teacher certification in Delaware, Pennsylvania, Maryland, and Georgia. Additionally, I taught an undergraduate course in beginning instrumental pedagogy and assisted with undergraduate courses in elementary, middle, and high school instrumental music. I also held certification in elementary general music, level 1, and instrumental music, level 1, from the Gordon Institute for Music Learning.

**Institutional Review Board**

Before beginning my research, I completed the necessary training for this study as set forth by CITI’s Protection Human Subjects curriculum (see Appendix A). I submitted an application to the University of Delaware’s Institutional Review Board (IRB) in October 2014. On October 14, 2014, the IRB approved the study through an expedited review process (see Appendix B). As part of the application, I included an outline of the curriculum (see Appendix C), letter to parents and students (see Appendix D), parental consent form (see Appendix E), consent form for students age 18 and over (see Appendix F), student assent form (see Appendix G), and focus group guiding questions (see Appendix H).

**Theoretical Framework**

I approached this study through the perspective of Gordon’s (2012) music learning theory. The principal objective of music learning theory is to develop students’ tonal and rhythm audiation. With audiation as a basis for learning, students
should be able to listen, sing, play, improvise, read, and compose with musical understanding. Gordon (2012) defined audiation as “hearing and comprehending in one’s mind the sound of music that is not, or may never have been, physically present. It is not imitation or memorization” (p. 399).

There are six stages and eight types of audiation. Gordon theorized that the six stages of audiation are acquired sequentially, while we are capable of engaging in various types of audiation during each stage of audiation. The types and stages of audiation are presented in Table 3 and Table 4, respectively. As we move through the first five stages of audiation, we are foretelling what necessary tonal and rhythm patterns will occur in succession with what we are hearing. By stage six of audiation, we are able to draw from our experiences with various tonalities and meters, and understand what we are hearing. As we are able to accurately anticipate and predict rhythm and tonal patterns, we begin to improvise and create within already existing music, as well as authentic music.

Gordon (2012) described audiation as thinking in music. Gordon said, “when you are listening to speech, you are giving meaning to what was just said by recalling and making connections with what you heard on earlier occasions” (p. 5). One could compare improvisation to a person’s ability to rephrase information into his own words. The ability to rephrase information demonstrates understanding of a topic, just as the ability to improvise demonstrates understanding of musical context.
### Table 3

**Stages of audiation**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Momentary retention of patterns</td>
</tr>
<tr>
<td>2</td>
<td>Recognizing a tonal center and macrobeats in a variety of tonalities and meters, and audiating and recreating tonal patterns and rhythm patterns</td>
</tr>
<tr>
<td>3</td>
<td>Establishing tonality and meter objectively or subjectively</td>
</tr>
<tr>
<td>4</td>
<td>Purposefully retaining in audiation organized tonal and rhythm patterns</td>
</tr>
<tr>
<td>5</td>
<td>Consciously recalling patterns in other pieces of music</td>
</tr>
<tr>
<td>6</td>
<td>Conscious prediction of tonal and rhythm patterns</td>
</tr>
</tbody>
</table>

(Gordon, 2012, p. 20)

### Table 4

**Types of audiation**

<table>
<thead>
<tr>
<th>Type</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Listening to</td>
<td>music that is familiar or unfamiliar</td>
</tr>
<tr>
<td>2 Reading</td>
<td>music that is familiar or unfamiliar</td>
</tr>
<tr>
<td>3 Writing</td>
<td>music that is familiar or unfamiliar by ear</td>
</tr>
<tr>
<td>4 Recalling and performing</td>
<td>music that is familiar from memory</td>
</tr>
<tr>
<td>5 Recalling and writing</td>
<td>music that is familiar from memory</td>
</tr>
<tr>
<td>6 Creating and improvising</td>
<td>music that is unfamiliar while performing or while audiating in silence</td>
</tr>
<tr>
<td>7</td>
<td>music that is unfamiliar while reading</td>
</tr>
<tr>
<td>8</td>
<td>music that is unfamiliar while writing</td>
</tr>
</tbody>
</table>

(Gordon, 2012, p. 15)
Conceptual Framework

The conceptual framework for this study is based upon both the aural tradition of steel band and the previously documented positive relationship between improvisation, aural learning, and student achievement (Azzara, 1993; Snell, 2006). Using music learning theory to guide instruction, I introduced students to tunes and patterns aurally. Students demonstrated their understanding of the tunes by improvising.

Aural learning has historically played a significant role in the steel drum ensemble. Tamboo Bamboo bands, the predecessor to the modern steel drum ensemble, were improvisatory in nature. Notation for the Tamboo Bamboo bands did not exist; therefore, players relied on memory to reconstruct familiar songs and rhythms. During World War II, Tamboo Bamboo players developed the modern steel pan using oil drums left behind by the United States Navy. As the ensemble evolved into the modern day steel drum band, influences of Cuban, Latin, French, and Spanish styles made way into the music. The aural tradition remained.

Because of the aural tradition, the steel band ensemble is an ideal context for teaching improvisation. I based the conceptual framework for this study on the overlap of music learning theory (Gordon, 2012) and the aural tradition of the steel band. Students learned aurally to internalize tonality, meter, pulse, and musicality. Through aural learning, students displayed the necessary readiness for improvisation. I present a visual of this framework in Figure 8.
Classroom Setting

This study occurred in a beginning level steel drum course at a high school in the mid-Atlantic region of the United States. Before the study began, Mr. Jerry Trommel, the teacher, worked with the students on scale patterns in C major, improvisation using scale patterns, technique-building exercises, basic notation reading skills, and several pieces of steel band repertoires.

Daily Classroom Procedure

Beginning steel band class at Acier High School met daily from 7:15 AM until 8:30 AM. While a majority of the students attended class daily and punctually, several students consistently came to class late. On a typical day, the students began class with time for personal warm-up and practice. After morning announcements, Mr. Trommel, the steel band teacher at Acier High School, instructed the students in a group warm-
up. By the beginning of the group warm-up, a majority of students were present. The warm-up usually consisted of scale patterns in a variety of major keys (see Appendix I). After warm-up the teacher would frequently lead the students in a brief improvisation warm-up using a blues progression (see Appendix J).

After warm-ups, Mr. Trommel rehearsed repertoire with the students. According to Mr. Trommel, the music at the beginning of the school year was simple. Students practiced arrangements of “Mary Had a Little Lamb” and other familiar tunes. As the year progressed, the students practiced literature such as “St. Thomas” and “Joy to the World.” Mr. Trommel also reported teaching basic music reading and theory concepts early in the semester.

Data Collection

Recruitment

I recruited participants by attending a class session and speaking about the purpose and procedure of the study. After speaking with the class, I distributed a letter addressed to parents and students explaining when and how the study would occur. I also gave each student under the age of 18 a parental consent form and student assent form detailing all aspects of the research. In order to participate, I asked students to return both forms with the appropriate signatures. Students who were 18 or older when the study began were not required to obtain parental consent. Rather, those students signed a personal consent form.
Audiation-based Curriculum

I implemented an audiation-based improvisatory curriculum over a 6-week period. During this phase, I instructed students to audiate, move, sing, chant, play, and improvise. The students learned two tunes by ear, “Mary Ann” and “Matilda” (see Appendix K). I selected each tune based on their harmonic content. “Mary Ann” is constructed of the tonic and dominant chords. “Matilda” utilizes the tonic, dominant, and sub-dominant chords. I did not emphasize musical notation, although it was part of the teacher’s daily classroom activities. Instead, students learned the repertoire by ear.

During the study, students engaged in activities based on Developing Musicianship through Improvisation (DMTI; Azzara & Grunow, 2006). The students performed, both aurally and on instruments, rhythm and tonal patterns based on repertoire. Students began to improvise as they developed rhythmic and tonal vocabularies. Improvisation activities became increasingly complex as the students achieved the seven skills outlined in DMTI:

1. Improvise rhythm patterns to the bass line;
2. Establish the tonality and harmonic texture of the song;
3. Play harmonic rhythm using the pitches from skill 2;
4. Improvise rhythm patterns to the harmonic progression using a neutral syllable;
5. Improvise tonal patterns to the macrobeats;
6. Improvise tonal and rhythm patterns to the harmonic progression;
7. Decorate and embellish melodic material (Azzara & Grunow, 2006).

In Table 5, I document the lesson plan objectives and length of each lesson. I based the information in Table 5 on my teaching log of what occurred in the class session, rather than on my intended objectives.

Table 5

Observation information and lesson plan objectives

<table>
<thead>
<tr>
<th>Lesson (L) or Observation (O)</th>
<th>Observation Information or Lesson Plan Objectives</th>
<th>Length of Lesson or Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>O 1</td>
<td>Observed normal class</td>
<td>1 hour</td>
</tr>
<tr>
<td>O 2</td>
<td>Observed normal class because not enough permission slips were returned to begin instruction</td>
<td>1 hour</td>
</tr>
<tr>
<td>L 1</td>
<td>Duple meter rhythm patterns*; macro/microbeat movement; Major tonal patterns (I and V)<em>; “Mary Ann”</em></td>
<td>10 minutes</td>
</tr>
<tr>
<td>L 2</td>
<td>Duple meter rhythm patterns*; macro/microbeat movement; Major tonal patterns (I and V)<em>; “Mary Ann”</em>; self evaluation**</td>
<td>20 minutes</td>
</tr>
<tr>
<td>L 3</td>
<td>Duple meter rhythm patterns*; same/different rhythm patterns; improvising four beat rhythm patterns; Major tonal patterns (I and V)<em>; label tonal patterns as tonic/dominant; “Mary Ann”; “Mary Ann” bass line</em></td>
<td>20 minutes</td>
</tr>
<tr>
<td>L 4</td>
<td>Review – no new concepts</td>
<td>10 minutes</td>
</tr>
<tr>
<td>L 5</td>
<td>Duple meter rhythm patterns*; same/different rhythm patterns; improvising four beat rhythm patterns; Major tonal patterns (I, IV, and V)<em>; “Mary Ann”; “Mary Ann” bass line</em>; improvised rhythms on chord roots; improvised chord tone patterns; “Matilda”; “Matilda” bass line</td>
<td>25 minutes</td>
</tr>
<tr>
<td>L 6</td>
<td>Duple meter rhythm patterns*; same/different rhythm patterns; improvising four beat rhythm patterns; Major tonal patterns (I, IV, and V)<em>; “Mary Ann”; “Mary Ann” bass line</em>; improvised rhythms on chord roots; improvised chord tone patterns; improvised rhythms with chord tone patterns; “Matilda”; “Matilda” bass line; improvised using passing tones</td>
<td>20 minutes</td>
</tr>
<tr>
<td>L 7</td>
<td>Review – no new concepts; self evaluation**</td>
<td>10 minutes</td>
</tr>
<tr>
<td>L 8</td>
<td>Duple meter rhythm patterns*; same/different rhythm patterns; improvising four beat rhythm patterns; Major tonal patterns (I, IV, and V)<em>; “Mary Ann”; “Mary Ann” bass line</em>; improvised rhythms on chord roots; improvised chord tone patterns; improvised rhythms with chord tone patterns; “Matilda”; “Matilda” bass line; improvised using passing tones</td>
<td>20 minutes</td>
</tr>
</tbody>
</table>

Note. *aurally and on instruments **students evaluated themselves on a 4 point scale – 4 = very comfortable with the concepts; 1 = uncertain with the concepts
Timeline

This study occurred in the fall of 2014. Beginning Wednesday, October 29, 2014, I engaged participants in two 10-20 minute instructional periods weekly, with the exception of school holidays. I collected quantitative data during a normal class period at the end of the semester. I also conducted the focus group during class time following quantitative data collection. Throughout the research period, I kept a log detailing each lesson.

Rating Scale

At the end of the instructional period, I recorded students performing both tunes and improvisations. Four judges evaluated the recordings using rating scales adapted from Developing Musicianship Through Improvisation (Azzara & Grunow, 2006; see Appendix L). The rating scales, previously found reliable (Snell, 2006; Stringham, 2010), are comprised of both continuous and additive dimensions. Both rating scales were comprised of continuous dimensions (rhythm, harmonic progression, and tonal) and additive dimensions (improvisation and expression). The judges evaluated students on tonal, rhythmic, harmonic, improvisatory, and expressive elements.

Judge Selection and Training

The judges were selected based on their experience with instrumental music education, improvisation, and knowledge of steel drums. I trained each judge before he or she began evaluating the recordings. During training, I reviewed three sample recordings and rubrics. I presented the judges with examples of three completed
rubrics where students scored averages of five, three, and one in each dimension.

Along with each rubric, I provided a de-identified recording for the judges to reference. In each sample rubric, I included a narration detailing the rating process (see Appendix M).

I originally invited three judges to evaluate students’ recordings. Upon initial data analysis of the data, I noticed one judge’s ratings did not align with the examples that I provided. For example, while I rated Student 2 with a total score of 17 out of 20 for improvisation, the judge rated the same student a total of 7 out of 20 for improvisation. Because of discrepancies in adjudication, I elected not to include those scores in my final data analysis.

Because I omitted one set of scores, I invited two additional qualified music educators to evaluate the students’ recordings. In my final analysis, I used four judges’ ratings; two of the three original judges and the two additional judges. Judge 1 was a first year graduate student in Music Education at a university in the mid-Atlantic region of the United States. Judge 1 had previous experience with steel drums, including performing with the university’s steel drum ensemble and with a steel drum ensemble in Trinidad.

The second judge was a veteran teacher at a high school for the arts in the mid-Atlantic region of the United States. Judge 2 had over 15 years of previous experience with steel band, including performing overseas on numerous occasions as part of a steel drum ensemble. Additionally, Judge 2 had a plethora of teaching experience with both choral and instrumental music, particularly steel band, in the high school setting.
Like Judge 2, the third judge was a veteran high school teacher. At the time of the study, Judge 3 had over 15 years teaching experience in the public school system. Judge 3 specialized in instrumental music and instructed a variety of ensembles including marching band, concert band, jazz band, and steel band.

Judge 4 was also a veteran teacher with experience instructing steel band. Similar to Judge 2, Judge 4 performed on steel drums in a variety of situations. Judge 4 taught elementary general music and elementary steel band for over 25 years.

**Focus Group**

After completing the quantitative phase, I conducted a focus group comprised of students selected by the classroom teacher. The teacher, Mr. Trommel, selected students based on their ability to articulate opinions and ideas clearly. During the focus group session, I inquired about the students’ experiences with the audiation-based improvisation curriculum and their participation in the ensemble. The students were encouraged to converse with one-another during the session. I facilitated discussion with several key questions:

1. Would you describe your experiences as a member of the steel band?
2. What was it like learning to improvise?
3. What was easy and difficult about learning to improvise?
4. Do you think that learning to improvise affected you as a musician?
5. Do you plan to participate in steel band in the future?
Data Analysis

At the completion of the quantitative phase, I recorded each student performing and improvising to two familiar pieces of repertoire using Garage Band (Version 10.0.3) on a MacBook computer. Four judges with extensive and varied musical backgrounds scored each recording using two rubrics that were found reliable in previous studies (Snell, 2006; Stringham 2010). The judges scored students on their ability to (a) improvise melodically, (b) improvise rhythmically, (c) improvise harmonically, (d) be expressive, and (e) perform the repertoire accurately. I kept students’ identities confidential by assigning numbers to the performance tapes and assigning pseudonyms to the students in the focus group. I did not disclose the location of the testing site, the teacher’s name, or any of the students’ identifiable information in reports of the findings.

I analyzed quantitative data and qualitative data separately. I began by calculating the sum, mean, and standard deviation for each judges’ rating of student performances. Next, I calculated inter-judge reliability for all aspects of the rating scale using Pearson’s r and alpha factor analysis. Using the data provided by the judges, I correlated students’ performance achievement with their achievement in improvisation.

Following collection of quantitative data, I conducted a focus group. I recorded the focus group meeting using Photo Booth (Version 6.0) on a MacBook computer. After conducting the focus group, I transcribed the focus group verbatim and analyzed the data using line-by-line coding. I carefully reviewed the transcript, noting emerging
themes. Several themes emerged as I reviewed the transcript: (a) enjoyment, (b) challenge, (c) musicianship/notation reading, (d) performance/participation, (e) repertoire, and (f) feeling. Analysis in Scribe (Version 4.2) showed most of the conversation centered on musicianship, literacy, performance, and participation.

Consistent with the sequential explanatory mixed methods design (Creswell, 2012), I sought to explain quantitative data using qualitative data. Creswell (2013) outlined strategies for mixed method data analysis: (a) data transformation, (b) exploration of outliers, (c) instrument development, (d) multiple level examinations, (e) development of a matrix (p. 219). I elected to use data transformation to explain the quantitative data through the qualitative themes.

**Reliability and Validity**

I determined reliability of the quantitative data by calculating inter-judge reliability using Pearson’s $r$ and Cronbach’s alpha. Although the initial analysis of inter-judge reliability showed several inconsistencies, the alpha coefficient of .886 demonstrated an acceptable overall reliability.

To ensure reliability of the qualitative data, I coded the transcript by hand and triangulated the data by inputting themes into Scribe 4.2. I also had a first year graduate student at a university in the mid-Atlantic region of the United States, who was familiar with qualitative data analysis, review transcript and coding. The reviewer determined that the transcript and coding were accurate.
Ethical Concerns

There were limited ethical concerns involved in this research study. I kept students’ identities confidential through use of pseudonyms. Students returned consent forms (see Appendix E & Appendix F) and assessment forms before beginning the study (see Appendix G).

In Chapter 4, I present quantitative findings and interpretations. In Chapter 5, I present qualitative findings and interpretations and mixed-methods analysis. Finally, I summarize the study, present conclusions and implications to music education, and offer recommendations for future researchers.
Chapter 4

QUANTITATIVE FINDINGS

In this research, I examined the effect of audiation-based instruction in improvisation on high school students’ musical achievement on the steel drum. I also explored students’ reactions to learning to improvise and participating in a steel drum ensemble. Because of the nature of this study, I elected to utilize a sequential explanatory mixed methods approach (Creswell, 2008). I collected audio-recorded data from each student, and presented it a panel of four qualified judges. After collecting the data from the judges, I used a variety of statistical analytical procedures to quantify the data.

The following research questions guided the quantitative phase of this study:

1. What effect does audiation-based instruction in improvisation have on students’ ability to (a) improvise rhythmically; (b) improvise melodically; and (c) improvise harmonically on steel drum?

2. What is the relationship between students’ performance of steel drum repertoire and their ability to improvise?

Participants

The participants for this study were 11 students enrolled in a beginning steel band class at a high school in the mid-Atlantic region of the United States. In total, there were 16 students enrolled in the class, 11 elected to participate in the study.
Data Analysis

I administered a 6-week curriculum consisting of audiation-based
improvisation activities to the participants (see Appendix C). At the conclusion of the
6-week period, I recorded each student performing two familiar tunes, “Mary Ann”
and “Matilda”, and improvising. The students based their improvisation on the
melodic, harmonic, rhythmic, and expressive aspects of the tunes. I used Garage Band
(Version 10.0.3) on a MacBook computer to record each student’s performance. I de-
identified the recordings using numbers, and then transferred the recordings to a
secure Sound Cloud account.

Reliability

Four judges evaluated the recordings using rubrics consisting of additive and
continuous dimensions. Judges evaluated students’ improvisation achievement
through a rating scale on harmonic progression, rhythm, expression, and
improvisation. The judges also evaluated students’ performance achievement through
a rating scale on tonal, rhythm, and expressive elements. Using Pearson’s $r$, I
calculated inter-judge reliability between each pair of judges for each dimension of the
rating scales for “Mary Ann” (MA), “Matilda” (M), and a combination of both “Mary
Ann” and “Matilda” (Both). I present the correlation coefficients in Table 6.
Table 6

*Inter-judge reliability (Pearson’s r) for “Mary Ann,” “Matilda,” and “Mary Ann” and “Matilda” (Both)*

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Judge 1-Judge 2</th>
<th>Judge 1-Judge 3</th>
<th>Judge 2-Judge3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MA</td>
<td>M</td>
<td>Both</td>
</tr>
<tr>
<td>Tune Tonal</td>
<td>.45</td>
<td>.42</td>
<td>.80</td>
</tr>
<tr>
<td>Tune Rhythm</td>
<td>.82</td>
<td>.22</td>
<td>.86</td>
</tr>
<tr>
<td>Tune Expression</td>
<td>.97</td>
<td>-.03</td>
<td>.83</td>
</tr>
<tr>
<td>Improvisation Improv.</td>
<td>.44</td>
<td>.47</td>
<td>.46</td>
</tr>
<tr>
<td>Improvisation Rhythm</td>
<td>.45</td>
<td>.35</td>
<td>.62</td>
</tr>
<tr>
<td>Improvisation Expressive</td>
<td>.23</td>
<td>.36</td>
<td>.45</td>
</tr>
<tr>
<td>Harmonic Progression</td>
<td>.44</td>
<td>.35</td>
<td>.61</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Judge 1-Judge 4</th>
<th>Judge 4-Judge 2</th>
<th>Judge 4-Judge3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MA</td>
<td>M</td>
<td>Both</td>
</tr>
<tr>
<td>Tune Tonal</td>
<td>.63</td>
<td>.83</td>
<td>.78</td>
</tr>
<tr>
<td>Tune Rhythm</td>
<td>.86</td>
<td>.68</td>
<td>.88</td>
</tr>
<tr>
<td>Tune Expression</td>
<td>.43</td>
<td>-.21</td>
<td>.25</td>
</tr>
<tr>
<td>Improvisation Improv.</td>
<td>.51</td>
<td>-.08</td>
<td>.41</td>
</tr>
<tr>
<td>Improvisation Rhythm</td>
<td>.19</td>
<td>.33</td>
<td>.31</td>
</tr>
<tr>
<td>Improvisation Expressive</td>
<td>.34</td>
<td>-.01</td>
<td>.37</td>
</tr>
<tr>
<td>Harmonic Progression</td>
<td>.27</td>
<td>.05</td>
<td>.05</td>
</tr>
</tbody>
</table>

Note. Judge 3 provided the same rating for all participants in the Improvisation Harmonic Progression dimension. This prevented me from calculating the correlation coefficient.
To establish inter-judge reliability among all four judges, I completed alpha factor analysis (Cronbach’s alpha) for “Mary Ann,” “Matilda,” and the average of both tunes combined. I present this data in Table 7.

Table 7

Inter-judge reliability (Cronbach’s Alpha) for “Mary Ann,” “Matilda,” and “Mary Ann” and “Matilda”

<table>
<thead>
<tr>
<th></th>
<th>MA</th>
<th>M</th>
<th>Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\alpha)</td>
<td>.854</td>
<td>.735</td>
<td>.886</td>
</tr>
</tbody>
</table>

Descriptive Statistics

After determining reliability of the rating scales, I calculated the mean and standard deviation for each dimension of the rating scale. Additionally, I calculated the theoretical mean and theoretical standard deviation for each dimension. The theoretical values indicate the ideal score in a normally distributed set of data (Walters, 2010). I present the mean, standard deviation, theoretical mean, and theoretical standard deviation for “Mary Ann” in Table 8, “Matilda” in Table 9, and for the composite of “Mary Ann” and “Matilda” in Table 10. In general, mean scores were higher than the theoretical mean, with the exception of the improvisation dimension on the improvisation rating scale. Standard deviations were smaller than the theoretical standard deviations. For reference, I present the rating scales in Appendix L.
Table 8

*Composite and theoretical means and standard deviations for rating scale dimensions for “Mary Ann”*

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Theoretical Mean</th>
<th>Theoretical Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tune - Tonal</td>
<td>4.32</td>
<td>.89</td>
<td>2.5</td>
<td>.83</td>
</tr>
<tr>
<td>Tune - Rhythm</td>
<td>3.66</td>
<td>1.48</td>
<td>2.5</td>
<td>.83</td>
</tr>
<tr>
<td>Tune – Expression</td>
<td>3.77</td>
<td>.64</td>
<td>2.5</td>
<td>.83</td>
</tr>
<tr>
<td>Tune - Composite</td>
<td>11.75</td>
<td>2.93</td>
<td>7.5</td>
<td>2.5</td>
</tr>
<tr>
<td>Improvisation - Improvisation</td>
<td>2.18</td>
<td>.86</td>
<td>2.5</td>
<td>.83</td>
</tr>
<tr>
<td>Improvisation – Rhythm</td>
<td>3.23</td>
<td>.86</td>
<td>2.5</td>
<td>.83</td>
</tr>
<tr>
<td>Improvisation - Expressive</td>
<td>2.90</td>
<td>.70</td>
<td>2.5</td>
<td>.83</td>
</tr>
<tr>
<td>Improvisation - Harmonic</td>
<td>4.18</td>
<td>.69</td>
<td>2.5</td>
<td>.83</td>
</tr>
<tr>
<td>Improvisation - Composite</td>
<td>11.73</td>
<td>2.45</td>
<td>10</td>
<td>3.33</td>
</tr>
</tbody>
</table>

*Note.* Maximum possible score for Tune Composite is 15. The Improvisation Composite maximum possible score is 20. For all other dimensions, maximum possible score is 5.
Table 9

*Composite and theoretical means and standard deviations for rating scale dimensions for “Matilda”*

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Theoretical Mean</th>
<th>Theoretical Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tune - Tonal</td>
<td>4.39</td>
<td>.62</td>
<td>2.5</td>
<td>.83</td>
</tr>
<tr>
<td>Tune - Rhythm</td>
<td>4.25</td>
<td>.54</td>
<td>2.5</td>
<td>.83</td>
</tr>
<tr>
<td>Tune - Expression</td>
<td>3.73</td>
<td>.53</td>
<td>2.5</td>
<td>.83</td>
</tr>
<tr>
<td>Tune - Composite</td>
<td>12.36</td>
<td>1.57</td>
<td>7.5</td>
<td>2.50</td>
</tr>
<tr>
<td>Improvisation – Improvisation</td>
<td>1.93</td>
<td>.76</td>
<td>2.5</td>
<td>.83</td>
</tr>
<tr>
<td>Improvisation – Rhythm</td>
<td>2.72</td>
<td>.70</td>
<td>2.5</td>
<td>.83</td>
</tr>
<tr>
<td>Improvisation – Expressive</td>
<td>2.70</td>
<td>.72</td>
<td>2.5</td>
<td>.83</td>
</tr>
<tr>
<td>Improvisation - Harmonic</td>
<td>3.23</td>
<td>1.06</td>
<td>2.5</td>
<td>.83</td>
</tr>
<tr>
<td>Improvisation - Composite</td>
<td>10.09</td>
<td>2.56</td>
<td>10</td>
<td>3.33</td>
</tr>
</tbody>
</table>

*Note.* Maximum possible score for Tune Composite is 15. The Improvisation Composite maximum possible score is 20. For all other dimensions, maximum possible score is 5.
Table 10

*Composite and theoretical means and standard deviations for rating scale dimensions for “Mary Ann” and “Matilda”*

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Theoretical Mean</th>
<th>Theoretical Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tune - Tonal</td>
<td>8.70</td>
<td>1.21</td>
<td>5</td>
<td>1.67</td>
</tr>
<tr>
<td>Tune – Rhythm</td>
<td>7.91</td>
<td>1.80</td>
<td>5</td>
<td>1.67</td>
</tr>
<tr>
<td>Tune – Expression</td>
<td>7.50</td>
<td>1.01</td>
<td>5</td>
<td>1.67</td>
</tr>
<tr>
<td>Tune – Composite</td>
<td>24.11</td>
<td>3.92</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>Improvisation – Improvisation</td>
<td>4.11</td>
<td>1.45</td>
<td>5</td>
<td>1.67</td>
</tr>
<tr>
<td>Improvisation – Rhythm</td>
<td>5.95</td>
<td>1.49</td>
<td>5</td>
<td>1.67</td>
</tr>
<tr>
<td>Improvisation – Expressive</td>
<td>5.61</td>
<td>1.26</td>
<td>5</td>
<td>1.67</td>
</tr>
<tr>
<td>Improvisation - Harmonic</td>
<td>7.41</td>
<td>1.56</td>
<td>5</td>
<td>1.67</td>
</tr>
<tr>
<td>Improvisation – Composite</td>
<td>21.81</td>
<td>4.72</td>
<td>20</td>
<td>6.67</td>
</tr>
</tbody>
</table>

*Note.* Maximum possible score for Tune Composite is 30. The Improvisation Composite maximum possible score is 40. For all other dimensions, maximum possible score is 10.

**Correlation**

I correlated participants’ overall performance achievement with their overall improvisation achievement. In Table 11, I present correlation coefficients between “Mary Ann” tune and “Mary Ann” improvisation, “Matilda” tune and “Matilda” improvisation, and the composite tune and composite improvisation. In Figure 9, I present a scatter plot of the relationship between performance achievement and improvisation achievement. In this study, there was a positive relationship between performance achievement and improvisation achievement.
Table 11

*Correlation of participant performance achievement with participant improvisation achievement*

<table>
<thead>
<tr>
<th></th>
<th>“Mary Ann” – Tune</th>
<th>“Matilda” – Tune</th>
<th>Both – Tune</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Mary Ann” – Improvisation</td>
<td>.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Matilda” – Improvisation</td>
<td></td>
<td>.66</td>
<td></td>
</tr>
<tr>
<td>Both – Improvisation</td>
<td></td>
<td></td>
<td>.62</td>
</tr>
</tbody>
</table>

![Figure 9](image)

*Figure 9  Relationship between participant performance achievement and participant improvisation achievement*
Interpretation of Quantitative Data

To determine inter-judge reliability, I correlated scores between judges’ ratings in each dimension of the rating scale. Because of the small population size ($N = 11$), inter-judge reliability between pairs of judges was inconsistent. Slight disparities between judges’ data can have significant effect on the $r$-value. However, the alpha co-efficient ($\alpha = .886$) indicates a high reliability. Reliability was consistent with previous research using similar rating scales, which affirmed the overall reliability of the rating scales (Snell, 2006; Stringham, 2010).

I also calculated the means and standard deviations for each dimension of the rating scale. In general, students’ scores exceeded the ideal mean. This suggests students were successfully learning repertoire by ear. This is consistent with researchers’ claims regarding students’ ability to play repertoire by ear and their ability to be successful (Azzara, 1993; Snell, 2006). A majority of the standard deviations were smaller the ideal standard deviation. This indicates that students’ scores were not distributed normally. The rating scale did not allow for a large distribution and did not spread participants’ scores. In this study, high achievement did not allow for normal distribution of the data.

By scoring above the ideal mean, students demonstrated their ability to achieve musically in each dimension. The improvisation category ($M = 4.11$) was the only dimension where students scored below the ideal mean ($M = 5.0$). This may be due to the subjectivity associated with that dimension of the rating scale. Curious, I reviewed the recordings using this rating scale (see Appendix L) and believe it is possible that the scores were lower because there was not enough time to develop a sense of silence, embellishment, tension, and release.
Another possibility for some of the variance was inconsistencies in judge training. I counseled each judge individually. Although I used the same script for each judge, there may have been some variations that occurred during questions and answers. It is also likely that the clarity of the recordings affected judges’ perceptions of the students’ performances. Some recordings were poor quality or had disparities because of problems with the drums.

The structured curriculum I used during this study may also explain lower scores in the improvisation category. Many concepts, both musically and extra-musically, were foreign to participants at the onset of the study. For example, participants were used to practicing improvisation with visual aids. Prioritizing aural learning was uncomfortable for students in the beginning of the study. Similarly, the aural tradition of the steel drum ensemble is informal in comparison to the curriculum associated with this study. On the contrary, students scored higher in the performance categories because they were familiar with performing repertoire during their regular class. This result is consistent with previous studies, where students achieved high scores in performance and lower scores in improvisation (Snell, 2006).

The correlation between performance achievement and improvisation achievement \( (r = .62) \) indicates a positive relationship between performance achievement and learning to improvise. This value affirms findings from previous studies, where participants’ experience with improvisation had a positive impact on their musicianship (Azzara, 2006; Guilbault, 2009; McPherson, 1993; Snell, 2006).

In this chapter, I presented the analysis and interpretation of quantitative data. In Chapter 5, I will present findings from the qualitative phase of the study. I will then
present the mixed methods data analysis, where I will use qualitative data to explain results from the quantitative data presented in this chapter.
Chapter 5

QUALITATIVE AND MIXED METHODS DATA ANALYSIS

The purpose of this study was to investigate the relationship between high school students’ musical achievement and improvisation on the steel drum. The research question I sought to answer during the qualitative phase of the study was: How do students describe audiation-based instruction using the steel drum?

I based this study on the framework of the aural tradition of the steel drum, combined with an audiation-based approach to teaching improvisation (Gordon, 2012). In order to fulfill the purpose of this study, I determined that it was necessary not only to explore quantitative data documenting student achievement, but also to query the students’ description of learning.

Research is lacking regarding the teaching of children to improvise outside of a traditional jazz ensemble and using steel band as a medium for instrumental music education. Due to the multidimensional nature of this study and the lack of research on both the facets of teaching children to improvise and non-traditional instrumental ensembles, I elected to utilize a sequential explanatory design (Creswell, 2011). In this method, the researcher utilizes quantitative data to explain and elaborate quantitative data.

The participants were selected based on their ability to articulate thoughts and ideas clearly. The teacher at Acier High School selected the students to participate in the focus group. I required students to obtain consent before participating in the all facets of the study, including the focus group. Following are guiding questions I wrote
to encourage participant dialogue about their experience learning to improvise and performing in a steel drum ensemble:

1. What musical experience did you have before beginning steel band?
2. Tell me about your experience as a member of the ensemble.
3. What were your experiences with learning to improvise?
4. What was easy and difficult about learning to improvise?
5. Do you think that learning to improvise affected you as a musician?

I recorded the focus group using Garage Band (Version 10.0.3) on a MacBook computer. I then transcribed the session using pseudonyms to protect the participants’ identities. After transcribing the interview, I coded the transcript by hand for emerging and predetermined themes related to my research questions. I had a first-year graduate student at a university in the mid-Atlantic region of the United States check my transcript and codes. The graduate student held a Bachelor of Music degree, with emphasis in education, and was familiar with qualitative research methods and analysis. To triangulate my work, I used Scribe (Version 4.2) to code the video data. Scribe is a computer program designed for data analysis of digital video recordings.

Figure 10   Scribe 4.2 Interface
Using Scribe, I recorded instances where each theme emerged. I used the focus group transcript to inform my video coding. The Scribe 4.2 interface is shown in Figure 10. In the interface, I was able to view the video on the left side of the screen while inputting the codes on the right.

**Setting**

The teacher selected three students to participate in the focus group session. I did not give the teacher guidelines in regards to race, gender, age, or musical background. However, I did ask the teacher to select students who could articulate responses and offer discerning comments. For this phase, I had two female participants and one male participant. Two participants were in 10th grade and one participant was in 12th grade. In the following section, I will introduce each participant.

**Bruce**

Bruce was a sophomore at Acier High School who visibly appeared to enjoy participating in steel band during rehearsals. He played tenor pan in steel band and reported a variety of prior musical experiences including participating in marching band, concert band, and jazz band. He was one of two students involved in the study who had participated in the steel drum ensemble the previous year. Additionally, he mentioned that he was able to play a variety of instruments. Following completion of the focus group meeting, I asked his teacher about Bruce’s achievement on other instruments. The teacher stated that, in addition to steel drum, Bruce could play the clarinet and guitar proficiently. The teacher also reported that Bruce was the section leader for the clarinet section, and was an excellent musician. Bruce was enthusiastic
and willing to share his thoughts, experiences, and opinions during the focus group meeting.

**Jenny**

Jenny was a sophomore at the time of the study. She played double seconds in beginning steel band. Like Bruce, Jenny reported previous experience in music. However, her experience was far more limited. She recounted her brief experience of playing clarinet in band from 4th to 7th grade. She also mentioned one year of choral participation. When I observed rehearsals, Jenny did not always appear to enjoy steel band, but reported enjoying “learning how to play a new instrument” and “being good at it.”

**Olive**

Olive was a senior at Acier High School. She played tenor pan in beginning steel band. Unlike Jenny and Bruce, Olive had no prior musical training. She did not participate in any school related ensembles or music classes. After the focus group, I followed up with her regarding outside school music experience. Other than listening to music, Olive reported no additional informal music experiences. Olive was very outgoing during the interview. She was free with expressing her thoughts and opinions. She reported enjoying steel band, and feeling good about being able to perform on par with the more experienced musicians. Olive reported feelings of boredom and noted that she felt comfortable with her abilities in comparison to her classmates.
Acier High School

Acier High School is located in a large suburban area. *US News and World Report* (2015) classified the school as a large suburban school, with enrollment totaling at 984 students during the 2013-2014 school year. Of the enrolled students, 52% were Black, 26% were White, 14% were Hispanic, 4% were Asian, and the remaining 4% identified as ‘other’ (US News and World Report, 2015). During the time of the study, the school received Title I funding. Over half the student population participated in the Free and Reduced Lunch Program: 51% free, 6% reduced (US News and World Report, 2015).

Acier High School has a multifaceted music department with three music teachers: band, orchestra, and chorus. The choral director and orchestra director are part-time. The band director, Mr. Trommel, is the only full-time music teacher. Acier High School has a prosperous instrumental music program. In addition to marching band, concert band, and steel band, Mr. Trommel also offers beginning piano and music technology classes. Mr. Trommel began working for the school district 22 years ago, and has been an employee of Acier High School for 20 years.

**Presentation of Qualitative Data**

The following research question guided this portion of the study: How do high school students describe audiation-based instruction using the steel drum? To answer the research question, I organized the qualitative data by themes (Bazeley, 2013). The following themes emerged during analysis: (a) challenges, (b) repertoire, (c) emotion (d) enjoyment, (e) performance and participation, and (f) musicianship and literacy.
For the purpose of this analysis, I will report data from the musicianship and literacy category separately.

Analysis in Scribe confirmed that a majority of the conversation (27.03%) centered on musicianship and literacy, followed by performance and participation (21.62%). I identified each emerging theme, along with the instances of discussion, in Table 12.

Table 12

*Instances and percentages of emerging themes*

<table>
<thead>
<tr>
<th>Theme</th>
<th>Instances</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Challenges</td>
<td>8</td>
<td>10.81%</td>
</tr>
<tr>
<td>Repertoire</td>
<td>10</td>
<td>13.51%</td>
</tr>
<tr>
<td>Emotion</td>
<td>10</td>
<td>13.51%</td>
</tr>
<tr>
<td>Enjoyment</td>
<td>10</td>
<td>13.51%</td>
</tr>
<tr>
<td>Performance and Participation</td>
<td>16</td>
<td>21.62%</td>
</tr>
<tr>
<td>Musicianship and Literacy</td>
<td>20</td>
<td>27.03%</td>
</tr>
</tbody>
</table>

**Challenges**

The three focus group participants possessed a variety of musical backgrounds. Bruce had the most amount of prior experience as a past participant in the steel band, and a member of the marching band and concert band. Additionally, Bruce participated in informal music making outside of school by playing the guitar. On the
other hand, Jenny reported having a limited background in music, having participated in beginning band and one year of choral music. Olive did not engage in any formal music making before starting steel band. Because of the variety of musical backgrounds, the students described different challenges of learning to improvise.

Bruce seemed confident in his ability to improvise. When I asked him about his initial experiences with improvising, before beginning audiation-based instruction, he said, “Well, I mostly just played random notes and hopefully it sounded good in the beginning. But then I, uh, learned more scales, and what the key of the song was that we learned and I just improved in that key and it just worked.” I asked Bruce about his challenges when improvising and he mentioned having difficulty during long solo passages:

I think the hard part would be, um, having to solo for much longer time in the song because you’re already like, done all your rhythms and that you thought of, and then [the director] wants you to keep going so you’re just like, oh, and you just do some random stuff that doesn’t sound as good as the beginning.

In spite of the challenges, Bruce remained confident in his ability to improvise. Since Bruce’s primary instrument is clarinet, I asked him if he thought it would be more difficult to improvise using his clarinet. He stated that it would be more difficult to improvise on clarinet due to the amount of executive skills required to play the instrument. Jenny, having previous experience on clarinet, agreed that improvising would be more difficult using the clarinet.
Olive agreed with Bruce’s original statement about early improvisation, stating, “I try to play keys and make sure it sound [sic] right.” At the time of the interview, Olive was in her first year of formal music instruction. She was unable to read notation. When I asked her about the challenges associated with improvising, she referenced her inability to read notation. She said, “the not so easy part is the notes, especially if you’re new to music. Cause, like, you still don’t know how to read it and like hear it in tunes and something. That’s the hard part.”

Jenny expressed discontent with improvising. She said, “I think soloing is hard because I cannot think that quickly. I can’t think fast enough to think about the scale, and the notes, and all the notes in the song. So, I just have no interest in improvising.” Jenny also mentioned difficulties with, “thinking of rhythms that sound good with the notes that you’re playing together.” However, despite Jenny’s displeasure with improvising, she commented that improvising helped her to become a better musician, “I think it made me realize that I wasn’t as good as I thought I was…’cause it’s difficult to improvise.” When I asked Jenny if she thought she would continue to improve as a musician if she continued practicing improvisation, she quickly responded, “Yeah.” Bruce and Olive also agreed that learning to improvise improved their musicianship.

**Repertoire**

Repertoire was an emergent theme in the focus group data. The students expressed frustration with the lack of repertoire in their regular class. They did not mention direct concerns regarding the repertoire used in the study, “Mary Ann” and
“Matilda.” All of their comments regarding repertoire were geared toward the large ensemble pieces they typically rehearsed in class. Bruce mentioned his excitement toward performing “all these songs” in the previous year of steel band. Later in the session, in reference to a comment about rehearsal being boring, he said, “[Our teacher] wants us to play the same song over and over and over again. So that’s probably the boring part.” Jenny nodded in agreement and said, “We only know like, three songs, so…”

Toward the end of the focus group, I asked the students “…is there anything any of you want to say more about steel drum, or improvising, or being part of the class, or anything?” Bruce answered, “Playing through music is cool.” Similarly, Jenny said, “When you first learn a song like, you’re like really like by yourself like learning it, but then like when like the first time you play it together you’re like, we all learned the same song but like, different parts of it. And it comes together and it sounds good.”

Because the students expressed frustration regarding the limited repertoire used in class, I inquired about what type of music they would like to perform. Jenny said she would like to learn songs that are more recent that the audience and performers would be familiar with. Bruce agreed and said, “People are going to get more into it ’cause they know the songs and they’re going to be like, ‘oh yeah, it’s that song…cool.’” Jenny made a similar comment, expressing her desire to play popular music because it is well known.
Olive said she would like to perform music that is more upbeat because she believed it would be more enjoyable and mistakes would be less noticeable. She said, “I wish we played music that was new and fast. I like fast music.” Jenny agreed saying, “Like, if you’re playing like a slow song, and you’re only like, you’re playing like three notes, at like, in like a long distance of time, and you go to that note before everyone else does it’s way more obvious than if you’re playing like a fast beat song and you press like one wrong note.”

**Emotion**

Similar to repertoire, emotion was an emergent theme during the qualitative analysis. The students conveyed a variety of emotions when related to improvising and performing in the steel drum ensemble. Olive and Jenny both described a good feeling associated with proficiency on the instrument. In reference to learning the instrument and being able to play well, Jenny said, “It’s just nice.” Analogously, regarding improvisation, Olive said, “It made me feel like, you know, that I’m pretty good for me to be a newbie.” Bruce also referenced positive feelings associated with performing for an appreciative audience. He said, “That was awesome.”

In addition to feelings of enjoyment, the students expressed frustration. In particular, Olive mentioned frustration about the class schedule and limited repertoire. She also noted discontent with the time of the class, saying, “Coming to this class every morning is just annoying.” I asked her if she felt the same about all her classes, and she said, “Uhh, kind of. But this class the most because it’s just early in the
morning.” However, in addition to feelings of frustration, she did express enjoyment in playing the instrument and improvising.

**Enjoyment**

During the focus group, all three participants expressed feelings of enjoyment about learning to play the steel drum. Bruce referred to his experience as a member of the ensemble the previous year stating, “Last year it was really fun going everywhere that we went, to festivals and steel drum tour. That was really fun. And it was just a fun experience with everybody in the class.” When asked to elaborate, Bruce described enjoyment in regards to learning music and playing for an appreciative audience.

Jenny also described enjoying steel band, “It’s like my favorite class of the day.” She went on to express excitement about “learning how to play a new instrument,” and “being good at it.” Jenny also commented that sometimes steel band can be boring and she, “wish[ed] that we did like, more songs. We just spend a lot of time on like, one song.” However, she continued by stating that regardless of class sometimes being boring, she still enjoyed playing the steel drum. Similarly, Olive expressed discontent with limited repertoire, but noted that steel drum “is fun.”

**Performance and Participation**

Throughout the focus group session, the students often referred to performing and participating in the ensemble without direct encouragement from my questions. Bruce first mentioned enjoyment from performing, saying he enjoyed “playing in front of people and they actually like, clapped for us, ’cause we were good. That was
awesome.” When asked about playing a solo improvisation, Olive mentioned her excitement to volunteer. She proclaimed that she is a “dare devil,” and enjoys performing solos. At the end of the interview, I asked the students if they intended to participate in steel band in the future. Bruce and Jenny answered a definite “yes.” However, Olive was reluctant to answer because she plans to attend college next year and is unsure about her schedule.

**Musicianship**

All three students noted improvement in their overall musicianship after learning to improvise. On the topic of improvisation and musicianship, Bruce said, “Well it definitely made me a better musician, ‘cause I thought of like the whole, what is this key going in this song, and make you like, hear different stuff which is better.”

The students also expressed a desire to perform music they are familiar with, such as popular music. Jenny stated that she thought it would be easier to perform and improvise to familiar, “I can take what I know from a song and like, try and put it into like the rhythm that I’m playing.” Jenny later continued,

Like, if you’re playing like a slow song, and you’re only like, you’re playing like three notes, at like, in a long distance of time, and you go to that note before everyone else does it’s way more obvious than if you’re playing like a fast beat song and you press like one wrong note.

After Jenny’s comment, I asked the students if they could hear when they played a wrong note, all three responded with a simultaneous “Yeah.”
Literacy

This study relied on an audiation-based curriculum. Although I did not use notation as part of instruction, the teacher introduced the students to notation and used it was part of the daily class. Although literacy was not a focus in this study, I felt it was important to inquire about the students’ ability to audiate notation. Bruce has been playing clarinet for 7 years. He said, “It’s easy for me because it’s exactly like the clarinet so, I just know it already.” He also verified his ability to audiate what is notated. Jenny described her literacy ability as a decoding process. She said, “I can read notes but it just takes me a little longer. Like, I can’t just look at it and know it. Like, I have to fill them in, but I, I can do it.” I asked Jenny if she was able to look at notation and know what it sounds like. She responded, “No, I have to play it to know what it sounds like.” Olive informed me that she was unable to read notation in any regard.

Interpretations

I interpreted the qualitative findings using themes I developed in the analysis. The participants provided many interesting insights and opinions on participating in steel band and learning to improvise through an audiation-based curriculum.

Challenges

The focus group participants came from various musical backgrounds. Bruce, the participant with the most experience, appeared confident in his ability to improvise. Because of his previous experiences, Bruce had an extensive musical vocabulary encompassing a variety of musical styles, genres, meters, and tonalities.
Bruce’s ability to improvise may be related to his musical vocabulary and previous participation in a variety of musical ensembles (e.g. marching band, concert band, steel band, etc.). Other researchers have attributed extensive musical vocabulary to the ability to improvise successfully (Azzara, 1993; Snell, 2006). Similarly, Oare (2008) reported an increase in students’ confidence when they are able to improvise and perform repertoire aurally.

Contrary to Bruce, Jenny expressed displeasure when asked about her experiences improvising. Jenny participated in several music ensembles before beginning steel band, but her participation was sporadic. Her lack of readiness for improvisation may be explained by her irregular participation and lack of regular music instruction. Specifically, Jenny mentioned an inability to think quickly in improvisatory situations, leading to disinterest in improvising. Again, there appears to be a relationship between musical vocabulary and successful improvisation.

Although new to formal high school music instruction, Olive enjoyed improvising and expressed confidence in her abilities. Olive was unable to read music, and therefore was not restricted by notation. When I asked her about the difficulties associated with improvising, she referenced her inability to audiate notation stating, “the not so easy part is the notes, especially if you’re new to music ’cause like, you still don’t know how to read it and like hear it in the tunes” (Gordon, 2012). This may be due to lack of experience with a variety of tunes. A larger repertoire may lead to Olive’s ability to audiate notation. However, because of her inability to read notation, she may have been better attuned to the aural aspects of the lessons.
Repertoire

The participants communicated displeasure for the limited repertoire and genre of repertoire used in their regular steel band class. All three students expressed a desire to perform popular music; because they were familiar with the music, and believed audience members would connect better with it. Students’ desire to perform popular music is not only linked to their familiarity with the repertoire, and its inclusion in their musical listening vocabulary, but also with the social aspects of daily life. Green (2006) documented students’ desire to perform popular music, positing a link between cultural and social components of life with students’ desire to utilize popular music in school.

Emotion

Each student mentioned positive emotions associated with playing steel drums. The disparity amongst the students’ musical backgrounds, along with the positive emotions expressed during the focus group, denotes the inclusiveness of the steel drum ensemble. Olive, in particular, never participated in music before taking steel band. However, she felt comfortable in her abilities as a member of the ensemble. Other researchers reported similar findings when engaging students of a variety of musical backgrounds in the same ensemble, noting the exclusiveness of traditional school ensembles (Oare, 2008; Runskie, 2008).

As a senior with no formal music training, Olive had limited choices when it came to participating in music. She was unable to join band or choir due to lack of experience playing an instrument, singing, and reading notation. However, steel band
was an ideal situation for her. She could participate without prior experience due to the aural nature of the ensemble and the easy technical aspects of the instrument. Olive’s experience in the steel band demonstrates the capacity for an inclusive musical environment.

**Enjoyment**

Based on focus group responses, students generally enjoyed their experiences participating in steel band. Students described enjoying playing their instruments and performing with the ensemble. This is consistent with previous research linking students’ enjoyment with participation in a non-traditional school ensemble (Green, 2006; Oare, 2008; Runskie, 2008).

**Performance and Participation**

Bruce and Olive enjoyed performing, both in class and in public. Although Jenny did not mention enjoying performance, she indicated her intent to play in steel band in the future. Similar to results from previous research (Green, 2006; Oare, 2008; Runskie, 2008), these participants enjoyed the social nature of preparing music within the ensemble and the excitement of performing their work for others.

**Musicianship**

Each focus group participant identified the benefits of learning to improvise on their own musicianship. In reference to improvise, Bruce said, “It definitely made me a better musician, ’cause I thought of like, the whole, what is going on in this song, and make you like, hear different stuff, which is better.” Even Jenny, who did not enjoy improvising, said that she noticed improvements in her overall musicianship.
Snell (2006) described similar findings during student interviews, noting that students who did not enjoy improvising nevertheless reported improved musicianship.

**Literacy**

In this study, I focused on aural learning. Although I did not use notation as part of the audiation-based curriculum, students were familiar with notation from their regular class instruction. Each focus group participant described different abilities when it came to reading notation. Bruce self-identified as musically literate, referencing his ability to audiate what is notated. I asked Bruce if he was able to “look at [music] and know what it sounds like.” Without hesitation, Bruce answered, “Yeah.” Jenny said she was able to identify notes and rhythms, but unable to audiate notation. Olive was unable to read notation at the time of the study. She participated in steel band by learning the tunes by ear. The focus group students’ capacity for improvisation did not seem to be affected by their ability or inability to read notation.

In this section, I offered interpretations based on the qualitative themes that emerged during data analysis. Overall, participants’ enjoyed steel band. Although the participants indicated challenges when learning to improvise, they indicated that learning to improvise improved their overall musicianship. Furthermore, they expressed a desire to play more repertoire. Following, I will use the themes from this section to elaborate the quantitative results from Chapter 4.

**Mixed Methods Data Analysis**

As outlined in the mixed methods sequential explanatory design (Creswell, 2013), I reviewed quantitative findings and then sought to explain the quantitative
findings via the qualitative findings. For the purpose of this study, I used data transformation to quantify the qualitative data through coded themes, and explained the quantitative data using qualitative themes (Creswell, 2013).

Through analysis of the qualitative data, I discovered six themes: (a) challenges, (b) repertoire, (c) emotion (d) enjoyment, (e) performance and participation, and (f) musicianship and literacy. In this section, I will explain quantitative results using qualitative results. Due to the small sample size, results from this study are not generalizable.

**Presentation of the Mixed Methods Analysis**

During quantitative analysis, I identified a difference between students’ performance achievement (M = 5.75-8.70) and their achievement on the improvisation dimension of the rating scale (M = 4.11). This difference can be explained by the focus group participants’ comments about being challenged, or not challenged, and their desire for more repertoire. The curriculum I used was easy for Bruce, who already had a significant musical vocabulary. However, Jenny became disengaged with the lessons, because she was unable to pull from prior musical experience.

Focus group participants’ desire to perform more repertoire could explain the lower score on the improvisation dimension of the rating scale (M = 4.11). The focus group participants expressed strong desires to play more music. During the focus group session, Bruce stated, “[class is] mostly annoying, because like um, our teacher, wants us to play the same song over and over and over again.” Because of the limited
repertoire used in class, the students likely had a limited musical vocabulary to draw from when improvising, thus leading to lower scores.

Participants reported increased self-perception of their musical ability as a result of participating in steel band and improvising. Previous researchers have identified a positive relationship between self-perception and musical achievement (Ryan & Deci, 2000). High achievement on all dimensions of the tune rating scale (M = 24.11) may support this relationship. Jenny said, “It’s just nice,” in reference to being good at steel drum. When asked if learning to improvise affected her musicianship, Olive said, “It made me feel like, you know, that I’m pretty good for me to be a newbie.” I believe that the increase in participants’ musical self-perception led to higher overall performance scores.

During the focus group session, each student agreed that learning to improvise positively affected his or her musicianship. This may explain the positive correlation (r = .62) between participants’ improvisation and performance achievement. Bruce affirmed that learning to improvise “definitely made [him] a better musician.” Olive said that playing an improvisatory solo makes her feel like she has “been [playing steel drums] for a while, but really I’ve only been [playing] for like a few months.” I asked Jenny if she felt that improvising would help her musicianship improve if she continued to practice improvising. She said, “Yeah.”
Summary

This chapter contained presentations and interpretations of qualitative data, and the mixed methods data analysis. The mixed methods data analysis helped me explain inconsistencies and extremities among participants’ scores in various dimensions of the rating scales. The qualitative data supported the differences between participants’ performance achievement and their achievement on the improvisation dimension of the rating scale through the participants’ desire for more repertoire and their feelings toward being challenged or not challenged. Qualitative data also supported participants’ high achievement on the tune rating scale through the attribution of improved self-perception and the participants’ feelings that learning to improvise positively affected their musicianship. The qualitative data helped me to gain a comprehensive view of the effect of improvisation on students’ performance achievement by confirming and supporting quantitative data. In the following chapter I will summarize the study, present conclusions and implications to music education, and offer recommendations for future researchers.
Chapter 6

CONCLUSIONS AND RECOMMENDATIONS

Summary

The purpose of this study was to investigate relationships between high school students’ musical achievement and improvisation on the steel drum. Research questions that guided this inquiry were:

1. What effect does audiation-based instruction in improvisation have on students’ ability to improvise (a) melodically, (b) harmonically, and (c) rhythmically on steel drum?

2. What is the relationship between students’ performance of steel drum repertoire and their ability to improvise?

3. How do students describe audiation-based instruction using the steel drum?

Because there is limited research on both teaching improvisation outside of jazz band and non-traditional ensembles as a means for instrumental music education, I elected to use a sequential mixed methods strategy of inquiry (Creswell, 2011). I collected quantitative data by first implementing an audiation-based improvisation curriculum to high school steel band students at a high school in the mid-Atlantic region of the United States ($N = 11$). At the conclusion of teaching the curriculum, I recorded students performing two tunes and improvisations and presented the recordings to four qualified judges. After collecting quantitative data, I facilitated a focus group comprised of three participants selected by the teacher. Finally, I used
themes developed from qualitative analysis to explain quantitative results. Consistent with Creswell’s (2011) design, data collection analysis occurred in three phases: (a) quantitative data collection and analysis; (b) qualitative data collection and analysis; (c) mixed methods analysis. Figure 7 is a visual representation of the research design used in this study.

![Sequential explanatory mixed methods design](Creswell, 2011)

**Quantitative Data Collection and Analysis**

I began by implementing a six-week audiation-based improvisation curriculum to high school steel band students ($N = 11$). During the instructional period, I engaged participants in singing, macrobeat and microbeat movement, rhythm pattern instruction, tonal pattern instruction, and rote learning. I selected two tunes based on their harmonic structure: “Mary Ann” includes tonic and dominant functions, while “Matilda” includes tonic, dominant, and subdominant functions. I prioritized rote and aural learning throughout my instruction.

At the end of the quantitative phase, I recorded participants performing each tune and an improvisation based on each tune. I shared the recordings with four judges who evaluated the performances using two rubrics composed of additive and continuous rating scales (see Appendix L). After collecting data from each judge, I
calculated mean and standard deviation for each dimension of the rating scale. I also calculated inter-judge reliability using Pearson’s r for each pair of judges and determined overall reliability by calculating Cronbach’s alpha.

**Quantitative Data Results**

The four judges evaluated students’ performance and improvisation achievement using two rating scales. The tune rating scale measured tonal, rhythm, and expressive elements. The improvisation rating scale measured harmonic progression, rhythm, expression, and improvisation. I calculated inter-judge reliability between each pair of judges for each dimension of the rating scales for “Mary Ann,” “Matilda,” and a combination of both tunes. The correlation coefficients ranged from -.47 to .97. To establish overall reliability, I calculated Cronbach’s Alpha. The alpha coefficient was .886, which is considered good overall reliability.

After determining reliability coefficients for inter-judge reliability and overall reliability of the measurement tool, I calculated mean, standard deviation, theoretical mean, and theoretical standard deviation for each dimension of the rating scales for “Mary Ann” and “Matilda,” and a composite of both tunes. In general, mean scores were higher than theoretical mean scores. The improvisation dimension of the improvisation rating scale was the only dimension in which participants scored lower than the ideal mean. Except for one dimension (Tune – Rhythm), standard deviations were consistently smaller than the theoretical standard deviations.

Finally, I correlated participants’ overall performance achievement with their improvisation achievement. I calculated r values for “Mary Ann,” “Matilda,” and a
composite of both tunes. In this study, there was a positive relationship between improvisation achievement and performance achievement ($r = .62$).

**Qualitative Data Collection**

After completing the quantitative phase, I conducted a focus group comprised of three participants who were selected by the classroom teacher. Mr. Trommel selected participants based on their ability to articulate thoughts and ideas clearly. During the focus group discussion, I encouraged participants to converse with one another and offer their thoughts about their experiences with audiation-based improvisation and participation in steel band. I guided discussion with the following questions:

1. Describe your experiences as a member of the steel band
2. What was it like learning to improvise?
3. What was easy and difficult about learning to improvise?
4. Do you think that learning to improvise affected you as a musician?
5. Do you plan to participate in steel band in the future?

I recorded the focus group session and subsequently transcribed the data using pseudonyms to maintain anonymity of the participants. After transcribing the data, I used line-by-line coding to develop common themes that emerged from the focus group session. I triangulated the themes by coding the video in Scribe (Version 2.4). To check my work, a graduate student from a mid-Atlantic university, familiar with qualitative data collection and analysis techniques, verified my transcript and codes.
**Qualitative Data Results**

After analyzing the transcript, I discovered the following emerging themes (Bazeley, 2009): (a) enjoyment, (b) challenges, (c) musicianship and literacy, (d) performance and participation, (e) repertoire, and (f) emotion. Analysis in Scribe confirmed that a majority of the conversation centered on musicianship and literacy (27.03%), and performance and participation (21.62%).

All three focus group participants communicated feelings of enjoyment regarding steel band. Specifically, their feedback focused on learning to play the instrument and participating in the ensemble, “going everywhere…to festivals and steel drum tour” (Bruce), “learning how to play a new instrument” (Jenny), steel band because it’s “fun” (Olive).

Focus group participants reported varied musical backgrounds. Bruce and Olive reported confidence in their ability, they both mentioned challenges associated with improvising. Bruce had difficulty “solo[ing] for a much longer time in the song.” Olive referenced difficulty reading notation saying, “the not so easy part is the notes…[be]cause you still don’t know how to read it and like, hear it in the tunes.” Jenny did not enjoy improvising because it was difficult. She articulated her inability to think quickly and react to musical nuances within the tune. Despite the challenges associated with improvising, all three students agreed that learning to improvise had a positive impact on their musicianship.

Participants expressed displeasure with the limited repertoire utilized in their daily class. They had a desire to perform more music, and more recent music. The
participants felt that class would be more engaging if they performed popular music. Additionally, they believed that the audience would connect better with music that was familiar.

Each participant described a different ability when it came to the topic of reading notation. Bruce was able to read and audiate notation. Jenny described her ability to decipher note names and rhythms, but conceded that she had to play music in order to know how it sounded. Olive informed me that she was unable to read notation in any regard.

Participants expressed a variety of emotions when related to improvising and performing in the steel drum ensemble. All three participants associated positive feelings with the activity. In regards to playing the instrument well, Jenny said, “It’s just nice” and Olive said, “It made me feel…pretty good for me to be a newbie.” Bruce associated positive feelings with performing for an appreciative audience, stating that it was “awesome.”

**Mixed Methods Data Analysis**

In a mixed methods sequential explanatory design (Creswell, 2011), the researcher collects and analyzes quantitative data and qualitative data separately, before analyzing the data together. Utilizing Creswell’s design, I collected and analyzed the data from the quantitative phase. Then, I conducted and transcribed the focus group, and developed codes based on themes that emerged during analysis of the transcript. In the mixed methods analysis, I used data transformation (Creswell, 2011) to explain the quantitative data through qualitative themes.
The participants’ desire for more repertoire and the challenges they associated with improvising may explain differences between performance achievement and improvisation achievement. Mixed methods analysis revealed that participants’ high scores on the tune rating scale might be attributed to an increase in self-perception as a result of participating in steel band. Correlation between participants’ performance achievement and improvisation achievement can be explained by the participants’ feelings that learning to improvise positively affected their musicianship.

**Conclusions**

The purpose of this study was to investigate relationships between high school students’ musical achievement and improvisation on the steel drum. After analyzing quantitative data, qualitative data, and completing a mixed methods analysis, I determined that three conclusions are warranted. Because of the small population associated with this study, these conclusions may only be applied to these participants. Generalizability of findings is not appropriate.

First, results from this study affirm that improvisation is an important component for developing students’ individual musicianship (Azzara, 1993; McPhearson, 1993; Snell, 2006). Continued instruction with an audiation-based approach to improvisation may lead to expansion of participants’ tonal and rhythm vocabularies, and more advanced musicianship. In this study, participants’ performance achievement was directly correlated with improvisation achievement. Similarly, focus group participants noted that learning to improvise positively affected their musicianship. The activities I used in this curriculum were designed to develop
students’ tonal and rhythm audiation and lay the foundation for improvisation and improved musicianship.

Second, aural learning is important in developing students’ musical vocabularies. In this study, participants engaged in audiation-based activities consisting of singing, chanting, moving, and playing tunes by ear. These activities required participants to engage in audiation and musical vocabularies. For example, Olive expressed confidence in her ability to improvise even though she was new to formal music instruction and unable to read notation. Nevertheless, she was able to successfully engage in the aural approach to learning tunes.

Third, regardless of prior experience in music, the steel band can be an inclusive ensemble. Scholars posited the inclusiveness of the ensemble, noting the accessibility of the ensemble for beginning music students and students with specialized academic or social needs (Miller, 2006; Tanner, 2006; Williams, 2008). Each participant in this study began steel band with a different background in music. Bruce had formal and consistent music training, including experience playing steel drum. Jenny had inconsistent music training in band and chorus, had difficulty reading music, and never played steel drum before the semester began. Olive never participated in secondary school music classes or ensembles, and did not know how to read notation. Yet, each participant reported a positive experience participating in steel band.
Implications for Music Education

Several researchers have suggested a link between improvisation and performance achievement in non-jazz instrumental music ensembles (Azzara, 1993; McPherson, 1993; Snell, 2006). However, a significant portion of the research dealing with improvisation relates specifically to jazz band. Furthermore, while valuable, much of the research that explores improvisation outside of jazz band accounts for a trend between performance achievement and improvisation achievement in middle or elementary school instrumental students or elementary general students (Azzara, 1993; Guilbault, 2009; McPherson, 1993; Snell, 2006). Few researchers have dealt exclusively with high school instrumental music students outside of jazz band (McPherson, 1993). This study enhances previous researchers’ claims that there is a positive relationship between high school students’ performance and improvisation achievement. Through this study, teachers and researchers can make informed curricular decisions regarding prioritization of improvisation.

Previous researchers examined students’ participation in school ensembles outside of the traditional offerings—band, choir, and orchestra—and found that non-traditional ensembles increase participation in music, appeal to a wider range of students than traditional large ensembles, and motivate students to engage with and improve the school’s music community (Green, 2006; Oare, 2008; Runskie, 2008). Although researchers have documented the value of non-traditional ensembles (e.g. Orff ensembles, Celtic strings, and rock bands), there is no research concerning students’ participation in steel band. This study is a first step toward documenting the
value of steel band in music education. Because students of all musical skill levels may successfully participate in steel band, teachers may use information from this study to support inclusion of non-traditional ensembles, specifically steel band, into their music programs.

Scholars have documented the aural nature of the steel drum ensemble (Price, 2012) and have posited a link between aural learning and readiness to improvise (Azzara, 1993; Gordon, 2012; Guilbault, 2009; Snell, 2006). In this study, I have attempted to connect the aural component of the steel drum ensemble and the necessary readiness for improvisation. This first study in this area of inquiry requires additional research.

**Recommendations for Future Research**

Researchers have conducted similar studies, documenting links between improvisation and performance achievement (Azzara, 1993; Snell, 2006) and exploring students’ participation in non-traditional ensembles (Green, 2006; Oare, 2008; Runskie, 2008). However, there is no documented research addressing the link between high school steel band students’ performance achievement and improvisation achievement. Additional research is necessary at the high school level to confirm the positive relationship between improvisation and performance achievement, and to document the use of steel drum as a medium for instrumental music education. This study should be replicated. Future researchers should consider the following modifications:
1. Use a larger sample for administering the curriculum and testing. Future researchers could consider using multiple schools to create a larger sample size.

2. Begin the study earlier in the school year, and administer the curriculum over the course of one semester. Because of the timeline associated with this study, I was unable to work with the students for an ideal period of time. I speculate that a longer instructional period would increase students’ musical vocabulary and improve performance achievement.

3. Verify that all judges understand the scoring process. Meet with the judges as a group to explain the rating scale and listen to samples. In this study, I met with each judge separately. I gave all judges a packet, accompanied by sample recordings and rubrics. Because of the individual meetings, the judges may not have all understood the instructions in the same regard. A judges meeting will eliminate the possibility for inconsistencies in judge training, and may lead to higher reliability coefficients.

4. Use recording software when administering the playing test. Some inconsistencies between judges may be related to the quality of the recordings. Using recording software, made specifically for recording acoustic instruments, may eliminate that problem.

In conclusion, more research is necessary to warrant generalizations associated with claims from this study. Although this study adds to the existing literature on
improvisation in the instrumental classroom, the body of research dealing specifically
with high school students’ improvisation in non-jazz ensembles is limited. Likewise,
documented research concerning the use of steel band as a medium for instrumental
music education is limited; and no research exists that links improvisation to steel
band. As research on these topics emerges, teachers will integrate improvisation into
their curriculums, and traditional school ensembles will not restrict student
participation. These concepts have the potential to positively impact the future of
instrumental music education.
REFERENCES


doi: 10.1177/1321103X08089887


doi: 10.1177/0027432112467648


doi: 10.1177/00274321080940040107
Appendix A

CITI HUMAN SUBJECTS TRAINING

LEARNER

Jessica Eastridge (ID: 3867219) 5503 Diana Drive Wilmington Delaware 19808

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI)

RESPONSIBLE CONDUCT OF RESEARCH CURRICULUM COMPLETION REPORT
Printed on 10/13/2014

PHONE 843-816-1188 EMAIL jessicae@udel.edu INSTITUTION University of Delaware EXPIRATION DATE

SOCIAL AND BEHAVIORAL RESPONSIBLE CONDUCT OF RESEARCH COURSE

COURSE/STAGE: PASSED ON: REFERENCE ID:

REQUIRED MODULES

RCR/1 12/04/2013 11748797

Responsible Conduct of Research (RCR) Course Introduction Introduction to the Responsible Conduct of Research Archived 1248 Introduction to Research Misconduct Archived 1343 Research Misconduct (RCR-SBE) Data Management (RCR-SBE) Authorship (RCR-SBE) Peer Review (RCR-SBE) Conflicts of Interest (RCR-SBE) Collaborative Research (RCR-SBE) Responsible Conduct of Research (RCR) Course Conclusion University of Delaware

DATE COMPLETED

12/04/13 12/04/13 12/04/13 12/04/13 12/04/13 12/04/13 12/04/13 12/04/13 12/04/13 12/04/13 12/04/13 12/04/13 12/04/13 12/04/13

SCORE

No Quiz No Quiz No Quiz 5/5 (100%) 5/5 (100%) 5/5 (100%) 5/5 (100%) 5/6 (83%) 5/5 (100%) No Quiz 5/5 (100%)

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI Program participating institution or be a paid Independent Learner. Falsified information and unauthorized use of the CITI Program course site is unethical, and may be considered research misconduct by your institution.

Paul Braunschweiger Ph.D. Professor, University of Miami Director Office of Research Education CITI Program Course Coordinator
COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI)

COURSE IN THE PROTECTION HUMAN SUBJECTS CURRICULUM COMPLETION REPORT Printed on 10/13/2014

Jessica Eastridge (ID: 3867219) 5503 Diana Drive Wilmington Delaware 19808
843-816-1188 jessicae@udel.edu University of Delaware 12/03/2016

HUMAN SUBJECTS PROTECTIONS FOR GRADUATE STUDENTS

COURSE/STAGE: PASSED ON: REFERENCE ID:

REQUIRED MODULES

Belmont Report and CITI Course Introduction Students in Research History and Ethics of Human Subjects Research Defining Research with Human Subjects - SBE The Federal Regulations - SBE

Basic Course/1 12/04/2013 11748796


Internet-Based Research - SBE FDA-Regulated Research Research and HIPAA Privacy Protections Conflicts of Interest in Research Involving Human Subjects University of Delaware

ELECTIVE MODULES

Recognizing and Reporting Unanticipated Problems Involving Risks to Subjects or Others in Biomedical Research

3/3 (100%) 10/10 (100%) 6/6 (100%) 5/5 (100%) 5/5 (100%) 5/5 (100%) 4/4 (100%) 5/5 (100%) 2/2 (100%) 4/4 (100%) 4/4 (100%) 3/3 (100%) 3/3 (100%) 3/3 (100%) 3/3 (100%) 3/3 (100%) 5/5 (100%) 5/5 (100%) 0/5 (0%)

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Paul Braunschweiger Ph.D. Professor, University of Miami Director Office of Research Education CITI Program Course Coordinator
Appendix B

IRB APPROVAL LETTER

DATE: October 14, 2014

TO: Jessica Eastridge
FROM: University of Delaware IRB

STUDY TITLE: [656033-1] HIGH SCHOOL STUDENTS’ MUSICAL ACHIEVEMENT AND IMPROVISATION ON THE STEEL DRUM

SUBMISSION TYPE: New Project

ACTION: APPROVED
APPROVAL DATE: October 14, 2014
EXPIRATION DATE: October 13, 2015
REVIEW TYPE: Expedited Review
REVIEW CATEGORY: Expedited review category # (6,7)

Thank you for your submission of New Project materials for this research study. The University of Delaware IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All sponsor reporting requirements should also be followed.

Please report all NON-COMPLIANCE issues or COMPLAINTS regarding this study to this office.

Please note that all research records must be retained for a minimum of three years.
Appendix C

LESSON OUTLINE

Tonal Patterns (Matilda):

Rhythm Patterns (Matilda):

Tonal Patterns (Mary Ann):

Rhythm Patterns (Mary Ann):

From *Developing Musicianship Through Improvisation*

Azzara and Grunow

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Lesson One:

- Rhythm patterns
  - Teacher performs rhythm patterns verbally and on instruments.
    Students repeat patterns.

- “Matilda” (rote song procedure)
  - Teachers sings tune to students
  - Instruct students to move with flow while teacher sings tune
  - Instruct students to move to the macrobeat while teacher sings tune. Teacher demonstrates movement.
  - Instruct students to move to the microbeat while teacher sings tune. Teacher demonstrates movement.
  - Instruct students to move to the macrobeat/microbeat while teacher sings tune. Teacher demonstrates movement.
  - Teacher demonstrates resting tone.
  - Teacher prompts students to sing resting tone.
  - Students sing resting tone.
  - Teacher instructs students to sing resting tone when he/she stops singing the tune. Students sing resting tone.
  - Teacher labels resting tone as “DO” and repeats previous step.
  - Teacher sings tune in parts. Students repeat.
  - Teacher plays the tune in parts. Students repeat the tune on instruments. Teacher uses solfege or letter names to assist students.
Lesson Two:

- Tonal patterns
  - Teacher performs tonal patterns verbally and on instruments.
    Students repeat patterns.
- Rhythm patterns
  - Teacher performs rhythm patterns verbally and on instruments.
    Students repeat patterns.
- Review “Matilda”
  - Teacher reviews melody with students
  - Teacher teaches bass line using rote song procedure outlined in Lesson One

Lesson Three:

- Rhythm patterns
  - Teacher performs rhythm patterns verbally and on instruments.
    Students repeat patterns.
  - Teacher performs rhythm patterns verbally and on instruments.
    Teacher asks students to be different. Teacher instructs students to stay within four macrobeats.
- Tonal Patterns
  - Teacher performs tonal patterns verbally and on instruments.
    Students repeat patterns.
Teacher labels tonal patterns as tonic, dominant, and subdominant. Teacher asks students to label patterns (with assistance).

- “Matilda”
  - Review “Matilda” melody
  - Review “Matilda” bass line
    - Teacher teaches functions for bass line. Students sing functions.

**Lesson Four:**

- Rhythm patterns
  - Teacher performs rhythm patterns verbally and on instruments. Students repeat patterns.
  - Teacher performs rhythm patterns verbally and on instruments. Teacher asks students to be different. Teacher instructs students to stay within four macrobeats.

- Tonal Patterns
  - Teacher performs tonal patterns verbally and on instruments. Students repeat patterns.
  - Teacher reviews tonal patterns functions with students
  - Students improvise three note patterns using chord root functions.

- Review “Matilda”
  - Teacher instructs students to improvise rhythm patterns to the bass line of “Matilda”
• “Mary Ann”
  o Teacher teaches “Mary Ann” by rote using the rote song procedure outlined in Lesson One.

Lesson Five:

• Rhythm patterns
  o Teacher performs rhythm patterns verbally and on instruments.
    Students repeat patterns.
  o Teacher performs rhythm patterns verbally and on instruments.
    Teacher asks students to be different. Teacher instructs students to stay within four macrobeats.

• Tonal Patterns
  o Teacher performs tonal patterns verbally and on instruments.
    Students repeat patterns.
  o Teacher reviews tonal patterns functions with students
  o Students improvise three note patterns using chord root functions.

• “Matilda”
  o Improvise tonal patterns on the macrobeats based on the functions outlined in “Matilda”
  o Improvise rhythm patterns to the bass line

• “Mary Ann”
  o Teacher reviews “Mary Ann.”
  o Teacher teaches bass line to “Mary Ann” using the rote song procedure outlined in Lesson One.
Lesson Six:

- Rhythm patterns
  - Teacher performs rhythm patterns verbally and on instruments.
    Students repeat patterns.
  - Teacher performs rhythm patterns verbally and on instruments.
    Teacher asks students to be different. Teacher instructs students to stay within four macrobeats.

- Tonal Patterns
  - Teacher performs tonal patterns verbally and on instruments.
    Students repeat patterns.
  - Teacher reviews tonal patterns functions with students
  - Students improvise three note patterns using chord root functions.

- “Matilda”
  - Teacher reviews “Matilda” melody and bass line.
  - Teacher instructs students to improvise using the chord roots of “Matilda” using chord tones and micro/macrobeat rhythms

- “Mary Ann”
  - Teacher reviews “Mary Ann” melody and bass line
  - Teacher teaches functions for bass line

Lesson Seven:

- Rhythm patterns
  - Teacher performs rhythm patterns verbally and on instruments.
    Students repeat patterns.
- Teacher performs rhythm patterns verbally and on instruments. Teacher asks students to be different. Teacher instructs students to stay within four macrobeats.

- **Tonal Patterns**
  - Teacher performs tonal patterns verbally and on instruments. Students repeat patterns.
  - Teacher reviews tonal patterns functions with students
  - Students improvise three note patterns using chord root functions.

- **“Matilda”**
  - Teacher reviews melody and bass line of “Matilda”
  - Teacher instructs students to improvise melodies using the bass line in “Matilda”

- **“Mary Ann”**
  - Teacher reviews melody and bass line of “Mary Ann”
  - Teacher instructs students to improvise using chord tones and macro/microbeat rhythms

**Lesson Eight:**

- **Rhythm patterns**
  - Teacher performs rhythm patterns verbally and on instruments. Students repeat patterns.
  - Teacher performs rhythm patterns verbally and on instruments. Teacher asks students to be different. Teacher instructs students to stay within four macrobeats.
• Tonal Patterns
  o Teacher performs tonal patterns verbally and on instruments. Students repeat patterns.
  o Teacher reviews tonal patterns functions with students
  o Students improvise three note patterns using chord root functions.

• “Matilda”
  o Teacher reviews “Matilda”
  o Teacher instructs students to improvise melodies

• “Mary Ann”
  o Teacher reviews “Mary Ann”
  o Teacher instructs students to improvise melodies
Appendix D

LETTER TO PARENTS AND STUDENTS

Dear Parents,

For the next several weeks, the beginning steel band at Christiana High School will participate in a research study based on aural learning and improvisation. The purpose of the study is to investigate relationships between high school students’ musical achievement and improvisation on the steel drum. Should your child elect to participate, he/she will partake in two brief improvisation lessons weekly during class. During these lessons, I will expose your child to aural learning, movement, audiation, and improvisation.

At the conclusion of the study, I will record your child performing a melody and improvisation. His/her identity will remain confidential. Nobody will be able to identify your child based on the recording. Your child’s recording will have no impact on his/her grade or position within the beginning steel band.

Your child may have the opportunity to participate in a focus group after the study is complete. In the focus group, I will ask your child questions about his/her participation in steel band and learning to improvise. His/her answers will remain confidential in my report.

Participation in this study is voluntary. Your child’s participation will occur solely during class time. There will be no requirements outside of class. If you have any questions, please email me at jessicae@udel.edu. I look forward to working with your child!

Sincerely,

Jessica L. Eastridge

Jessica L. Eastridge
Title of Project: HIGH SCHOOL STUDENTS’ MUSICAL ACHIEVEMENT AND IMPROVISATION ON THE STEEL DRUM
Principal Investigator(s): Jessica Eastridge
You are being invited to participate in a research study. This consent form tells you about the study including its purpose, what you will be asked to do if you decide to take part, and the risks and benefits of being in the study. Please read the information below and ask us any questions you may have before you decide whether or not you agree to participate.

WHAT IS THE PURPOSE OF THIS STUDY?
The purpose of this study is to investigate relationships between high school students’ musical achievement improvisation on the steel drum. Through this study, I hope to inform teachers of the benefits of teaching improvisation in instrumental music classes. By completing this research, I will contribute to the literature on improvisation in instrumental music education and the use of steel drum band as a medium for instrumental music education. This study is in partial fulfillment of my Masters of Music degree.
You will be one of approximately 15-20 participants in this study. You are being asked to participate because you are a member of the beginning steel drum ensemble at Christiana High School. Each participant will be a member of the same ensemble. All ensemble members will receive the same instruction regardless of participation status in this study.

WHAT WILL YOU BE ASKED TO DO?
As part of this study, you will be asked to participate in eight (8) sessions during your regular steel band class at Christiana High School. During those sessions, I will teach short lessons (10-20 minutes) involving aural skills, playing by ear, movement, and improvisation. At the end of 8 sessions, I will record you performing two tunes by ear and improvising. The recording session will occur during class time. Following completion of the recordings, I will conduct a focus group with select students. The focus group session will occur during class time and will last for approximately one (1) hour. I will ask the focus group students about their experiences with steel band and improvisation. The study will occur entirely during class time.
WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?
I do not expect your participation in this study to expose you to any risks other than what you would typically encounter in daily life.

WHAT ARE THE POTENTIAL BENEFITS?
You may gain musicianship skills during this study by improvising and learning aurally. This study may contribute to music educators’ understanding of teaching improvisation, teaching musicianship skills, and participating in non-traditional school music ensembles.

HOW WILL CONFIDENTIALITY BE MAINTAINED? WHO MAY KNOW THAT YOU PARTICIPATED IN THIS RESEARCH?
I will maintain participants’ confidentiality by de-identifying recordings. Student performances will be identified by number only; the judges who listen to the audio recordings will be unable to identify individual student performances. At the beginning of the focus group, I will assign pseudonyms to participants so they are not identifiable in my report. I will delete recordings once they are no longer necessary for research purposes.
I cannot guarantee confidentiality during the focus group meeting. It is possible that information shared with other participants during the focus group will not remain confidential between participants. However, I will use pseudonyms in the report of the results.
I will make every effort to keep all research records that identify you confidential to the extent permitted by law. In the event of any publication or presentation resulting from the research, no personally identifiable information will be shared. I also must let you know that if during your participation in this study our research team was to observe or suspect, in good faith, child abuse or neglect, Delaware state law obligates us to file a report to the appropriate officials.
The confidentiality of your records will be protected to the extent permitted by law. Your research records may be viewed by the University of Delaware Institutional Review Board, which is a committee formally designated to approve, monitor, and review biomedical and behavioral research involving humans. Records relating to this research will be kept for at least three years after the research study has been completed.

WILL THERE BE ANY COSTS TO YOU FOR PARTICIPATING IN THIS RESEARCH?
There are no costs associated with participating in this study.

WILL YOU RECEIVE ANY COMPENSATION FOR PARTICIPATION?
There is no compensation involved for participating in this study.
DO YOU HAVE TO TAKE PART IN THIS STUDY?
Taking part in this research study is entirely voluntary. You do not have to participate in this research. If you choose to take part, you have the right to stop at any time. If you decide not to participate or if you decide to stop taking part in the research at a later date, there will be no penalty or loss of benefits to which you are otherwise entitled. Your decision to stop participation, or not to participate, will not influence current or future relationships with the University of Delaware. If you elect to terminate your participation in the study, please inform the researcher.

As a student, if you decide not to take part in this research, your choice will have no effect on your academic status or your grade in the class.

WHO SHOULD YOU CALL IF YOU HAVE QUESTIONS OR CONCERNS?
If you have any questions about this study, please contact the Principal Investigator, Jessica Eastridge, at (302) 294-1602 or jessicae@udel.edu. You may also contact Alden Snell, academic advisor, at (302) 831-6895 or asnell@udel.edu. If you have any questions or concerns about your rights as a research participant, you may contact the University of Delaware Institutional Review Board at hsrb-research@udel.edu or (302) 831-2137.

You are making a decision whether or not to have your child participate in this study. Your signature indicates that you have read the information provided above and decided to allow your child to participate.

__________________________________________________________________________
(Printed Name of Parent/Guardian)          (Signature of Parent/Guardian)
Date

__________________________________________________________________________
(Person Obtaining Consent)          (Person Obtaining Consent)
Date

(PrintED NAME)                  (SIGNATURE)
Appendix F

STUDENT CONSENT: 18 AND OVER

Title of Project: HIGH SCHOOL STUDENTS’ MUSICAL ACHIEVEMENT AND IMPROVISATION ON THE STEEL DRUM

Principal Investigator(s): Jessica Eastridge

You are being invited to participate in a research study. This consent form tells you about the study including its purpose, what you will be asked to do if you decide to take part, and the risks and benefits of being in the study. Please read the information below and ask us any questions you may have before you decide whether or not you agree to participate.

WHAT IS THE PURPOSE OF THIS STUDY?
The purpose of this study is to investigate relationships between high school students’ musical achievement improvisation on the steel drum. Through this study, I hope to inform teachers of the benefits of teaching improvisation in instrumental music classes. By completing this research, I will contribute to the literature on improvisation in instrumental music education and the use of steel drum band as a medium for instrumental music education. This study is in partial fulfillment of my Masters of Music degree.

You will be one of approximately 15-20 participants in this study. You are being asked to participate because you are a member of a beginning steel drum ensemble. Each participant will be a member of the same ensemble. All ensemble members will receive the same instruction regardless of participation status in this study.

WHAT WILL YOU BE ASKED TO DO?
As part of this study, you will be asked to participate in eight (8) sessions during your regular steel band class at Christiana High School. During those sessions, I will teach short lessons (10-20 minutes) involving aural skills, playing by ear, movement, and improvisation. At the end of 8 sessions, I will record you performing two tunes by ear and improvising. The recording session will occur during class time. Following completion of the recordings, I will conduct a focus group with select students. The focus group session will occur during class time and will last for approximately one (1) hour. I will ask the focus group students about their experiences with steel band and improvisation. The study will occur entirely during class time.
WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?
I do not expect your participation in this study to expose you to any risks other than what you would typically encounter in daily life.

WHAT ARE THE POTENTIAL BENEFITS?
You may gain musicianship skills during this study by improvising and learning aurally. This study may contribute to music educators’ understanding of teaching improvisation, teaching musicianship skills, and participating in non-traditional school music ensembles.

HOW WILL CONFIDENTIALITY BE MAINTAINED? WHO MAY KNOW THAT YOU PARTICIPATED IN THIS RESEARCH?
I will maintain participants’ confidentiality by de-identifying recordings. Student performances will be identified by number only; the judges who listen to the audio recordings will be unable to identify individual student performances. At the beginning of the focus group, I will assign pseudonyms to participants so they are not identifiable in my report. I will delete recordings once they are no longer necessary for research purposes.
I cannot guarantee confidentiality during the focus group meeting. It is possible that information shared with other participants during the focus group will not remain confidential between participants. However, I will use pseudonyms in the report of the results.
I will make every effort to keep all research records that identify you confidential to the extent permitted by law. In the event of any publication or presentation resulting from the research, no personally identifiable information will be shared. I also must let you know that if during your participation in this study our research team was to observe or suspect, in good faith, child abuse or neglect, Delaware state law obligates us to file a report to the appropriate officials.
The confidentiality of your records will be protected to the extent permitted by law. Your research records may be viewed by the University of Delaware Institutional Review Board, which is a committee formally designated to approve, monitor, and review biomedical and behavioral research involving humans. Records relating to this research will be kept for at least three years after the research study has been completed.

WILL THERE BE ANY COSTS TO YOU FOR PARTICIPATING IN THIS RESEARCH?
There are no costs associated with participating in this study.

WILL YOU RECEIVE ANY COMPENSATION FOR PARTICIPATION?
There is no compensation involved for participating in this study.
DO YOU HAVE TO TAKE PART IN THIS STUDY?
Taking part in this research study is entirely voluntary. You do not have to participate in this research. If you choose to take part, you have the right to stop at any time. If you decide not to participate or if you decide to stop taking part in the research at a later date, there will be no penalty or loss of benefits to which you are otherwise entitled. Your decision to stop participation, or not to participate, will not influence current or future relationships with the University of Delaware. If you elect to terminate your participation in the study, please inform the researcher.

As a student, if you decide not to take part in this research, your choice will have no effect on your academic status or your grade in the class.

WHO SHOULD YOU CALL IF YOU HAVE QUESTIONS OR CONCERNS?
If you have any questions about this study, please contact the Principal Investigator, Jessica Eastridge, at (302) 294-1602 or jessicae@udel.edu. You may also contact Alden Snell, academic advisor, at (302) 831-6895 or asnell@udel.edu. If you have any questions or concerns about your rights as a research participant, you may contact the University of Delaware Institutional Review Board at hsrb-research@udel.edu or (302) 831-2137.

Your signature on this form means that: 1) you are at least 18 years old; 2) you have read and understand the information given in this form; 3) you have asked any questions you have about the research and the questions have been answered to your satisfaction; and 4) you accept the terms in the form and volunteer to participate in the study. You will be given a copy of this form to keep.

__________________________________________  __________________________________________
Printed Name of Participant  Signature of Participant
__________________________________________  __________________________________________
Person Obtaining Consent  Person Obtaining Consent
__________________________________________  __________________________________________
Date  Date

(PRINTED NAME)  (SIGNATURE)
Appendix G

STUDENT ASSENT

Title of Project: HIGH SCHOOL STUDENTS’ MUSICAL ACHIEVEMENT AND IMPROVISATION ON THE STEEL DRUM

Investigator: Jessica Eastridge
I am asking if you want to be part of a research study. This form tells you what the study is about, what you will be asked to do if you want to be in the study, and the possible bad and good things about this study. Please read this paper and ask us any questions you have.

WHAT IS THE PURPOSE OF THIS STUDY?
The purpose of this study is to investigate relationships between high school students’ musical achievement and improvisation on the steel drum. Through this study, I hope to inform teachers of the benefits of teaching improvisation in instrumental music classes. This study is in partial fulfillment of my Masters of Music degree. We are asking you if you want to be in it because you are a member of the beginning steel band at Christiana High School. We want to know if learning to improvise will help you become a better musician. You will receive the same instruction as your classmates regardless of your participation in this study.

WHAT WILL YOU BE ASKED TO DO?
If you want to participate, I will ask you to partake in eight (8) sessions during your regular steel band class at Christiana High School. During those sessions, I will teach short lessons (10-20 minutes) involving aural skills, playing by ear, movement, and improvisation. At the end of 8 sessions, I will record you performing two tunes by ear and improvising. The recording session will occur during class time. When the recordings are finished, I will conduct a focus group with select students. The focus group session will occur during class time and will last for approximately one (1) hour. I will ask the focus group students about their experiences with steel band and improvisation. The study will occur entirely during class time.

WHAT ARE THE POSSIBLE BAD THINGS ABOUT THIS RESEARCH?
I do not expect you to encounter anything that will make you uncomfortable or hurt you during this research study.
WHAT ARE THE POTENTIAL GOOD THINGS ABOUT IT?
You may gain musicianship skills during this study by improvising and learning aurally. This study may contribute to music teachers’ understanding of teaching improvisation, teaching musicianship skills, and participating in non-traditional school music ensembles.

WHO MAY KNOW THAT YOU PARTICIPATED IN THIS RESEARCH?
No one other than the investigator, your classmates, and your teacher will know that you participated in this study. If we tell other people about the research, we will not use your name. We will audio record you performing. We will only use the recordings for research purposes. No one will other than the investigator will know which recording belongs to you.

WILL YOU RECEIVE ANY COMPENSATION FOR PARTICIPATION?
There will be no compensation.

CAN YOU CHANGE YOUR MIND ABOUT BEING IN THE STUDY?
You do not have to say yes. Taking part in this research study is up to you. If you choose to take part, you can change your mind and stop at any time. If you decide not to participate or if you decide to stop taking part in the research later, nothing bad will happen to you and no one will be upset with you. If, at any time, you decide to stop please let us know by telling one of the researchers.
If you decide not to take part in this research, your choice will not affect your grades or your relationship with your classmates and your teachers.

WHO SHOULD YOU CALL IF YOU HAVE QUESTIONS OR CONCERNS?
If you have any questions about this study, please contact the Principal Investigator, Jessica Eastridge, at (302) 294-1602 or jessicae@udel.edu. You may also contact Alden Snell, academic advisor, at (302) 831-6895 or asnell@udel.edu.
If you have any questions or concerns about your rights as a research participant, you may contact the University of Delaware Institutional Review Board at hsrb-research@udel.edu or (302) 831-2137.

If you want to participate, and we have answered all of your questions about it, please sign below.

Printed Name of Participant _______________________________ Signature of Participant _______________________________

Date _______________________________ _______________________________

Person Obtaining Consent _______________________________ Person Obtaining Consent _______________________________

Date _______________________________ _______________________________
Appendix H

FOCUS GROUP GUIDING QUESTIONS

1. Describe your experiences as a member of the steel band.

2. What was it like learning to improvise?

3. What was easy and difficult about learning to improvise?

4. Do you think that learning to improvise affected you as a musician?

5. Do you plan to participate in steel band in the future?
Appendix I

ACIER HIGH SCHOOL STEEL BAND SCALE WARM-UP
Appendix J

ACIER HIGH SCHOOL STEEL BAND BLUES PROGRESSION WARM UP

C Blues
(C 12 Bar)

1st Note Leads

2nd Note - Second

3rd Note - Cello

All notes - Bass

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I, IV, V, Progression

#1
I, IV, I, IV, I

#2
I, IV, I, IV, I

#3
I, IV, V, IV, I

#4
I, V, IV, IV, I
Appendix K

REPERTOIRE

Matilda

Volklied aus Trinidad

F C G C

Ma - til - da, Ma - til - da, Ma - til - da, she take me mo - ney and

C G7 C

run Ve - ne - zuel - a.

C G7 C

Five hun - dred dol - lars friend, I lost, she made me

F G C G7 C

sell me cart and horse, Ma - til - da, she take me money and run Ve - ne - zuel - a

Mary Ann

Traditional

All day, all night, Mar - y Ann, Down by the sea - shore sift - ing sand.

All the lit - tle chil - dren, I join in the band Mar - y Ann Down by the sea - shore sift - ing sand.

(1st time only)
Appendix L

RATING SCALES

Rating Scale for Mary Ann
Improvisation
Student Number: ____

Improvisation (Additive Dimension, 0-5)

The improviser:
1 performs a variety of related ideas and reuses material in the context of the overall form (thus performance contains elements of unity and variety).
1 demonstrates motivic development through tonal and rhythm sequences.
1 demonstrates effective use of silence.
1 demonstrates an understanding of tension and release through resolution of notes in the context of the harmonic progression.
1 embellishes notes and performs variations of themes.

Rhythm (Continuous Dimension, 0-5)

The improviser:
1 performs individual beats without a sense of the meter.
2 demonstrates a rhythmic feeling of the meter throughout.
3 employs contrasting rhythm patterns without a sense of rhythmic motivic development.
4 develops and relates rhythmic ideas in some phrases.
5 establishes a cohesive solo rhythmically – develops rhythmic motives in the context of the overall form.

Expressive (Additive Dimension, 0-5)

The improviser:
1 demonstrates a sense of musical interaction (e.g., melodic dialogue alone, or musical conversation among performers).
1 demonstrates an understanding of dynamics.
1 demonstrates an understanding of musical style and characteristic tone quality.
1 demonstrates a sense of appropriate articulation.
1 demonstrates an understanding of appropriate phrasing.

Harmonic Progression (Continuous Dimension, 0-5, Major/Minor-Tonic and Dominant)

The improviser:
1 performs first and/or last note correctly.
2 performs some patterns in one function correction (tonic reference).
3 performs all patterns in one function correctly (tonic reference).
4 performs all patterns in one function (tonic) correctly and some patterns in another function correctly.
5 performs all patterns in tonic and dominant correctly.
Rating Scale for Mary Ann
Tune
Student Number: ____

Tonal (Continuous Dimension, 0-5)

The performer:
1. plays the first and/or last note correctly.
2. performs most patterns in one function correctly.
3. performs all patterns in one function correctly.
4. performs all patterns in one function correctly and most patterns in the other function correctly.
5. performs all tonic and dominant patterns correctly.

Rhythm (Continuous Dimension, 0-5)

The performer:
1. maintains a consistent tempo (steady beat) throughout.
2. maintains a proper sense of meter throughout (macrobeat reference).
3. performs all patterns in one function correctly (macrobeats) and some patterns in the another function correctly.
4. performs all patterns in two functions correctly.
5. performs all patterns in all functions correctly.

Expression (additive criteria, 0-5)

The performer:
1. gives movement to the music.
1. demonstrates an understanding of dynamics.
1. has good tone quality.
1. plays with appropriate style (technique).
1. demonstrates an understanding of the appropriate phrasing.
Rating Scale for Matilda
Improvisation
Student Number: ____

Improvisation (Additive Dimension, 0-5)

The improviser:
1. performs a variety of related ideas and reuses material in the context of the overall form (thus performance contains elements of unity and variety).
2. demonstrates motivic development through tonal and rhythm sequences.
3. demonstrates effective use of silence.
4. demonstrates an understanding of tension and release through resolution of notes in the context of the harmonic progression.
5. embellishes notes and performs variations of themes.

Rhythm (Continuous Dimension, 0-5)

The improviser:
1. performs individual beats without a sense of the meter.
2. demonstrates a rhythmic feeling of the meter throughout.
3. employs contrasting rhythm patterns without a sense of rhythmic motivic development.
4. develops and relate rhythmic ideas in some phrases.
5. establishes a cohesive solo rhythmically – develops rhythmic motives in the context of the overall form.

Expressive (Additive Dimension, 0-5)

The improviser:
1. demonstrates a sense of musical interaction (e.g., melodic dialogue alone, or musical conversation among performers).
2. demonstrates an understanding of dynamics.
3. demonstrates an understanding of musical style and characteristic tone quality.
4. demonstrates a sense of appropriate articulation.
5. demonstrates an understanding of appropriate phrasing.

Harmonic Progression (Continuous Dimensions, 0-5, Major/Minor-Tonic, Subdominant, Dominant)

The improviser:
1. performs first and/or last note correctly.
2. performs all patterns in one function correctly (tonic reference).
3. performs all patterns in one function correctly (tonic) and some patterns in one other function correctly.
4. performs all patterns in two functions correctly.
5. performs all tonic, dominant, and subdominant patterns (functions) correctly.
Rating Scale for *Matilda*

Tune

Student Number: ____

**Tonal (Continuous Dimension, 0-5)**

The performer:
1. plays the first and/or last note correctly.
2. performs all patterns in one function correctly.
3. performs all patterns in one function correctly, and some patterns in the other function correctly.
4. performs all patterns in two functions correctly.
5. performs all tonic, dominant, and subdominant patterns correctly.

**Rhythm (Continuous Dimension, 0-5)**

The performer:
1. maintains a consistent tempo (steady beat) throughout.
2. maintains a proper sense of meter throughout (macrobeat reference).
3. performs all patterns in one function correctly (macrobeats) and some patterns in the another function correctly.
4. performs all patterns in two functions correctly.
5. performs all patterns in all functions correctly.

**Expression (additive criteria, 0-5)**

The performer:
1. gives movement to the music.
1. demonstrates an understanding of dynamics.
1. has good tone quality.
1. plays with appropriate style (technique).
1. demonstrates an understanding of the appropriate phrasing.
Appendix M

JUDGE TRAINING

Sample: #1 – Please listen to the recording. Notice there are two rubrics. The first rubric is for improvisation only. The second rubric is for the student’s performance of the tune. As you listen to the recording, please follow along with the rubric.

Rating Scale for Mary Ann

Improvisation (Additive Dimension, 0-5)

The improviser:
1. performs a variety of related ideas and reuses material in the context of the overall form (thus performance contains elements of unity and variety).
1. demonstrates motivic development through tonal and rhythm sequences.
1. demonstrates effective use of silence.
1. demonstrates an understanding of tension and release through resolution of notes in the context of the harmonic progression.
1. embellishes notes and performs variations of themes.

Comments: For this dimension, you select all that apply. In this case, student earned 4/5 possible points. The student reused material, particularly rhythmic material. The student developed the improvisation through a variety of tonal and rhythmic sequences. The student embellished notes and performed variations on themes. And, the student demonstrated an understanding of tension and release through the harmonic progression. I did not award the student a point for effective use of silence because I did not hear the student use any silence.

Rhythm (Continuous Dimension, 0-5)

The improviser:
1. performs individual beats without a sense of the meter.
2. demonstrates a rhythmic feeling of the meter throughout.
3. employs contrasting rhythm patterns without a sense of rhythmic motivic development.
4. develops and relates rhythmic ideas in some phrases.
5. establishes a cohesive solo rhythmically – develops rhythmic motives in the context of the overall form.

Comments: This dimension is continuous, meaning you select the number that is most
appropriate. Five is the highest rating a student can receive. In this instance, the student earned a 5 because the improvisation is rhythmically cohesive.

Expressive (Additive Dimension, 0-5)

The improviser:
1. demonstrates a sense of musical interaction (e.g., melodic dialogue alone, or musical conversation among performers).
2. demonstrates an understanding of dynamics.
3. demonstrates an understanding of musical style and characteristic tone quality.
4. demonstrates a sense of appropriate articulation.
5. demonstrates an understanding of appropriate phrasing.

Comments: For this dimension, you select all that apply. I awarded the student 5/5 points because the student demonstrated all of the above characteristics in the performance.

Harmonic Progression (Continuous Dimension, 0-5, Major/Minor-Tonic and Dominant)

The improviser:
1. performs first and/or last note correctly.
2. performs some patterns in one function correctly (tonic reference).
3. performs all patterns in one function correctly (tonic reference).
4. performs all patterns in one function (tonic) correctly and some patterns in another function correctly.
5. performs all patterns in tonic and dominant correctly.

Comments: This portion rating scale is continuous. You should mark the most appropriate number (5 is the highest, 1 is the lowest). The student earned a 5 because all patterns in the improvisation were correct.
Rating Scale for *Mary Ann* Tune

**Tonal (Continuous Dimension, 0-5)**

The performer:
1. plays the first and/or last note correctly.
2. performs most patterns in one function correctly.
3. performs all patterns in one function correctly.
4. performs all patterns in one function correctly and most patterns in the other function correctly.
5. performs all tonic and dominant patterns correctly.

**Rhythm (Continuous Dimension, 0-5)**

The performer:
1. maintains a consistent tempo (steady beat) throughout.
2. maintains a proper sense of meter throughout (macrobeat reference).
3. performs all patterns in one function correctly (macrobeats) and some patterns in the another function correctly.
4. performs all patterns in two functions correctly.
5. performs all patterns in all functions correctly.

**Expression (additive criteria, 0-5)**

The performer:
1. gives movement to the music.
1. demonstrates an understanding of dynamics.
1. has good tone quality.
1. plays with appropriate style (technique).
1. demonstrates an understanding of the appropriate phrasing.

**Comments:** The student earned all points possible because the performance of the tune was accurate.
Sample 2: #2

**Rating Scale for Mary Ann**

**Improvisation (Additive Dimension, 0-5)**

The improviser:

1. performs a variety of related ideas and reuses material in the context of the overall form (thus performance contains elements of unity and variety).
1. demonstrates motivic development through tonal and rhythm sequences.
1. demonstrates effective use of silence.
1. demonstrates an understanding of tension and release through resolution of notes in the context of the harmonic progression.
1. embellishes notes and performs variations of themes.

**Comments:** For this dimension, you select all that apply. In this case, the student did not demonstrate the lower four qualities. However, the student did reuse material, therefore I awarded the student the first point.

**Rhythm (Continuous Dimension, 0-5)**

The improviser:

1. performs individual beats without a sense of the meter.
2. demonstrates a rhythmic feeling of the meter throughout.
3. employs contrasting rhythm patterns without a sense of rhythmic motivic development.
4. develops and relates rhythmic ideas in some phrases.
5. establishes a cohesive solo rhythmically – develops rhythmic motives in the context of the overall form.

**Comments:** For this dimension, you select the most appropriate number. While the student did not develop and relate rhythmic ideas or create a cohesive rhythmical solo, the student did demonstrate contrasting rhythmic patterns and a sense of motivic development.

**Expressive (Additive Dimension, 0-5)**

The improviser:

1. demonstrates a sense of musical interaction (e.g., melodic dialogue alone, or musical conversation among performers).
1. demonstrates an understanding of dynamics.
1. demonstrates an understanding of musical style and characteristic tone quality.
1. demonstrates a sense of appropriate articulation.
1. demonstrates an understanding of appropriate phrasing.

**Comments:** For this dimension, you select all that apply.
Harmonic Progression (Continuous Dimension, 0-5, Major/Minor-Tonic and Dominant)

The improviser:
1 performs first and/or last note correctly.
2 performs some patterns in one function correction (tonic reference).
3 performs all patterns in one function correctly (tonic reference).
4 performs all patterns in one function (tonic) correctly and some patterns in another function correctly.
5 performs all patterns in tonic and dominant correctly.

Comments: For this dimension, you select most appropriate number. When improvising, the student performed some tonic patterns correctly, but failed to perform dominant patterns correctly.
Rating Scale for Mary Ann
Tune

Tonal (Continuous Dimension, 0-5)
The performer:
1. plays the first and/or last note correctly.
2. performs most patterns in one function correctly.
3. performs all patterns in one function correctly.
4. performs all patterns in one function correctly and most patterns in the other function correctly.
5. performs all tonic and dominant patterns correctly.

Comments: For this dimension, you select the most appropriate number. In this case, it took multiple times for the student to perform the tune. Because of this, the student earned a 1 because the first and last note were performed correctly.

Rhythm (Continuous Dimension, 0-5)
The performer:
1. maintains a consistent tempo (steady beat) throughout.
2. maintains a proper sense of meter throughout (macrobeat reference).
3. performs all patterns in one function correctly (macrobeats) and some patterns in the another function correctly.
4. performs all patterns in two functions correctly.
5. performs all patterns in all functions correctly.

Comments: For this dimension, you select the most appropriate number. However, because the student did not maintain a steady beat, the student did not earn any points in this category.

Expression (additive criteria, 0-5)
The performer:
1. gives movement to the music.
2. demonstrates an understanding of dynamics.
3. has good tone quality.
4. plays with appropriate style (technique).
5. demonstrates an understanding of the appropriate phrasing.

Comments: For this dimension, you select all that apply. The student did perform with good tone quality and appropriate style. However, because the student had to start and stop multiple times, I did not award points for giving movement to the music or appropriate phrasing. I did not award points for understanding dynamics because the entire performance was the same dynamic level.
Sample 3: #3

Rating Scale for *Matilda*
Improvisation

**Improvisation (Additive Dimension, 0-5)**

The improviser:
1. performs a variety of related ideas and reuses material in the context of the overall form (thus performance contains elements of unity and variety).
1. demonstrates motivic development through tonal and rhythm sequences.
1. demonstrates effective use of silence.
1. demonstrates an understanding of tension and release through resolution of notes in the context of the harmonic progression.
1. embellishes notes and performs variations of themes.

**Comments:** For this dimension, select all that apply. I awarded the student points for reusing material and demonstrating motivic development. However, I did not award the student points for the bottom three qualities because the student did not use silence, demonstrate an understanding of tension/release, or embellish.

**Rhythm (Continuous Dimension, 0-5)**

The improviser:
1. performs individual beats without a sense of the meter.
2. demonstrates a rhythmic feeling of the meter throughout.
3. employs contrasting rhythm patterns without a sense of rhythmic motivic development.
4. develops and relate rhythmic ideas in some phrases.
5. establishes a cohesive solo rhythmically – develops rhythmic motives in the context of the overall form.

**Comments:** For this dimension, select the most appropriate number. Here, the student did demonstrate an understanding of meter/rhythm, but was still developing.

**Expressive (Additive Dimension, 0-5)**

The improviser:
1. demonstrates a sense of musical interaction (e.g., melodic dialogue alone, or musical conversation among performers).
1. demonstrates an understanding of dynamics.
1. demonstrates an understanding of musical style and characteristic tone quality.
1. demonstrates a sense of appropriate articulation.
1. demonstrates an understanding of appropriate phrasing.
Comments: For this dimension, select all that apply. The student did not demonstrate a sense of musical interaction and performed at the same dynamic level throughout. However, the student did have a characteristic tone quality, sense of articulation, and appropriate phrasing.

Harmonic Progression (Continuous Dimensions, 0-5, Major/Minor-Tonic, Subdominant, Dominant)

The improviser:
1 performs first and/or last note correctly.
2 performs all patterns in one function correctly (tonic reference).
3 performs all patterns in one function correctly (tonic) and some patterns in one other function correctly.
4 performs all patterns in two functions correctly.
5 performs all tonic, dominant, and subdominant patterns (functions) correctly.

Comments: For this dimension, select the most appropriate number. Although the student had a rhythmic error at the end, all patterns were tonally correct.
Rating Scale for *Matilda* Tune

**Tonal (Continuous Dimension, 0-5)**

The performer:
1. plays the first and/or last note correctly.
2. performs all patterns in one function correctly.
3. performs all patterns in one function correctly, and some patterns in the other function correctly.
4. performs all patterns in two functions correctly.
5. performs all tonic, dominant, and subdominant patterns correctly.

**Rhythm (Continuous Dimension, 0-5)**

The performer:
1. maintains a consistent tempo (steady beat) throughout.
2. maintains a proper sense of meter throughout (macrobeat reference).
3. performs all patterns in one function correctly (macrobeats) and some patterns in the another function correctly.
4. performs all patterns in two functions correctly.
5. performs all patterns in all functions correctly.

**Expression (additive criteria, 0-5)**

The performer:
1. gives movement to the music.
2. demonstrates an understanding of dynamics.
3. has good tone quality.
4. plays with appropriate style (technique).
5. demonstrates an understanding of the appropriate phrasing.

**Comments:** The student earned all points possible because the performance of the tune was accurate.
Appendix N

FOCUS GROUP TRANSCRIPT

RESEARCHER: OK, so, just if each of you could say a little about your music background. So, tell us if you have been part of an ensemble before or if this is your very first time and you’re brand new to music totally, um, what you’ve done in school, out of school, etc.

JENNY: Um, I was in chorus last year and from like 4th grade to 7th grade I was in band.

BRUCE: I was playing the clarinet since 4th grade, I’ve been in marching band, concert band, jazz band and I’ve been in steel drums before. I play a whole bunch of other instruments.

OLIVE: Um, this is my first time with music.

RESEARCHER: Perfect! OK, so, if you all could talk a little about your experience as a member of the steel drum ensemble. So, Bruce, if you could talk about your experience last year, and you guys can talk about this year.

BRUCE: Ok, well, last year it was really fun going everywhere that we went to festivals and steel drum tour. That was really fun. And it was just a fun experience with everybody in the class.

RESEARCHER: OK. Can you talk a little bit more about what was so fun about it?

BRUCE: Um, just the fact that we learned all these songs that we were playing in front of people and they actually like, clapped for us, cause we were good. That was awesome.

RESEARCHER: Cool.

JENNY: Um, steel drums is fun, but like, I just wish that we did like, more songs. We just spend a lot of time on like, one song. (pause) One song, but I still have a lot of fun. It’s like my favorite class of the day.

RESEARCHER: What’s fun about it?
JENNY: It’s just, like, learning how to play a new instrument, and then like, being good at it. And like, just knowing how to play it. It’s just nice.

RESEARCHER: Cool.

OLIVE: Um, steel drums. Steel drums is, it’s fun, but it can get boring having it every day in my opinion. Um, some of the songs are easy, some of them is like hard to catch onto, but I do it. I survive.

RESEARCHER: Yeah, OK. You said it’s fun but it can be boring coming every day. So can you talk a little bit more about that?

OLIVE: Um, see. It, before our old schedule, we used to have like red day, blue day, silver. So it used to be like different classes. Like, you skip one class, and then you have like another day. So now, they have this new schedule and we have it like, every day. So, coming to this class every morning is just annoying. Yeah. It was good in the beginning. Now it’s just like…

RESEARCHER: Do you feel the same way about all your classes?

OLIVE: Uhh, kind of. But, this class the most because it’s just early in the morning.

BRUCE: I think it’s like, mostly annoying, because like um, our teacher, wants us to play the same song over and over and over again. So that’s probably the boring part.

OLIVE: Yeah.

JENNY: We only know like, three songs, so…

RESEARCHER: If you played more music, what would you think?

BRUCE: Yeah.

OLIVE: I think it would be better. Cause it seems like time drags.

RESEARCHER: Alright. So, can you tell me a little bit, and I know each of you have different experiences with this, about learning to improvise? So I know (gesture to BRUCE), you already came into this knowing how to improvise and then both of you didn’t really know but maybe you had some ideas from the warm ups Mr.- does. So, just tell me a little bit about how that went. How you felt about learning to improvise.
BRUCE: Well, I mostly just, uh, just played random notes and hopefully it sounded good in the beginning. But then I, uh, learned more scales, and like, what, uh, the key the song was that we learned and I just improved in that key and it just worked.

OLIVE: That’s the same, the same for me also. I try to play keys and make sure it sound right. Half of the time it don’t, but yeah. And um, what else? I’m a dare devil, so at first like the, the people in the classroom, they don’t want to solo, and I’ll raise my hand and just do it, a solo. So…

JENNY: I think soloing is hard because I cannot think that quickly. I can’t think fast enough to think about the scale, and the notes, and all the notes in the song. So, I just have no interest in improvising.

RESEARCHER: OK. So, can you say a little bit more about that? SO, you say it’s really hard, but what if you had some more practice at it?

JENNY: I just like, I don’t have an interest in it. Like, I’m fine with just playing in the background. (5:02)

RESEARCHER: So, if you guys could talk a little bit about what might have been easy about learning to improvise, and what might have been not so easy about learning to improvise.

OLIVE: Um, the not so easy part is the notes, especially if your new to music cause like you still don’t know how to read it and like hear it in tunes and something. That’s the hard part. (pause) The easy part? That it’s just go with the flow.

JENNY: I think that hard part for me is, like, thinking of rhythms that sound good with the notes that you’re playing together.

BRUCE: I think the hard part would be, um, having to solo for much longer time in the song because you’re already like, done all your rhythms that you thought of, and then he wants you to keep going so you’re just like, oh, and you just do some random stuff that doesn’t sound as good as the beginning. And I’d say the easiest part would probably have to be, um, just playing the notes cause its, uh, right there in front of your face. You don’t have to like, press anything, you just hit the note.

RESEARCHER: So if you had to improvise on clarinet, do you think you could do it?

BRUCE: Yeah, I could do it probably.

RESEARCHER: Would it be harder?
BRUCE: Well, it would be harder than steel drums, yeah, cause you don’t like, it’s weird because like, you don’t have like, two hands, it’s just like all your fingers for the clarinet and like, you can’t, you can make certain rhythms but it’s harder to because then you have to tongue faster and everything.

JENNY: And when you’re playing the clarinet you have to like, blow differently for different notes. So you have to like, think about how to blow. (pause) If the note’s higher you have to blow more.

RESEARCHER: OK. And, do you think that learning to improvise affected you as a musician?

BRUCE: Well it definitely made me a better musician, cause I thought of like the whole, what is this key going in this song, and make you like, hear different stuff, which is better…

JENNY: I think it made me realize that I wasn’t as good as I thought I was… Cause it’s difficult to improvise.

RESEARCHER: Yeah. And I know you said you don’t like it, you don’t have an interest in it, but if you were trying to, maybe like you said, it’s making you better, you realize that there’s certain things you’re not as good at, do you think if you practiced it you would continue to get better?

JENNY: Yeah.

OLIVE: Well, um, it made me feel like, you know, (mutters something inaudible), that I’m pretty good for me to be a newbie. Sometimes when I’m playing, I’m soloin’, it comes out good so it makes me feel like, yeah, I’ve been doing this for a while but really I’ve only been doing this for like a few months. So, it makes me feel kind of good.

RESEARCHER: So is there anything any of you want to say more about steel drum, or improvising, or being part of it in the class, or anything?

BRUCE: Steel drums, is overall a great thing to get into, and it’s a great thing to do cause it, cause like playing through music is cool, and like you can like get all your frustration out of it and everything and it’s just awesome.

JENNY: And when you’re part of like, when you’re in steel drums like, when you first learn a song like, you’re like really like by yourself like learning it, but then like when like the first time you play it together you’re like, we all learned the same song but like, different parts of it. And it like comes together and it sounds good.
OLIVE: I think steel drums is like, pretty cool. I didn’t even know about a steel drum till I got here. So, yeah…

RESEARCHER: Do you think you’ll all participate again in steel band?

JENNY: Yeah.

BRUCE: Definitely.

OLIVE: I’m going to college next year, so I don’t know.

RESEARCHER: There’s steel band in college!

OLIVE: Ehhhh, I don’t know.

RESEARCHER: It’s a lot of fun! Um, OK, a little earlier you guys expressed a little bit of frustration about not playing a lot of different kinds of music, or a lot of different music in general. So, if you could learn more music, what kind of music would you want to learn?

JENNY: Just like more recent songs, like songs that people know like the words to. And like, that like, cause like the songs that we played, other than Joy to the World, I never heard before so I can’t like, take what I know from a song and like try and put it into like the rhythm that I’m playing.

BRUCE: And like, it’d be better to have like, more recent songs so like, if, more, if you, on the steel drums if you play more recent songs that people know, people are going to get more into it cause they know the songs and they’re going to be like, “oh yeah, it's that song…cool,” and they start like, going with it and everything, and it’s better in my…

OLIVE: I agree. I wish we played that was new, fast, I like fast music.

RESEARCHER: Yeah, OK.

JENNY: And because when you play slow songs, it’s a lot more obvious when you mess up.

OLIVE: That too!

RESEARCHER: (laugh) What do you mean?
JENNY: Like, if you’re playing like a slow song, and you’re only like, you’re playing like 3 notes, at like, in like a long distance of time, and you go to that note before everyone else does it’s way more obvious than if you’re playing like a fast beat song and you press like one wrong note.

OLIVE: I did that a couple of times and I didn’t hear it, so, maybe it’s the fast pace…

RESEARCHER: Well, do you hear when you play a wrong note? Even in the fast music?

All: Yeah.

RESEARCHER: Yeah? That’s good. (pause). Um, ok, so if you were playing more recent music, especially you (gesture to student 1), since you had said that you don’t really like improvising, if you were playing more recent music and it was stuff you heard on the radio and stuff that you really knew, do you think that you would be more into improvising to that stuff?

JENNY: Yeah.

RESEARCHER: Can you say a little bit about why?

JENNY: Because like just know like the song more than, like you like know, the words and like the rhythm, and the beats and stuff, cause if you just like, if you have like a song thrown at you, that you never heard before, and like your just looking at like the notes, you can’t really, well I can’t, really think about it. So I think it matters if there’s like more fast beat songs…

RESEARCHER: OK. And how are each of you with reading music? Where are you at on that?

BRUCE: Um, it’s easy for me because it’s exactly like the clarinet so, I just know it already.

RESEARCHER: Sure, different key but yeah…

JENNY: I can read notes but it just takes me a little longer. Like I can’t just look at it and know it. Like I have to fill them in, but I, I can do it.

OLIVE: I cannot read notes. Unless it’s like…you know. I can’t read them.

RESEARCHER: What about rhythm?
OLIVE: So-so.

RESEARCHER: So, what do you mean by so-so? Like, you can simple rhythms or rhythms you might be familiar with?

OLIVE: Uhhh (pause), I guess the first one. I forgot what you said…

RESEARCHER: Simple rhythms?

OLIVE: Yeah.

RESEARCHER: Alright. And you’ve taken choir before (gesture to JENNY), so you can read a little bit. Can you look at it and know what it sounds like?

JENNY: No. No, I have to play it to know what it sounds like.

RESEARCHER: Can you look at it and know what it sounds like (gesture to BRUCE)?

BRUCE: Yeah.

RESEARCHER: OK. Cool. Alright, well before we wrap up is there anything anybody else wants to add or contribute about anything we’ve talked about?

All: Shake head “no.”

RESEARCHER: Will you all participate in steel band when you go to college if there is an option for it?

BRUCE: Definitely.

OLIVE: No.

JENNY: If I were going to college.

RESEARCHER: What about a community band?

JENNY: I don’t know.

RESEARCHER: OK! Cool. I’m going to stop the recording.