

THE EFFECT OF ADAPTIVE INSTRUCTION  
ON THE DEVELOPMENTAL RHYTHM APTITUDE  
AND RHYTHM ACHIVEMENT  
OF PRESCHOOL STUDENTS  
WITH HEARING IMPAIRMENT

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By

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An Honors Project Submitted in Partial Fulfillment  
Of the Requirements for Honors  
In the Department of  
Music, Theatre and Dance

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Faculty of Arts and Sciences


Rhode Island College


2012

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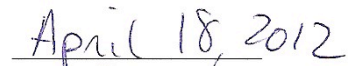
An Undergraduate Honors Project  
Presented by  
Danielle Marcéne Carrier Trial  
To the Department of  
Music, Theatre and Dance

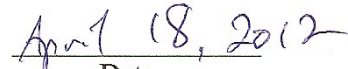
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## ABSTRACT

The purpose of this study was to investigate the effect of adaptive instruction on the developmental rhythm aptitude and rhythm achievement of preschool students with a hearing impairment. Specifically, this study is designed to determine a) if the addition of body percussion and percussive instruments to music instruction affects the developmental rhythm aptitudes of 3-, 4-, and 5-year-old children with a hearing impairment and b) if the addition of body percussion and percussive instruments affects the rhythm achievement scores of 3-, 4-, and 5-year-old children with a hearing impairment. The results of this study may have implications for music teachers who teach students in an inclusive classroom setting.

Subjects were 5 students from 3 intact preschool classrooms in an urban public elementary school. *Audie* was used as a pretest and posttest assessment tool.

The researcher taught each class two 30-minute music classes for 6 consecutive weeks. Content was identical for both the treatment group and the control group except that the treatment group received instruction utilizing hand drums and body percussion while the control group received instruction using stimulation from CD player speakers and general body movements such as clapping and tapping.

Subjects engaged in activities in which they moved, sang, chanted, and responded to rhythm patterns both in a group and individually. Content for the lessons consisted of age-appropriate songs, rhythmic games, chants and movement activities.

The researcher found no statistical difference found between the treatment and control groups for developmental rhythm aptitude scores. A five-point rating scale was used to measure rhythm achievement. Three judges independently rated each child's

video taped final performance. No significant difference was found for the effect of adaptive instruction. Students who received instruction that included drums and body percussion received similar rhythm achievement mean score as students who did not experience the drums and body percussion.

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## DEDICATION

This paper is dedicated my parents, who instilled in me a love of music, the desire to persevere, the will to reach for the highest possible goals, and provided the guidance for this project. To my classmates at Pulaski Elementary School, my earliest encounter with the deaf and the world of silence – who piqued my curiosity, taught me American Sign Language, and brought about my first understanding of deaf culture. To my teachers at Pulaski Elementary School, who encouraged inclusion before it was standard practice, and who taught me to respect and interact with students with special needs, and brought about my love for and desire to work with these students. To Sam Kampersaul, my first of many ‘special’ friends who still brings a smile to my face with every simple greeting of “Hey Dan!” And finally, to the memory of my Grandmother, Dolores Trial, who encouraged me to embrace the sound of music.



## ACKNOWLEDGEMENTS

I gratefully acknowledge the guidance and editorial assistance of my project advisor, Dr. Denise Guilbault, whose knowledge and attention to detail helped to produce the highest quality scholarship.

To my committee members, Dr. Samuel Breene, Dr. Mary-Ellen Guzzio Kregler, Dr. Theresa Coffman, Mr. Ian Greitzer and Mr. William Wilson, a sincere thank you – for without their unending patience, this project would not have been possible. Also, a special thank you to Dr. Susan Dell for her assistance to the committee.

Much appreciation and gratitude goes to John Henry Burns, Allison Wroe and James Suchodolski, who gave of their time and knowledge to rate the performances. Also thanks to Alex Lucini, who continued to keep me motivated and on track throughout this entire process.

Thank you to Anne and Bob De Stefano – who, without their generous contributions to the De Stefano Fund, this project would not have been possible. Also, a special thank you to West Music for their contribution toward the purchase of the drums (with the aid of a grant from the De Stefano Fund) that were used in daily activities for this research.

To my good friend Kevin Gravier, who translated many versions of Consent Forms into Spanish for me, much appreciation, gratitude, and thanks. Also, thank you to Janmarie Rivera-Cintrón who retranslated all of the forms back into English to ensure that information was correctly represented in Spanish. Their efforts and assistance were greatly appreciated.

A heartfelt thank you to all the teachers and administration of the elementary school, for allowing me into their building and into their classrooms. Thank you to the elementary school music teacher, for agreeing to oversee this project and to everyone from the Providence Office of Research and Accountability for allowing me to conduct this research.

And finally, a most sincere thank you to the students with whom it was a pleasure and a joy to work; who were always anxious and willing to try something new, and who always greeted me with smiles and hugs, even when words were not possible.

*“Where words fail, music speaks.”* – Hans Christian Anderson

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## CHAPTER ONE

### INTRODUCTION

There are nearly 71,000 special education students between the ages of six and twenty-one who have hearing losses (U.S. Department of Education, 2002). There are additional students with hearing impairments who receive no special education services (Darrow, 2007). It is a common misconception that these students cannot participate in music simply because they cannot *hear* it (Darrow, 2007; Darrow, 2006; Walczyk 1993). Many members of the Deaf community, however, consider music to be an important part of their lives (Darrow, 1993).

There are some students with hearing impairments, just as there are some students who can hear, whose brains are wired to be musicians. The ability to make discriminations about what one hears is a function of listening. Listening is a mental process, whereas hearing is a physical process. It is the function of the ear to collect auditory stimuli and deliver them to the brain. The brain interprets the information and hearing becomes listening (Darrow, 1990). The development of good listening skills allows students with hearing impairment to use their residual hearing to the maximum extent (Darrow, 2007). The music classroom is an excellent place for these skills to develop.

Students with hearing impairments have the potential to achieve in music, yet many dismiss this idea simply because these students cannot hear. Many do not realize that music can be accessed in many ways other than hearing; feeling, touch and movement are some of the many ways that music can become accessible for these students. As schools move towards a fully inclusive model, it is important for educators

to understand the many ways they can adapt their content area to fit the special needs of their students. Music educators may find this research helpful in developing and adapting their programs to fit these needs.

### The Importance of Developmental Music Aptitude

Music aptitude is the potential to achieve in music (Gordon, 1993). It represents the ‘inner possibilities’ (Gordon, 2003). All persons have some potential to achieve in music and, like all human characteristics, are normally distributed in the population. Relatively few have high aptitude, a similar number have low aptitude, and the majority of persons fall somewhere in the middle of the bell curve with an average aptitude. Gordon has spent 54 years researching how persons learn music. He states that persons are born with varying degrees of music aptitude. Therefore, no two persons are born with the same potential (Gordon, 1999). Music aptitude is a product of an individual’s innate potential and his/her early environmental experiences involving music. It is not known whether one factor is more important than the other, or if they contribute equally to a person’s music aptitude. Although a student who is achieving at a high level necessarily has a high music aptitude, a student who is achieving at a low level does not necessarily have low music aptitude (Taggart, 1989). Knowing a student’s aptitude, be it low, average, or high, allows a teacher to adapt instruction to fit the musical needs of that individual.

Gordon states that the components of a person’s music aptitude are developmental from birth to approximately age nine, and stabilize after that age. This developmental aptitude may be improved through formal and informal musical experiences. Stabilized

aptitude (after approximately age nine) may be improved little, if at all. Music instruction should begin as early in the child's life as possible because younger children learn faster and are capable of learning more than older children (Gordon, 1967; Gordon, 1980a; Gordon 1989a; Gordon, 1993).

There are multiple dimensions to music aptitude. The two most common dimensions are tonal and rhythm. Most test tonal and rhythm aptitudes individually and then provide a composite score. Each student has different degrees of various musical aptitudes which are related to the student's overall music aptitude. With the exception of average scores, it is rare for a student to have the same level of aptitude for several dimensions. Gordon has written music aptitude tests for a variety of age groups: *Audie* (1989) for ages three through five, the *Primary Measures of Music Audiation* (1979) for kindergarten through grade three the *Intermediate Measures of Music Audiation* (1982) for grades 1-6, the *Musical Aptitude Profile* (1965) for grades five through 12, and the *Advanced Measures of Music Audiation* (1989) for grades seven through adult.

Knowing each student's music aptitude is an efficient way to differentiate instruction to meet the needs of all students. By knowing the music aptitude scores for each student in a class, the music teacher will know which students are going to need more help. The teacher can then give those students the help that they need without embarrassing them in front of their peers by repeatedly asking them to perform tasks that are beyond their capabilities (Taggart, 1989). Teaching to the individual needs of students based upon their levels of music aptitude is especially important when students are in the developmental music aptitude stage. The opportunity to increase a student's aptitude is

available for only a limited time, so it is important that the music teacher take advantage of the opportunity while it exists (Taggart, 1989; Gordon, 1993).

### Importance of Rhythm Achievement

Music achievement is the level of skill that one has acquired as a result of his or her aptitude and experience with music (Gordon, 1993; Taggart, 1989). Likewise, rhythm achievement is the level of skill that one has acquired as a result his or her rhythm aptitude, instruction and experience. Music achievement, and subsequently rhythm achievement is evidence of what a person has learned relative to his or her aptitudes (Gordon, 2003). It seems likely that the acquisition of musical skills takes place in the early childhood years as children learn and react to cultural norms. To be musically capable, a child must learn the skills necessary for musical performance (Gordon, 1993; Lathom, 1972).

### Need for Rhythm

Between birth and age three, children learn rhythm, without biases and without notation. Their bodies move and respond to rhythm in a natural way. They play with and experience rhythm and movement without inhibition. The essence of rhythm, according to Gordon's Music Learning Theory, is movement (Gordon, 1993). Rhythm classifications are organized based on the body's natural response to rhythm. A body that responds naturally to rhythm is a necessary prerequisite of learning rhythm and establishing a consistent tempo. Without the experience of free movement, one will never organize rhythm experiences. Because of this, one can never achieve rhythmic accuracy

(Jordan, 1989). Movement helps to develop rhythm skills, so it is foolish to consider one without the other (Gordon, 1993).

Movement is a child's first language. It reflects the subtleties of thought and feeling not captured by verbal expression (Blesedell, 1991). Young children learn through exploration and activity. Adults guide that learning by labeling the actions of children, and by asking questions that stimulate thinking. Because of that, movement is an integral part of a young child's development, and therefore should be part of music curricula designed for use with preschool aged children. Gordon (2003) states the importance of movement exploration before structured activities. Music and movement educators have advocated that young children explore and experience moving their bodies with rhythmic movement while moving freely through space to their own beat and personal tempo. Without proper guidance and encouragement, children lose that ability and develop rigidity (Blesedell, 1991).

#### Effect of Instruction on Rhythm Achievement

In a study by White and Vanneman (1999), it was concluded that student involvement in musical activities (one of which was rhythm and movement) is positively related to student achievement in music, both tonally and rhythmically. In addition, the researchers also found a positive relationship between students responding to music and students creating and performing music.

Blesedell (1991) conducted a study comparing Laban-based and Dalcroze-based movement instruction on the rhythm achievement and developmental rhythm aptitude of preschool aged children. She did not determine that one type of movement instruction



proved more beneficial than the other. She concluded that, regardless of music aptitude or chronological age, movement instruction is beneficial for the musical development of three and four-year-old preschool children.

### Summary

The aforementioned research strongly supports the use of movement to help students continue to develop their rhythmic abilities. However, body percussion was not mentioned as a type of movement. Also, there is no mention of the use of percussive instruments to help develop rhythmic abilities such as beat competency. This indicates a need for further research regarding the use of these two methods.

### Importance of Adaptive Instructional Strategies

As schools move toward a fully inclusive model, it is important for educators to know and understand adaptive instructional strategies to help their students. For students with hearing impairments to process music, vibrations and rhythms (rather than pitch and melody) are a key factor (Darrow, 1985; Darrow, 1987a). Percussion, low frequency instruments, and physically large instruments tend to work best for students with hearing impairments because music is felt and aurally processed (Harman, 2009; Fahey and Birkenshaw, 1972; Darrow, 1985). These instruments produce strong vibrations that the students can feel in different parts of their bodies – even sitting a few feet away from the instrument. Proper instruction, modified curriculum, and sensory-appropriate tools can help students with hearing impairments experience success in music (Harman, 2009).

When music is presented in a meaningful context, any student receiving instruction, even those that are deaf or hard of hearing, will benefit. Music is an individualized language in which the sense of hearing does not need to limit or define a person's ability to perceive and express it (Harman, 2009). Music can be experienced, processed, and performed by all students with hearing loss. In reality, the typical deaf individual is capable of experiencing, processing, and performing music. Only about 10% of the deaf population has absolutely no hearing. About 90% have some residual hearing (useable hearing). Therefore, the majority of the deaf community can hear to some extent.

Many children who are deaf are delayed developmentally when entering school. Many lack language skills, and approximately 33% of all deaf children have another disability including physical, developmental, and/or emotional. The benefits of music have been underestimated or even ignored by those in the hearing community that make decisions regarding the education of deaf students. Over 90% of deaf children are born to hearing parents. In the typical educational setting for these students, the majority of teachers are hearing. With a lack of exposure to music and the obvious aural/oral connection between music and hearing, the strongest opposition to teaching music to the deaf comes from individuals who view music as only connected with the hearing community. Subsequently, there is a lack of qualified music education professionals that are also trained in deaf education (Harman, 2009).

Harman (2009) explains that there are two main types of hearing loss – conductive and sensory-neural. Individuals with conductive loss perceive and process sound just as persons with normal hearing do. The decibel level of this sound needs to be higher for individuals with a conductive loss to hear. Depending upon the degree of

hearing loss, individuals with sensory-neural losses perceive and process sounds that are typically distorted at varying frequencies and volume levels. For these individuals, increased sound is not necessarily helpful and may be quite painful.

Hearing aids are designed to process and amplify sounds such as speech. While music includes frequencies similar to those of speech, it also includes lower and higher frequencies along with increased volume levels. Because of this, it is commonly uncomfortable for a hearing aid wearer to listen to music since the hearing aid tends to distort the sound.

Sound is a compilation of vibrations at different frequencies. These vibrations can be felt as well as heard. Most deaf individuals rely on vibrations and rhythms rather than pitch and melody to process music (Harman, 2009; Darrow, 2006; Darrow, 1990; Darrow, 1985; Jellison, 1993). With proper instruction, modified curriculum, sensory-appropriate tools, exposure, and a willingness to learn, any deaf student who wishes to learn music can experience success.

Fahey and Birkenshaw (1972), and Darrow (1985) explain that students with hearing impairment can experience music by hearing certain tones within their limited range of hearing and by feeling vibrations from instruments. The senses of hearing and touch are closely related. The ear drum is, in fact, an organ of touch. It is intended to be touched only by vibrations of the air, never a solid object. Students can feel these air vibrations on their faces and hands and still partake in music they cannot hear.

Hearing impaired children are born with the same potential to appreciate and learn music as their hearing peers. However, many of these children will not be able to enjoy or participate in music through the auditory sense. Children with hearing loss have wide

variations in their abilities to access sound through audition alone. Many hearing impaired children can participate in, and enjoy, regular music classes with their hearing peers (Darrow, 1990). Some students with cochlear implants may also benefit from these classes, but teachers should keep in mind that cochlear implants do not restore normal hearing (Darrow 2007). Successful participation for these children depends on appropriate amplification and accommodations, as well as each student's personal motivation and ability. Deaf students, with severe to profound hearing loss, will likely find music classes designed for hearing students frustrating and have limited benefits (Darrow, 1990).

It is, however, possible for severe to profoundly deaf students to both enjoy and benefit from exposure to music. Research indicates that teaching music to children who are profoundly deaf is not only possible but also beneficial. Music encompasses far more than mere auditory vibrations. Music is multi-sensory. Rhythm, meter, intensity, beauty, mood, and movement are all parts of a musical experience and can be appreciated through tactile and visual stimulation, even for students who cannot hear sounds (Shibata, 2001).

In estimating the pleasure that can be derived from music, it must not be forgotten that the sensation or perception of sound is not the only pleasure produced by music. A large part of this pleasure is a result of the rhythmic character of the movement, which can be perceived by the sense of sight alone, to a considerable extent, and more perfectly by sight and feeling combined. Another avenue of pleasure for the deaf from music is the effect of vibrations gently exciting the nerves (Turner and Bartlett, 1848)

When the whole body is used to teach and learn music, gross and fine motor skills are developed and refined. In a study of brain activity in deaf and hearing individuals, it was discovered that deaf persons sense vibration in the part of the brain that others use for hearing. Shibata (2001) concluded that the experience deaf persons have when they feel music through vibrations is similar to that which hearing persons experience when listening to music. Shibata used functional magnetic resonance imaging (fMRI) to compare brain activity between 10 hearing impaired volunteers and 11 volunteers with normal hearing. They agreed to let Shibata scan their brains while subjected to intermittent vibrations on their hands. He realized that, while both groups showed brain activity in the part of the brain that normally processes vibrations, the hearing impaired volunteers also showed activity in the auditory cortex – the area responsible for hearing. This cortex is usually only active during auditory stimulation (when hearing sound). In addition, Shibata says, the research is important because it suggests that it may be helpful to expose deaf children to music early in life giving their auditory cortex the stimulus to develop further.

In another study examining the relationship between hearing and rhythm perception, subjects were asked to reproduce rhythms presented visually on a telegraph key. Rileigh and Odom (1972) studied the performance of 24 deaf and 48 normal hearing ten and 15-year-old students on a rhythm reproduction task. The researchers presented subjects, with visual rhythmic patterns of varying complexities. They were seeking to determine if hearing impairment inhibited the development of rhythm skills. No significant differences were found due to hearing status; however, the results indicated different developmental curves for rhythmic abilities. Results suggested that hearing

impairment might delay but did not impair the development of rhythmic skills. Therefore, those with hearing loss are just as likely to have varied rhythm achievement as their hearing counterparts. This research suggests that hearing loss does not inhibit the development of rhythm achievement. Therefore, it is imperative that music be introduced as early in life as possible for a hearing impaired individual – just as it is for those with normal hearing.

There are many music programs that use adaptive strategies for instruction. For example: for music instruction, Zinar (1987) recommends the harp and guitar – harp because the strings are close to the ear and the guitar because it is held close to the body, allowing vibrations to be felt. Hash (2003) also suggests the electric bass since it produces a significant amount of vibrations. Woodwind instruments also present possibilities. Individuals with hearing loss have successfully learned the clarinet and saxophone, both utilizing one note per fingering, good resonance, and a large frequency range (Edwards, 1974; Vettese, 1974; Zinar, 1987). Larger versions of these instruments such as the bass clarinet or tenor sax should also be considered as the lower frequencies they produce may be easier for some to hear (Robbins & Robbins, 1980).

When selecting the adaptive measures for a hearing impaired student in the classroom, it is helpful to think in terms of what the child *can do* instead of what he/she *can't do*. These students may not be able to hear all the frequencies in a song but their visual and tactile senses are more acute than hearing students'. Visual and tactile stimulation enable even profoundly deaf students to experience music. Body movements and computer light displays engage the visual sense and can convey the rhythm and intensity of music. The vibrations of speakers and musical instruments can be accessed in

a variety of ways – including touch and proximity. Young children will gain the most sensation by being allowed to sit on top of large speakers or placing their hands on smaller speakers. A Deaf child can experience a full body sensation when sitting on a wooden floor with speakers facing the floor. Action songs and movement have also proven stimulating and beneficial for students with hearing impairments (Missouri School for the Deaf, 2011).

For children who are still learning basic gross motor skills, a sense of rhythm helps them master simple movements such as walking, jumping, running, skipping, and dancing. Rhythm and movement are so intertwined that it would be foolish to consider one without the other (Gordon, 1999). Gordon, music learning theorist and author of many music aptitude tests, has stated that rhythm requires movement (Gordon, 1993).

The California School for the Deaf has a wooden floor that has been raised a few inches to improve the reception of vibrations in the music room (Fahey and Birkenshaw, 1972). Students close their eyes and feel the vibrations of a piano being played. Rhythm band instruments are used to help establish a perception of difference in pitch. The Metropolitan School for the Deaf combines speech and speech rhythms with movement and singing (Fahey and Birkenshaw, 1972). Much of the instruction involves skipping, running, and jumping to drum accompaniment, both for movement and auditory training (Fahey and Birkenshaw, 1972). The drum provides an excellent tool for teaching rhythmic patterns (Darrow, 1985).

The piano can be a valuable tool for music educators who work with students with hearing impairments. Diane Merchant, music director at Gallaudet University for the deaf, has observed that students do not have to correctly produce a pitch – the instrument

does it for them; and the correct keys can be seen and felt (Darrow, 1985). It is a visual, tactile, and vibrotactile tool for students. The piano provides a visual component in relation to pitch, half steps, octaves, etc. It provides a tactile component as the students can touch and strike the keys to create the desired pitch. It provides a vibrotactile component as the students can place their hands on any part of the wooden body and feel the vibration of sound from the key that they are striking. This helps students discriminate between pitches using their residual hearing, the visual component of seeing each individual key being played, as well as feeling the sounds that they are making on the keys (Fahey and Birkenshaw, 1972; Darrow 1985).

The rhythm program at the California School for the Deaf was developed by Grace Paxson, principal of the Lower School at the California School for the Deaf (Fahey and Birkenshaw, 1972). She uses not only rhythm band instruments, but also has a special room designed just for her classes – equipped with a grand piano, a phonograph and a loudspeaker, a group hearing aid, and a wooden floor that has been raised to improve the reception of vibrations. Her program is designed to improve certain aspects of speech, improve coordination and bodily control, to encourage creativity, imagination and self expression, and promote socialization.

The classroom teacher has students touch the piano with the tips of their fingers, and she begins playing notes starting at the lowest pitch of the piano. She works her way up chromatically, having the students raise their hand when the music stops. This helps develop the students' listening skills. Other activities include: having the students turn their backs to the piano with their bodies touching, or run or walk around the piano,



pausing when the music stops. (Fahey and Birkenshaw, 1972; Walczyk, 1993) Where the music stops will be different for each student depending on their level of hearing loss.

The teacher helps students interpret rhythm by playing music suitable for skipping and then music suitable for walking. As the children learn the difference between these rhythms, she adds marching music, hopping music and lullaby music. In later years, she introduces the concept of time (2/4, 3/4, and 4/4) in a similar manner. Since the development of clear speech is of high importance when teaching students with hearing impairments, speech is incorporated into all aspects of Paxson's music program. Aiding the children in their speech development is a goal of Paxson's rhythm instruction.

To teach the concept of pitch in relation to speech (Fahey and Birkenshaw, 1972), the teacher places cards reading "low" and "high" on the keyboard in the proper places. She plays pitches or chords that are low, and then writes low on the board. When a low chord is played, the students point to the "low" card. "High" is taught in the same manner. When the students can differentiate between the two, she adds "middle" to the cards on the keyboard, and plays chords in the middle register. Percussive instruments can be used to help establish a better perception of differences in pitch. The low range of pitches is demonstrated using bass drums, castanets and wood blocks. Whistles, bells, triangles, cymbals, and xylophones are used for the high range of pitches. Students are then asked to experiment with their voice in the low, middle and high register. The ideas of "strong" and "weak" are then taught in the same manner. Many hearing impaired persons are visual learners. Therefore, it is important to take advantage of this during instruction (Darrow, 2006, Walczyk, 1993; Jellison, 1993).

Birkenshaw (1972), a teacher at the Metropolitan School for the Deaf in Toronto, Canada explains that music can play an important role in the areas of relaxation, movement, auditory training, rhythmic exercise, and speech. She explains the importance of choosing songs wisely. They should be rhythmic and repetitive and have a vocabulary that the children can grasp. (For instance, she points out that tuffet, curds, and whey are meaningless in Little Miss Muffet because there is no translation of these words that a young, deaf student can understand.) She recommends using songs the students will be likely to encounter in life such as Jack and Jill, Grand Old Duke of York, She'll Be Coming Round the Mountain, and Liza Jane.

With regards to movement, she explains that the children spend a lot of time skipping, running, and jumping to drum accompaniment in her class for movement and auditory training. This helps them internalize a rhythm and feel the beat. Emile-Jaques Dalcroze, a music learning theorist in the early part of the 20<sup>th</sup> century, stated that musical rhythm depends on motor consciousness (movement) for its fullest expression. He stated that rhythm is a series of connected movements forming a whole and capable of being repeated (Dalcroze, 1930). From these and other ideas, it can be deduced that movement is an adequate means of helping to develop a student's rhythmic ability.

Birkenshaw's program combines speech and speech rhythms with movement and singing. In this school, the students are taught to speak rather than use sign language so they can be integrated as soon as possible. However, the majority of her students are profoundly deaf and have never heard any sound. Because of this, they have never heard speech and therefore have nothing to model their pattern of speech on. They cannot even hear their own speaking voice when they do manage to produce it. This music program is

designed to assist children in developing a rhythm and pattern to aid in their speaking. Every lesson in her program combines the movement, speech or singing, rhythm, and auditory training to help the students develop the skills necessary in the hearing world.

Darrow (1985) also describes speech related benefits of music for the hearing impaired, as well as “listening skills.” She points out that the history of music education for the deaf extends back at least 136 years (at the time this article was written; now 162 years), and yet the idea is met with surprise by most persons, if not a suspicion. She explains that many assume that deaf means completely without hearing. In fact, only a small percentage of hearing impaired individuals have no hearing whatsoever. She explains that a child must first become accustomed to the instrument so they can develop an understanding of tone color and sound production, pointing out that, even if the child cannot hear the pitch, they can feel the vibrations from many instruments. The chromatic bells, for instance, possess a range of pitches wide enough for hearing impaired children to find the tones they are able to hear, while the cymbals provide a strong vibration they can feel. However, the drum, which is one of the most popular instruments among hearing impaired children, provides an excellent tool for teaching rhythmic patterns.

With regards to speech development, Darrow explains that the perception, interpretation, and performance of sound serve as the basic foundation for speech and music. The auditory perception of speech and music involves the ability to distinguish between different sounds, their pitches, durations, intensities, timbres, and the way in which these sounds change. Darrow explains that body movement, which is an integral part of Dalcroze Eurhythmics and Orff, is also an important aspect of speech therapy. The

children must use their entire bodies in many rhythmic experiences before they can be expected to use a more highly refined rhythmic response in their speech.

Birkenshaw (1972) also states that the use of music in auditory training is important when teaching deaf children. The instruments that she found to be most useful are large drums or timpani, bass xylophones, and bass metallophones. The students touch the instrument to feel the vibration and experience the “sound” in their own way. Deaf and hearing impaired children can learn to identify a pulse and recognize the vibrations of tones in different parts of their body – low tones are felt in the stomach and legs, medium or mid range tones in the chest cavity, and high tones in the sinus cavities of the forehead. In this way, the students can learn to distinguish pitch and identify a pulse even though they cannot hear it (Fahey and Birkenshaw, 1972).

The goal of auditory training is to teach the students to listen. Music offers a way in which the hearing impaired child can practice good *listening* habits. While the child cannot physically hear, and that cannot be changed, listening is different from hearing. It involves concentration, and the ability to give meaning to what is being listened to. Hearing impaired children, who will not naturally absorb and comprehend sound as those with normal hearing do, are motivated by the use of musical stimuli (Darrow, 1985). Speech is musical in nature. The melodic aspects of language contain a great deal of information, making musical instruments ideal when teaching students to speak. Music is an integral part of the education of students with hearing impairments, to help integrate them into the hearing world.

Rhythm is one of the most important elements in speech. Birkenshaw (1972) teaches rhythm by combining speech with clapping. A word is clapped with accents

representing the inflection of the word. Students can repeat the word over and over and then clap and walk to the rhythm. They can also learn to play the rhythm on a drum. This helps them not only create rhythmic patterns in a musical sense (which they can then move and dance to) but they also learn the rhythmic patterns of words they need to speak every day. One group of children can play these rhythms on percussion instruments while the others walk the sequence and say the words, repeating them a certain number of times. In this way, students can find success in performing speech patterns and rhythm patterns.

A primary adaptive strategy for students with hearing losses is the use of visual and tactile aids (Darrow, 1985). Almost any aural concept can be represented visually as well (Darrow, 2007). For example, instructions can be written on the board for students that can read. Beating a drum can also be a visual cue. Students can observe the beat movements of the teacher and other students in the class as they play. Vibrotactile stimuli may be a successful strategy for music training as well (Darrow, 2007). Allowing students to feel stereo speakers as music plays or touch instruments, such as the drums being used by the researcher in the current study, as they are being played are examples of vibrotactile stimuli that can be used in the music classroom. Performing kinesthetic movements to music may be beneficial for students with hearing impairment also (Darrow, 2006).

It is imperative that music be introduced as early in life as possible for a hearing impaired individual – just as it is for those with normal hearing – and focus on ability rather than disability (Harman, 2009; Darrow, 2006). It may be necessary to work with a student one-on-one or in a small group setting to allow for answering questions,

evaluation, reinforcement and feedback. Deaf percussionist Evelyn Glennie (2004) explains that she spent a great deal of time, when she was young, working with her percussion teacher, Ron Forbes. The pair worked to refine her ability to detect vibrations. She would stand with her hands against the classroom wall while Ron played notes on the timpani. Eventually she was able to distinguish the rough pitch of notes by associating where she felt their vibrations on her body. The low sounds she would feel mainly in her legs and feet while higher sounds on her face, neck and chest. Because music is felt and processed visually, percussion, lower frequency instruments and physically larger instruments tend to be good matches for students with hearing impairments.

Placing a hand on an instrument allows the student to feel the beat instantaneously and connect with the music (Glennie, 2004). Playing these instruments along with a teacher opens up the possibilities of observing as well as feeling the beat that the teacher is playing. Playing an instrument individually allows the student to participate in music by playing along, and feel the music from both the teacher's instrument as well as their own. Most students with hearing impairments learn best through active participation in music making (Darrow, 2007). This active participation could also include moving to the vibrations that the student feels, to help the student internalize and demonstrate a steady beat. The ability to identify the pulse in a piece of music, and keep time with it, is known as beat competency (Eddy, 2009; Gordon, 1993).

Glennie (2004) has worked with various hearing and students with hearing impairments both privately and in master class settings. She will often encourage students to remove their shoes so they can feel the vibrations from the floor as she plays either a bass drum or timpani. With a bass drum, she has the students place one hand on

the instrument and strike it with the other. She asks the student to raise his or her hand when he/she feels the vibrations stop (which is usually long after the sound has stopped). When working with the timpani, she adjusts the pitch and asks students to explain how the vibrations of different pitches feel in order to teach them to discriminate pitch based on touch. Because these instruments produce such strong vibrations, both hearing and students with hearing impairments can learn to interpret music through touch.

All of these examples suggest that students with hearing impairments can succeed in music if the instruction is appropriately adapted to fit their needs. Without adaptive music instruction, students are either left out of class altogether or do not participate in class. By being unable to attend music class, they are not receiving the opportunities or tools necessary to succeed in music. If they attend class, but instruction is not adapted, they are not provided with the tools to succeed. The purpose of education is to provide students with appropriate tools and opportunities to find success.

### Summary

The results of the aforementioned research provide multiple adaptive practices for teaching music to students with hearing impairment. However, none specifically mention the use of hand drums *and* body percussion. Although the above articles do demonstrate success in teaching students with hearing impairments, hand drums and body percussion may provide another method for teaching these students. Spoken macrobeat/microbeat patterns are beneficial for hearing students (Gordon, 1993). These same patterns, performed on hand drums and as movement (body percussion) may be preferable for those with hearing impairment. Since teaching macrobeat/microbeat patterns and the use

of movement is suggested by Gordon (1993), and there is little research regarding the use of this type of instruction for students with hearing impairments, further research is needed so that the findings are conclusive.

## THE FOCUS OF THIS RESEARCH

The effect of instruction on developmental rhythm aptitude and rhythm achievement of students with hearing impairments is the focal point of the present study. Music instruction during the first nine years of life can determine the extent to which children give meaning to and take pleasure from music throughout their lives (Gordon, 1993). Beat competency is important for supporting and developing a child's rhythm aptitude and measuring his or her understanding of music syntax. Research suggests that developing beat competency benefits hearing students, but little research has been done to determine whether the same holds true for students with hearing impairment.

### Purpose and Problems of this Study

In order to help music educators teach persons with hearing disabilities, and to define factors necessary for creating the best environment for their musical development, the purpose of this research is to investigate the effect of instruction using percussive instruments and body percussion on the developmental rhythm aptitude and rhythm achievement of students with hearing impairments. The specific problems of this study are the following:



1. Does the addition of hand drums and body percussion to music instruction affect the developmental rhythm aptitude of preschool aged children with hearing impairment?
2. Does the addition of hand drums and body percussion to music instruction affect the beat competency of preschool aged children with hearing impairment?

### Definitions

Beat Competency – The ability to maintain a steady beat

Body Percussion – The use of one's body to create rhythm patterns using the 9 movement patterns as defined by body percussionist Keith Terry

Developmental Music Aptitude – The potential to achieve in music

Rhythm Aptitude – The potential a student has to achieve musically (rhythmically)

Vibrotactile stimuli - Relating to or involving the perception of vibration through touch

### Limitations

1. Although there are many ways in which to measure a child's rhythm achievement, the present study will be limited to measuring the student's ability to perform macrobeat/microbeat patterns within the context of duple and triple meter only.
2. Generalization of the results of this study is limited by the specific characteristics of the students at the school in which this study was conducted.

## CHAPTER TWO

### RELATED LITERATURE

The focus of this study is on the effects of the use of hand drums and body percussion on the developmental rhythm aptitudes and rhythm achievement of students with hearing impairments. Therefore, the literature that is directly related to this study falls into three categories. They are the following: (1) studies that consider the effect of instruction on developmental music aptitude (for both hearing and students with hearing impairments), (2) studies that consider instructional methods that affect rhythm achievement (3) studies that consider the effect of adaptive music instruction on rhythm achievement. This review will address each of those categories of study.

#### The Effect of Instruction on Developmental Rhythm Aptitude

Developmental music aptitude is defined as music potential that is affected by the quality of environmental factors. A child is in developmental music aptitude from birth to about age nine (Gordon, 1993). Instruction that takes place before a child reaches this age is crucial in the development of his/her developmental music aptitude. Aptitude is divided into two subsections – tonal aptitude and rhythm aptitude. For the purpose of this study, only rhythm aptitude is considered.

Rutkowski (1986) conducted a study related to the effect of restricted song range on kindergarten children's use of singing voice and their developmental music aptitudes. Subjects were six intact kindergarten classrooms at three public elementary schools in Pennsylvania. All classes were taught by female classroom teachers and female music specialists. Two different types of instruction were administered – one involving

restricted song range not exceeding C3 to B3 with a tessitura not exceeding D3 to A3, the other involving song materials in original form as presented in the *Silver Burdett Music: Early Childhood* book. A seventh kindergarten class at a local parochial school was chosen as the control group as this class did not receive weekly instruction from a music specialist. All students in the treatment groups received music instruction from a music specialist once weekly for 30 minutes over the course of 15 weeks.

Prior to the beginning of instruction, students individually sang a predetermined song (Bakerman) and five tonal patterns. These performances were video recorded and evaluated by two judges based upon a scale developed by the researcher referred to as the Singing Voice Development Measure (SVDM). The SVDM is a five-point continuous rating scale pertaining to the student's use of singing voice. The *Primary Measures of Music Audiation* (PMMA) was also administered prior to instruction. According to the instructions presented in the test manual, the *Tonal* subtest was administered first followed one week later by the *Rhythm* subtest.

These same measures were conducted again at the conclusion of the 15-week instructional period. Results of this investigation determined that the use of restricted song range alone was not an affective treatment for assisting kindergarten children to gain use of their singing voice. Since no significant differences were found between the treatment groups and the control group, either in singing voice or aptitude score, it is possible that music instruction once a week for 30 minutes may not be sufficient instructional time for kindergarten children or that an instructional period of 15 weeks is too short for achievement to be significantly noticeable.

The current study may have a similar problem. Due to time constraints and scheduling with the elementary school, the researcher can only conduct 30-minute lessons twice per week for six weeks, totaling 12 lessons - 10 instructional lessons, one lesson devoted to pretesting, and one lesson devoted to posttesting. Given the results of Rutkowski's (1986) study, this may not be sufficient time to yield any significant results.

Flohr (1981) conducted a study related to short term musical instruction and its effects on the developmental music aptitude of 5-year-old students. He randomly separated 29 students into three groups, Music I, Music II, and Control. Music I received 25 minutes of music instruction twice a week for 12 weeks with a concentration on improvisation. The children used Orff xylophones in improvisatory experiences such as question and answer games, improvising to a bordun, improvising extensions to phrases, and playing in response to verbal stimuli. Music II received 25 minutes of typical classroom music instruction twice a week for 12 weeks which included singing, playing percussion instruments, dancing, expressive movement, and games. The Control group received no music instruction. Prior to instruction beginning, all students received 3 months of music instruction once a week for 25 minutes.

The PMMA was administered to all students prior to the 12-week experimental period. The PMMA was administered to all students again at the conclusion of the 12 weeks of instruction. He found that the students in Music I and II scored higher on the PMMA than those in the control group after just 12 weeks of instruction. There was no significant difference between Music I and Music II, so it is unclear whether one type of instruction should be favored over the other. However, he also found that the control group PMMA scores had dropped, though insignificantly, from their initial test. The

control group's decrease after the end of initial instruction suggests that the effects of instruction may be temporary. A need for further research concerning the duration of instructional effects was indicated.

While Flohr's study examined the effect of short term instruction, he was able to administer 24 30-minute lessons in 12 weeks. For the current study, the researcher has a shorter period of time for instruction with significantly fewer lessons. It is possible that the researcher will not find similar results to Flohr given the reduced time for instruction.

Blesedell (1991) conducted a study comparing Laban-based and Dalcroze-based movement instruction on the rhythm achievement and developmental rhythm aptitude of preschool aged children. She chose two intact classes of three-year-old children and two intact classes of four-year-old children enrolled in a private pre-primary education program at a school in Pennsylvania. Prior to the study, the intact groups were randomly assigned the methods of movement instruction – either Laban movement or Dalcroze movement.

*Audie* was administered in its complete form (both *Tonal* and *Rhythm* subtests) to all children individually by the researcher before the study began. *Audie* was re-administered in its complete form to all children individually by the researcher at the conclusion of instruction. Each group met with the researcher for 30-minute lessons once a week for ten weeks.

Children assigned to the Laban method of movement instruction were exposed to lessons based on four of the 16 basic movement themes described by Laban. Those four themes were body awareness, awareness of weight and time, awareness of space, and awareness of flow.

Children assigned to the Dalcroze method of movement instruction were exposed to lessons adapted from Elsa Findlay's applications of Dalcroze eurythmics. Those objectives included the use of the whole body, involving the larger muscle groups; the development of physical coordination through rhythm; the development of listening skills by relating what was heard to what was done; body, mind, and emotion are integrated in rhythmic expression; and freedom of expression in every aspect of music learning.

In addition, all children were asked to perform microbeats and macrobeats on a small hand drum to a researcher-designed criterion song. The researcher modeled the microbeats and macrobeats for the children to provide a visual reference.

A five-point continuous rating scale was used to rate the children's movement performances. Specific lessons were video recorded for evaluation purposes. The judges' combined ratings for each child's movement performance from the first, fifth, and tenth lessons to represent the child's movement achievement. A five-point continuous rating scale was also used to rate the children's rhythm performance. The combined judges' ratings of each child's rhythm performance represent the child's rhythm achievement.

Although she did not determine that one type of movement instruction proved more beneficial than the other, she found that the post-instruction aptitude scores of the students involved were significantly higher than their pre-instruction aptitude score. She concluded that, regardless of music aptitude or chronological age, movement instruction is beneficial for the musical development of three- and four-year-old preschool children (Blesedell, 1991).

Although Blesedell's study did not involve students with hearing impairment, a number of other similarities exist between Blesedell's and the current study. The age

group, the use of macrobeats and microbeats, and the length of instruction are almost identical to the study being conducted by the researcher. However, in the current study, the ten 30-minute lessons will take place twice per week, constituting five of the six weeks of instruction involved in this study, while Blesedell saw the students once per week over the course of 10 weeks.

Crouch (2005) used rhythmic movement activities to help develop the rhythm aptitude, and subsequently the rhythm achievement, of three learning disabled piano students. The three students, all age 11, had various disabilities that limited their fine muscle control, thereby causing a degree of rhythmic inaccuracy when playing.

Before beginning the study, the students were tested to determine their ability to synchronize to a steady beat and imitate various rhythm patterns accurately. All three had difficulty with pattern imitation, finding the steady beat, and maintaining the beat throughout a one-minute musical excerpt. The *Rhythm* subtest of PMMA was administered to measure rhythm aptitude.

For 12 weeks following the pretest, all three students participated in a movement activity at the conclusion of each weekly private piano lesson. Activities utilized the large muscles of the arms, legs, and whole body. At the conclusion of the 12-week instructional period, the three tests were administered again (synchronizing a steady beat, imitation of various rhythm patterns, and the PMMA). Improvement was found in the scores for the *Rhythm* subtest of the PMMA, although students still scored below the scores for the normative population. Results were insignificant due to the small sample size. However, the individual improvement of each student showed promise that a study with a larger sample size could yield similar, perhaps significant, results.

The researcher realizes that similar results may occur for the current study due to a similarly small sample size. However, this study could provide information to encourage others to explore the area of music education for the deaf.

Little attention has been given, however, to the study of music perception (how persons mentally process music) and the hearing impaired. As a result, music education programs for the hearing impaired have been based on intuition and perhaps inappropriate generalizations from music education programs for normal hearing children (Darrow 1987b).

Darrow (1987a) administered the PMMA to twenty-eight children in grades one through three at the Kansas School for the Deaf. The average age of students was eight. She discovered that hearing impaired subjects' tonal, rhythm and composite scores across grades one, two, and three were significantly lower than those scores representing normal hearing children that appeared in the PMMA data. However, unlike scores reported for normal children, hearing impaired subjects at each grade level scored higher on the rhythm subtest than on the tonal subtest. Darrow found that hearing subjects scored higher on the tonal subtest than the rhythm subtest. The data indicate that hearing impairment does affect music aptitude, since both developmental tonal and rhythm aptitude mean scores for all grade levels for hearing impaired subjects were significantly lower than those reported for normal hearing children. The mean scores increased by grade level.

As stated, students with hearing impairments scored higher on the rhythm subtest than on the tonal subtest. This is probably due to the fact that hearing impaired children, in general, are more sensitive to rhythmic than to tonal stimuli in their daily environment.



The study does not mention whether or not the students were receiving music instruction at the school prior to her study beginning. If no instruction was provided, this may be why she saw that the students' aptitude scores were significantly lower.

While no instruction was discussed in Darrow's (1987a) study, the researcher assumes that aptitude scores of the subjects involved will show similar trends to that of Darrow's, and anticipates that improvement in aptitude scores will occur.

### Summary

All of the studies mentioned measured the effect of instruction on developmental music aptitude. Most of the studies yielded significant results. Length of instruction is certainly an important factor to consider. The instruction needs time to have an affect on the students. There is a clearly identified need for further research regarding which type of instruction most greatly affects children's developmental music aptitude.

### The Effect of Instruction on Music Achievement

Music achievement is the level of skill that one has acquired as a result of his or her aptitude and his or her experience (Taggart, 1989; Gordon, 1993). Minimum levels of music aptitude do not determine the maximum levels of music achievement (Gordon, 1993). Those with low music aptitude may still have high achievement based upon their skill level. Likewise, those with exceptionally high music aptitude may not be achieving at the potential of their skill level.

White and Vanneman (1999) analyzed data collected from the National Assessment of Educational Progress (NAEP) 1997 Arts Assessment in Music, which

covered 2,275 eighth-grade students, regardless of whether or not they had received instruction in music. They compared the music achievement of students with the musical activities they participated in or the type of instruction they received. These activities ranged from students listening to music on their own to being required to play their instrument in class on a regular basis. Analysis of data gathered in the assessment show a relationship between many types of musical activities, such as playing an instrument, singing in class, or performing tonal and rhythm patterns, and higher student achievement in music.

Students were assessed on three arts processes: creating, performing, and responding. In order to capture all three processes, the arts assessment exercises included creating and performing tasks in addition to standard paper and pencil tasks. These tasks asked students to sing and play instruments, sight read music, and to improvise. The responding tasks asked students to describe, analyze, interpret, and evaluate works of art, both by writing short statements and essays and by answering multiple choice questions.

It was notable that students who were asked to play their instruments almost every day had higher performing and creating mean scores than all other students. Students whose teachers asked them to sing almost every day had higher creating mean scores than all students except those whose teachers asked them to sing once or twice a month. However, in performing, students whose teachers asked them to sing almost every day outscored those students who did not take music class. It was also noticeable that students whose teachers played music for them to listen to once or twice a month had higher performing and creating mean scores than students whose teachers played music for them

to listen to almost every day. The data collected demonstrates a positive relationship between involvement in musical activities and student achievement in music.

The researcher hopes to find similar results in terms of performing as students will be required to play on instruments every lesson, participate in singing and movement activities and pattern instruction – all of which proved to be beneficial in White and Vanneman's (1999) study.

### Summary

This study shows that a variety of types of musical instruction and involvement have positive influences upon a student's musical achievement. This musical achievement continues to grow based upon the student's involvement in music related activities. Some of the activities discussed were activities that the student participates in on his or her own, such as listening to music. A variety of the beneficial instructional techniques discussed will be used by the researcher in the current study.

### The Effect of Adaptive Music Instruction on Rhythm Achievement

Adaptive practices are beneficial for any special learner. Teachers need to continue to develop ways of differentiating instruction to meet the needs of the students in their classroom. This can be more of a challenge when trying to adapt for students with severe disabilities rather than just different learning styles. A variety of adaptations for a variety of needs is required.

In hearing impaired children, the development of the sense of rhythm begins at birth as in normal children. The development of the skills of concentrating and listening

gains importance in a hearing impaired child's communication with others in the social environment he or she may happen to be in. Rhythmic activities greatly contribute to the development of these skills (Bilir, Altan & Bal, 1995).

Several researchers have investigated different methods of teaching music to students with hearing impairments. Some have used instruments, such as pianos, amplified keyboards or amplified orchestras as well as visual aids to develop student's musical abilities (Fahey and Birkenshaw, 1972; Harman, 2009; Walczyk, 1993; Jellison, 1993; May, 1961; Ankrim, 1953; Wecker, 1931; Darrow, 1990). Some have used pitched drums to help students discriminate pitch, while others have used music instruction to aid children in speech development (Fahey and Birkenshaw, 1972; Darrow, 1985; Glennie, 2004). Those most closely related to this study are those that examine the potential of teaching students to feel and understand vibrations to access music.

Murphy (1957) conducted a study to evaluate the rhythmical responses of those with severe cognitive disabilities. She explains that rhythmic activity contributes to the total development of a child including his or her social as well as physical development. Subjects were 64 males between the ages of two and 13 that were enrolled in a program devoted to their care. It was determined that the mental age of the subjects involved was between approximately 11 months and three years. Music instruction was provided by two musicians playing saxophone and guitar. The melody was played on the saxophone and the rhythmical beat of the amplified guitar accompaniment was accentuated in an effort to encourage rhythmic participation through both sound and vibration. Subjects would sit in a circle ensuring that all were within close proximity of the amplification system, encouraging an internalization of the beat that they were hearing, seeing, and

feeling. Music selections consisted of popular songs in 4/4 and 3/4 time as well as familiar marches, hymns, and folk tunes that subjects might recognize and know.

Two specific types of active participation were identified. The first type was participants who expressed rhythm with spontaneous rocking movements. The second type of participant was those who responded to musical rhythms with conventional hand clapping.

There were 32 subjects in each group – referred to as rockers or clappers. The two groups were compared based on diagnostic background, chronological age, and mental age. Social and emotional implications of the rhythmic activities were also evaluated. The average mental age of the rockers was determined to be about 11 months (by the *Vineland Social Maturity Scale*) while the clappers were considered close to three years. A review of the literature revealed that spontaneous rocking movements frequently occurred among those with the lowest mental age range. Rockers appeared to be self-absorbed and uninterested in the activities of others around them. The clapping participants tended to move as a group.

The rhythmical behavior of those in each of the groups was comparable to the behaviors of normal children of the same mental age, but far inferior to that of normal children of the same chronological age. Results suggest that rhythmic responses may reflect social-emotional levels of development as well as the degree of intellectual and motor development which has been attained. Some subjects in both groups habitually participated passively as listeners, suggesting a distribution of aptitude for rhythmic responses in the two mental age groups.

While this group of subjects was mentally challenged rather than hearing impaired, the researcher is hoping for similar responses from students by allowing them to feel the vibrations of the beat of music through the use of drums for the treatment classes and stereo speakers (much like the guitar amplifier) for the control group. However, since three of the five subjects involved in the current study also have cognitive disabilities as well as hearing impairment, the researcher is hopeful that the vibrations from drums will prove beneficial just as the vibrations from the amplified beat from the guitar was for Murphy's (1957) study.

Crouch (2005) used rhythmic movement activities to help develop the rhythm achievement of three learning disabled piano students. The three students, all age 11, had various disabilities that limited their fine muscle control, thereby causing a degree of rhythmic inaccuracy when playing. One student was high-functioning autistic. One was blind in the left eye and had very limited vision in the right. This student also suffered a stroke and spinal meningitis at the age of 13 months, which resulted in poor gross and fine motor skills. The third student had multiple learning disabilities and was legally blind. All students exhibited poor muscle tone and coordination. The subjects were two girls and one boy.

Before beginning the study, the students were tested to determine their ability to synchronize to a steady beat and imitate various rhythm patterns accurately. All three had difficulty with pattern imitation, finding the steady beat, and maintaining the beat throughout a one-minute musical excerpt.

For 12 weeks following the pretest, all three students participated in a movement activity at the conclusion of each weekly private piano lesson. Activities utilized the large

muscles of the arms, legs, and whole body. Objectives included internalizing a steady beat in duple and triple meter, imitating rhythm patterns in duple and triple meter and recognizing same and different rhythm patterns. Body movements included marching, swaying, clapping and patting thighs based on the body percussion found in Carl Orff's methodology (which explains that these body movements provide a way for children to sense rhythms through movement and allows tactile practice performing the rhythms before transferring this skill to an instrument). Students were also required to toss a beanbag from hand to hand, play woodblocks with a mallet and pull a stretchy band back and forth rhythmically. The final movement activity was a computer game that required the student to recognize same and different rhythm patterns and imitate these patterns using the computer's space bar.

At the conclusion of the 12-week instructional period, the tests were administered again (synchronizing a steady beat and imitation of various rhythm patterns). All three students showed improvement, though not statistically, in their ability to imitate rhythm patterns accurately and to find and maintain a steady beat. However, not all students improved equally. The individual improvement of each student showed promise. Given a larger sample size, adaptive instruction may affect rhythm achievement.

Since Crouch was unable to find significant results with such a small number (N=3), it is possible that the current study may have a similar outcome.

There are a variety of other instruments to be considered to encourage rhythmic responses. A number of drums conduct vibrations that may prove beneficial for those with hearing impairment, as a means to access and feel rhythm.

In a study conducted by Bilir, Altan, & Bal (1995), the rhythm skills of eight hearing impaired kindergarten students were evaluated. The subjects were five to seven years of age with serious bilateral sensorineural hearing impairment (profoundly deaf). The students otherwise had no disabilities. The students had been receiving music instruction at the kindergarten located at the Child Health and Education Department Hacettepe University in Ankara, Turkey for one to two years for two and a half days per week prior to the study.

The study consisted of a pre- and post-instruction test. Two identical drums, which were also used in the instructional portion of their study, were used for the evaluation of the children's ability to perform the rhythm of a sound heard (with the instructor seated *behind* the child), and the ability to perform the rhythm by imitating the model (with the instructor seated *in front of* the child). The instructor would perform a rhythm and the child had three chances to perform the rhythm correctly. Each correct rhythm earned the child one point.

Instruction was implemented for two months, five and a half days per week. In order to help children develop the concept of rhythm, percussion instruments such as the drum, tambourine, and steel triangle were used so that children could beat the rhythm of a sound heard and by imitating a model. These instruments were chosen because they fit the decibel range of the students' hearing. The hearing impaired children were also integrated with hearing children attending the same kindergarten which allowed the students to experience activities involving dancing and singing to the accompaniment of music, as well as rhythmic activities.



Evaluation of post-instruction scores revealed a statistically significant difference between pre-instruction and post-instruction mean scores for specific rhythms. The rhythms patterns that showed a significant increase contained two quarter notes, three quarter notes, and quarter note, rest, two eighth notes. For the other rhythm patterns, results were insignificant. However, it was found that all rhythm mean scores for those imitating the model sitting in front of them were greater, though non-statistically, in the post-instruction test. Performing a rhythm by imitating a model (the instructor seated in front of them) proved to be easier than the development of the skill of performing the rhythm of a sound heard (with the instructor sitting behind them). The researchers concluded that further time should be spent teaching students to use their residual hearing to perform rhythms that he or she can hear.

The researcher is hopeful that pattern instruction based upon Gordon's *Music Learning Theory* (1993) will prove to have similar success to the pattern instruction in the study above. However, Bilir, Altan, & Bal had a much greater amount of instruction time than the researcher has (30 minutes, twice per week for six weeks). The researcher hopes that the small number of subjects in this study (N=5) will prove to have some statistical improvement just as the small number of subjects (N=8) in Bilir, Artan, & Bal's study. The researcher also intends to conduct all lessons sitting and playing in front of the students so that they may see a model since Bilir, Artan, & Bal found this to be beneficial.

## Summary

All the studies mentioned contain adaptive practices for teaching music, or helping students with disabilities access music. Many of the studies found positive results, though most were not statistically significant due to small sample size. Almost all of the studies mention the use of vibrations and/or movement although not all pertained to hearing impairment. This suggests that this type of adaptive practice may be beneficial for a number of special learners, not just the hearing impaired.

## Chapter Summary

The research reviewed in this chapter focuses on three major areas: (1) the effect of instruction on developmental rhythm aptitude; (2) the effect of instruction on music achievement; (3) the effect of adaptive practices on music achievement. Studies that are closely related to the aforementioned sections were presented to provide the research base behind the present study.

The researchers presented in this chapter concluded that: developmental aptitude (both rhythmic and tonal) may increase as a result of instruction; children's musical achievement may increase as a result of instruction; adaptive practices can benefit a multitude of special learners; further research concerning adaptive practices is needed to determine the best approach.

The studies in this chapter regarding the effect of instruction on developmental aptitude either compared the effects of different types of instruction or compared the effects of instruction to no music instruction. The present study compares one adaptive type of instruction (percussion instruments and body percussion) versus standard

instruction without the use of percussive adaptations. Most of the studies mentioned discussed the importance of a lengthy period of instruction. Due to scheduling conflicts and time constraints of the elementary school, a lengthy period of instruction was not possible for this study. All researchers discussed the use of an aptitude test – either the *Primary Measures of Music Audiation* (PMMA) or *Audie*. Due to the age of the subjects involved in the study, *Audie* was the only valid option of aptitude test to serve as a pretest and posttest measure.

The study that discussed the effect of instruction on rhythm achievement discussed a number of different musical activities. These not only included types of instruction, but also musical activities that take place outside of school as well. Based on the quality of instruction provided by the school's music specialist and the fact that not all classrooms involved in the study were receiving music, it can be assumed that students involved were not receiving as varied of a musical environment outside of the lessons conducted by the researcher each week.

The studies on the effect of adaptive practices on music achievement showed that similar adaptations may be beneficial for a variety of special needs other than just hearing impairment. The majority of these studies emphasize the need for a larger group of subjects to reach statically significant conclusions. Due to the size of the hearing impaired population at the elementary school that the current study was conducted at, a number greater than five was simply not possible.

The present study seeks to fill in some of the gaps in the studies presented above by investigating (1) does the addition of hand drums and body percussion to music instruction affect the developmental rhythm aptitude of preschool aged children with

hearing impairment; (2) does the addition of hand drums and body percussion to music instruction affect the beat competency of preschool aged children with hearing impairment. The researcher did not find any other study that has examined the effect of these specific adaptive practices to developmental rhythm aptitude and rhythm achievement of preschool aged children. It is the intent of this researcher to gain insight into the issues presented above and provide a need for further research.

## CHAPTER THREE

### DESIGN AND ANALYSIS

#### Sample

Subjects for this study were five hearing impaired preschool children (N=5) from an elementary school in Providence, Rhode Island. The children in this study were from three self-contained special education classrooms. The student population at this school was composed of 57% Hispanic, 21% Black, 17% White, and 5% Asian. Seventy-seven percent of the student population was eligible for free lunch and 10% were eligible for reduced lunch. The school employed approximately 39 full-time teachers, and the student/teacher ratio was about 12:1 (publicschools12.com “School Rating” 2009-2010).

The students were available for instruction twice weekly as intact classrooms. The students received 30 minutes of formal music instruction twice per week for six consecutive weeks. This schedule continued for the duration of the study. The music curriculum that was used for all of the children was based on Music Learning Theory (Gordon, 1993) which is a theory of how persons learn music. Instruction based on Music Learning Theory can be divided into two parts – learning sequence activities and classroom activities. Learning sequence activities, or pattern instruction, is research based and sequentially introduces new skills such as tonal and rhythm syllables, discriminating between duple and triple meter or major and minor tonalities, and improvisation. Classroom activities include active music making through singing, chanting, movement, and playing instruments. Learning sequence activities and classroom activities are taught together and coordinated with one another so that children understand and comprehend the music that they hear and perform. Two of the classes (referred to as the “treatment

classes”) received this instruction while performing (demonstrating beat competency) on hand drums and performing body percussion patterns. The third group (the “control class”) received identical instruction without the use of hand drums and body percussion. Instead, students would tap, clap or move to demonstrate beat competency.

### Design

The design of this study was pretest-posttest involving treatment and control groups. One self-contained special education preschool class and one inclusion class were randomly assigned and designated as the treatment groups. The remaining self-contained classroom was designated the control group.

### Procedures

After the researcher’s departmental honors committee accepted the proposal, a copy of the proposal was submitted to the Districts’ Public Schools Office of Research, Planning and Accountability. Upon the approval of the district, the proposal was submitted to the Rhode Island College Internal Review Board (IRB). After permission for conducting the research was granted by the IRB (Appendices A, B, C and D) the researcher received permission for conducting research at the elementary school (Appendices E and F) and distributed information about the research study and consent form to the parents. Upon the request of the school district, the Spanish consent form was retranslated into English and authenticated by a native Spanish speaker who was blind to the study (Appendix G). Consent forms in both English and Spanish were provided to the parents (Appendices H and I). Participation in the study was completely voluntary, and a

child could withdraw from the study or refuse to respond at any time without penalty. Students gave verbal assent prior to instruction, and again at the conclusion of the research before data collection (Appendix J). The researcher ensured confidentiality of all student responses. All children with returned consent forms were able to participate in the study.

The researcher provided instruction to one randomly assigned self-contained special education preschool class and one randomly assigned inclusion class as treatment groups, and one randomly assigned self-contained special education preschool control group.

The researcher measured each individual subject's developmental rhythm aptitude using *Audie* (Gordon, 1989). *Audie* is an aptitude test designed for children ages three to five.

Instruction in the treatment classes included duple and triple meter macrobeat/microbeat rhythm patterns from *Rhythm Register Book One* (Gordon, 1984) Units 1A1, 1A2, 2B1, and 2B2. The rhythm patterns were chanted aloud by the researcher and then students repeated the patterns aloud (as all students had some verbal communicative skills). Next, the same pattern was demonstrated by the researcher on a drum, similar to the visual procedure used by Bilir, Artan, & Bal (1995). Students performed the patterns back on the drum. Students were also asked to perform the macrobeat and microbeat on their drums to familiar and unfamiliar songs in duple and triple meter (Appendix K) Students were also asked to move to the macrobeat of songs in duple, triple, and unusual meters. The researcher sang songs aloud while using a headset amplification device.

During instruction, students wore hearing aids (or cochlear implants). Time was also spent each class working with the nine body percussion patterns as developed by Keith Terry (2002) (Appendix L). The researcher demonstrated and taught these patterns individually. Students would then perform the pattern on a drum. Lastly, students would perform rhythm patterns on their bodies. Instruction time was divided so that approximately 5 minutes was spent on pattern instruction from *Rhythm Register Book One* (both verbally and on drums) 10-12 minutes was spent on performing macrobeats and microbeats on the drums to familiar and unfamiliar songs, and 10-12 minutes performing body percussion patterns. After three weeks of instruction, rhythm patterns were combined and strung together using both body and drums.

The control group received similar instruction. This group performed the same songs, chants, and rhythm patterns. Instruction excluded the use of the drums and body percussion. This class was taught using a cd player for stereo speaker stimuli (vibrations and amplification) in place of stimuli from drums, Picture Exchange Communication System (PECS) pictograms (Appendix M) (a method that was already established within the classroom prior to the researcher arriving) in conjunction with song singing, and observation of student's natural movement – such as kicking feet, tapping fingers, rocking/swaying etc. in place of body percussion.

Song repertoire (Appendix K) and all lesson plans (Appendix N) were developed by the researcher. All music instruction took place in each individual classroom.

*Audie* was administered on the first day of instruction during the week of May 9, 2011, and then again on the final lesson during the week of June 6, 2011. Only the *Rhythm* subtest was administered and used in the analysis.



Post-instructional performance testing occurred during the week of June 6, 2011 as well. Individual children were taken out of his/her regular class and led to a designated place in the hallway outside of the classroom. After the students gave verbal assent (Appendix I), they were asked to listen to a song they had never heard before and then perform their choice of either the macrobeat or microbeat. The treatment groups performed on drums and the control group demonstrated using natural movement.

Solo playing was a common practice during regular music instruction, so playing for the researcher did not seem out of the ordinary. All of these performances were video-recorded using a Sony Handycam DCR-SX63 so the performances could be rated at a later time. Three independent judges reviewed the footage and rated the children's performance using the Rhythm Rating Scale (Appendix O). The judges received training in the use of the rating scale beforehand. The judges were blind to the study.

### Research Instruments

Two criterion measures were used for this study. The *Rhythm* subtest of *Audie* served as a pretest and posttest measure of the developmental rhythm aptitude of all students participating in this study. The *Rhythm* subtest of *Audie* consists of a "special song" containing a specific rhythm that is repeated multiple times before the test begins. Students are given ten examples and asked to answer "yes" when they hear *Audie's* "special song," and "no" when *Audie* sings a different song. The answer sheet consisted of fill in the bubbles for yes, no, and not sure/ unresponsive. Due to the ages and needs of the students, assistance from teacher and teacher aids was necessary in helping the children fill out the answer sheet (Appendix N). Since the control group was completely

non-verbal, these students used PECS picture cards (Appendix M) to communicate yes and no during the aptitude test (Appendix P).

The second measure was used to rate the children's performance of two criterion songs at the completion of the study. The Rhythm Rating Scale (Appendix O) was based on a scale developed by Darrel Walters for use with Frosteth's *Primary Measures of Kinesthetic Responses to Tempo in Music* (Walters, 1983). This scale is a five-point continuous rating scale used to assess the student's rhythm achievement.

### Data Analysis

Means and standard deviations were computed for pretest and posttest *Audie Rhythm* subtest scores and for scores on the Rhythm Achievement Rating Scale. In addition, split-halves reliabilities were calculated for *Audie Rhythm* subtest scores of the pretest and posttest administration. The interjudge reliabilities of the Rhythm Achievement Rating Scale and Composite Rhythm Achievement scores were calculated as well.

To determine whether or not there was an affect of treatment on developmental rhythm aptitude, an Analysis of Variance (ANOVA) was used to see if there was a significant difference between treatment and control groups.

Studies have shown that movement and rhythm instruction is beneficial to the development to young children's music aptitude as well as their coordination skills. Other studies show that students with hearing impairments do have musical potential, just as hearing students do, and that instruction can be just as beneficial if adapted properly.

Researchers found that the developmental music aptitude of the students increased significantly after 25 minutes of instruction twice per week for 12 weeks. It was also found that students who received no instruction for the same 12 weeks tended to score lower, on the post-instruction aptitude test. This suggests that quality instruction, even for a short period of time, may have an affect on the developmental music aptitude of students.

If similar results are found for the present study, it would add to the body of research that instruction influences children's developmental music aptitude. If no significance is found, it may be possible that 12 half-hour lessons over the course of six weeks was too short of a time period to yield significant results. It may also be possible that further adaption's need to be considered when working with students with hearing impairments with multiple physical and/or cognitive disabilities.

To determine whether or not there was an affect of treatment on rhythm achievement, an Analysis of Variance was used to see if there was a significant difference between treatment and control groups.

Student's developmental aptitude is continuing to fluctuate and change at this age based upon quality of instruction (Gordon, 1993). It can be deduced that this aptitude affects a child's musical achievement. If a significant change in rhythm aptitude and rhythm achievement scores is found in this study, it will strengthen the argument for music instruction as a contributing factor to students' musical achievement.

## CHAPTER FOUR

### RESULTS AND INTERPRETATIONS

#### Reliabilities of Pre-Instruction and Post-Instruction *Rhythm* Subtest of *Audie*

Split-half reliabilities were computed for this study using the pre-instruction and post-instruction *Rhythm* subtest scores of *Audie*. The reliability coefficient for the pretest was  $r = .80$ . The reliability coefficient for the posttest was  $r = .78$ . The Kuder-Richardson reliability coefficient reported in the *Audie* manual (Gordon, 1989b) for the *Rhythm* subtest is .69. The split-halves reliability, corrected using the Spearman Brown Prophecy, for the pre-instruction administration was .89. The split-halves reliability, corrected using the Spearman Brown Prophecy, for the post-instruction administration was .88.

#### Reliabilities of the Rhythm Achievement Rating Scale

At the conclusion of the six-week instructional period, three independent judges rated the students' performances of the two criterion songs (Appendix J). The interjudge reliabilities were as follows: Duple Meter reliability coefficients ranged from  $r = .32$  to  $r = .88$ ; Triple Meter reliability coefficients ranged from  $r = .69$  to  $r = .92$ . The Composite Rhythm Achievement scores reliability coefficients ranged from  $r = .65$  to  $r = .91$ . The reliability coefficients ranged from low to high; however, most ratings appear to be reliable.

Table 1

Rhythm Achievement Rating Scale Reliabilities

<u>Duple Meter Dimension</u>			
	Judge 1	Judge 2	Judge 3
Judge 1	1.00	0.67	0.32
Judge 2	0.67	1.00	0.88
Judge 3	0.32	0.88	1.00
<u>Triple Meter Dimension</u>			
Judge 1	1.00	0.92	0.69
Judge 2	0.92	1.00	0.92
Judge 3	0.69	0.92	1.00
<u>Total Rhythm Achievement Scores</u>			
Judge 1	1.00	0.88	0.65
Judge 2	0.88	1.00	0.91
Judge 3	0.65	0.91	1.00

## The Effect of Instruction Including Hand Drums and Body Percussion on the Developmental Rhythm Aptitude of Hearing Impaired Children in Preschool

### Means and Standard Deviations of *Rhythm* Subtest of *Audie* Pre-Instruction Scores

The means and standard deviations for the pre-instruction scores of the *Rhythm* subtest of *Audie* are presented in Table 2. The mean score of the *Rhythm* subtest of the *Audie* pretest for the treatment group was 4. The mean score for the control group was 1.

The standard deviation for the treatment group was 2.71. There is no standard deviation for the control group since N=1. Therefore, the two groups have dissimilar variability of scores.

Table 2

#### Means and Standard Deviations for *Audie* Pretest

---

	N	M	SD
Treatment	4	4.00	2.71
Control	1	1.00	

### ANOVA of Pre-Instruction *Audie Rhythm* Scores

In order to determine whether or not there was a significant difference between the two mean scores of the treatment and control groups on the pretest *Rhythm* subtest of *Audie*, an ANOVA (analysis of variance) was used. The results of the ANOVA are presented in Table 3. There was no significant difference given the treatment. The treatment and control groups had similar aptitude scores.

Table 3

ANOVA for *Audie* Pretest


---

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Grouping	1	7.20	0.98	0.40	0.40
Residual	3	22.00	7.33		

*p* > .05

Means and Standard Deviations of *Rhythm* Subtest of *Audie* Post-Instruction Scores

The means and standard deviations for the post-instruction scores of the *Rhythm* subtest of *Audie* are presented in Table 4. The mean score of the *Rhythm* subtest of the *Audie* posttest for the treatment group was 4.5. The mean score for the control group was 0 (unresponsive).

The standard deviation for the treatment group was 3.32. There is no standard deviation for the control group since N=1. Therefore, the two groups have dissimilar variability of scores.

Table 4

Means and Standard Deviations for *Audie* Posttest


---

	N	M	SD
Treatment	4	4.50	3.32
Control	1	0.00	

### ANOVA of Post-Instruction *Audie Rhythm* Scores

In order to determine whether or not there was a significant difference between the two mean scores of the treatment and control groups on the posttest *Rhythm* subtest of *Audie*, an ANOVA was used. The results of the ANOVA are presented in Table 5. There was no significant difference given the treatment. The treatment and control groups had similar aptitude scores.

Table 5

#### ANOVA for *Audie* Posttest

---

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Grouping	1	16.20	16.20	1.47	0.31
Residual	3	33.00	11.00		

$p > .05$

### Interpretation of *Audie Rhythm* Aptitude Scores

There is no significant difference between the mean rhythm aptitude gain scores of the treatment and control groups. This is most likely due to the small number (N=5) of students involved in the study. There were too few students and therefore it is impossible to claim statistical significance even if the results had indicated statistical significance. The limited amount of time (six weeks) could also be a contributing factor to a lack of change in aptitude scores. Several students had multiple disabilities, both physically and cognitively, beyond hearing impairment. These disabilities could be contributing factors as well. It is also possible that students did not understand the directions for the test due



to low cognitive abilities. Therefore, it can be determined that the treatment had no affect on the rhythm aptitude of students.

### The Effect of Instruction Including Hand Drums and Body Percussion on the Rhythm Achievement of Hearing Impaired Children in Preschool

#### Means and Standard Deviations of the Rhythm Achievement Rating Scale – Duple Meter Dimension

The means and standard deviations of the Duple Meter Rating Scale are presented in Table 6. The mean score of the Duple Meter Dimension of the Rhythm Rating Scale for the treatment group was 2.67. The mean score for the control group was 2.00.

The standard deviation for the treatment group was 0.67. There is no standard deviation for the control group since N=1. Therefore, the two groups have dissimilar variability of scores.

Table 6

#### Means and Standard Deviations of the Rhythm Achievement Rating Scale - Duple Meter

---

	N	M	SD
Treatment	4	2.67	0.67
Control	1	2.00	

#### ANOVA of the Rhythm Achievement Rating Scale – Duple Meter Dimension

In order to determine whether or not there was a significant difference between the two mean scores of the Duple Meter Dimension of the Rhythm Rating Scale, an

ANOVA was used. The results of the ANOVA are presented in Table 7. The treatment and control groups had similar scores.

Table 7

ANOVA Table for Duple Meter Rhythm Achievement Rating Scale

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Grouping	1	0.36	0.36	0.81	0.44
Residual	3	1.33	0.44		
<i>p</i> > .05					

Means and Standard Deviations of the Rhythm Achievement Rating Scale – Triple Meter Dimension

The means and standard deviations of the Triple Meter Rating Scale are presented in Table 8. The mean score of the Triple Meter Dimension of the Rhythm Rating Scale for the treatment group was 1.67. The mean score for the control group was 1.00.

The standard deviation for the treatment group was 0.77. There is no standard deviation for the control group since N=1. Therefore, the two groups have dissimilar variability of scores.

Table 8

Means and Standard Deviations of the Rhythm Achievement Rating Scale - Triple Meter

	<i>N</i>	<i>M</i>	<i>SD</i>
Treatment	4	1.67	0.77
Control	1	1.00	

### ANOVA of the Rhythm Achievement Rating Scale – Triple Meter Dimension

In order to determine whether or not there was a significant difference between the two mean scores of the Triple Meter Dimension of the Rhythm Rating Scale, an ANOVA was used. The results of the ANOVA are presented in Table 9. There was no significant difference given the treatment. The treatment and control groups had similar scores.

Table 9

#### ANOVA Table for Triple Meter Rhythm Achievement Rating Scale

---

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Grouping	1	0.35	0.35	0.60	0.50
Residual	3	1.77	0.60		

$p > .05$

#### Means and Standard Deviations Composite Score of the Rhythm Achievement Rating Scale

The means and standard deviations of the Composite Score for the Rhythm Achievement Rating Scale are presented in Table 10. The mean of the Composite Score of the Rhythm Rating Scale for the treatment group was 2.17. The mean score for the control group was 1.50.

The standard deviation for the treatment group was 0.64. There is no standard deviation for the control group since  $N=1$ . Therefore, the two groups have dissimilar variability of scores.

Table 10

Means and Standard Deviations Composite Score of the Rhythm Achievement Rating Scale


---

	N	M	SD
Treatment	4	2.17	0.64
Control	1	1.50	

ANOVA of the Composite Score of the Rhythm Achievement Rating Scale

In order to determine whether or not there was a significant difference between the two mean scores of the Composite Scores of the Rhythm Rating Scale, an ANOVA was used. The results of the ANOVA are presented in Table 11. There was no significant difference given the treatment. The treatment and control groups had similar scores.

Table 11

ANOVA of the Composite Score of the Rhythm Achievement Rating Scale


---

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Grouping	1	0.36	0.36	0.89	0.42
Residual	3	1.23	0.41		

$p > .05$

Interpretation of Rhythm Achievement Scores

There is no significant difference between the mean rhythm achievement scores for the treatment and control groups. This could be due to the small number (N=5) of students involved in the study. There were too few students and therefore it is impossible

to claim statistical significance even if the results had indicated statistical significance. The limited amount of time (six weeks) could also be a contributing factor to a lack of change in aptitude scores. Several students had multiple disabilities, both physically and cognitively, beyond hearing impairment. These disabilities could be contributing factors as well. It is also possible that students did not understand the directions for the rhythm achievement task due to low cognitive abilities. Therefore, it can be determined that the treatment had no affect on the rhythm achievement of students.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A summary of the study is presented in this chapter. Conclusions and implications for music education are also included, followed by recommendations for future research.

#### Summary of the Study

##### Purpose and Problem

The purpose of this research was to gain information about the effect of instruction using percussive instruments and body percussion on the developmental rhythm aptitude and the rhythm achievement of students with hearing impairment. The problems of this study were to determine if:

3. Does the addition of hand drums and body percussion to music instruction affect the developmental rhythm aptitude of preschool aged children with hearing impairment?
4. Does the addition of hand drums and body percussion to music instruction affect the beat competency of preschool aged children with hearing impairment?

##### Design and Procedures

Children from three intact preschool classrooms (N=5) from a suburban public elementary school participated in this study. *Audie* was administered to each subject before treatment began. Two classes were randomly assigned as the treatment group, while the third was randomly assigned as the control group. Each class received two thirty-minute music classes each week for 6 weeks. The nature of the instruction was

identical for the two groups, except that the treatment group was given instruction using hand drums and body percussion as well as movement, while the control group was given instruction using a cd player (stimuli from speakers) and student's natural movement to music (such as kicking feet, tapping fingers, rocking/swaying etc.) Both groups experienced live singing performed by the researcher with the assistance of a headset amplification device and student hearing aids or cochlear implants.

After treatment, the researcher again administered *Audie* to each subject. Upon completion of the posttest, students were videotaped performing macrobeats or microbeats to unfamiliar duple and triple meter songs. Footage was shown to 3 judges who were blind to the study, who graded each student performance on a five-point continuous rating scale. (Appendix L) Means and standard deviations for the judges' ratings were calculated and interjudge reliabilities were calculated.

### Results and Interpretations

There was no significant difference between the *Audie* mean scores for the treatment and control groups. Therefore, it can be determined that the treatment had no affect on the rhythm aptitude of students. This could be due to the small number of students (N=5) involved in the study. Only one subject was in the control group and this may have also been a contributing factor. Another possible explanation is that four of the five students had multiple disabilities, either physically or cognitively, other than hearing impairment.

There was no significant difference between the rhythm achievement scores for the treatment and control groups. Therefore, it can be determined that the treatment had

no affect on the beat competency of students. This, again, may be related to the small number (N=5) of students involved in the study. Such a small number makes it nearly impossible to find statistical significance in the results. This could also be due to the multiple disabilities that some of the students faced.

### Conclusions and Implications for Music Educators

The following information can be concluded from this study. Results relating to the effect of instruction using percussive instruments and body percussion on the developmental rhythm aptitude of preschool aged students with hearing impairments revealed no significant results. Further research is needed to verify the results so that conclusive findings are established. Results may have been due to the small number of subjects (N=5) in this study. This small number makes it difficult to reach any credible conclusions.

There was also no significant difference between the rhythm achievement scores of the students in the treatment and control groups. This could be due to the length of the study. Perhaps more than just six weeks of instruction is needed to yield significant results. It is also possible that the multiple disabilities of the students were a contributing factor. Those with cognitive disabilities may not have understood the task. Those with physical disabilities may have had trouble coordinating their body movements with the beat.

The treatment and control groups were asked to perform different final performance tasks, with the treatment group performing on drums while the control



group performed movements only. Had the final performance been a uniform test with all students performing movements to the beat, the results may have been different.

The researcher also had a limited time to conduct the research. Had there been more time with the students the results may have been different.

If this research were to be repeated, the researcher would suggest using a larger population of hearing impaired subjects without multiple disabilities, performing identical final performances, and working with the subjects for a significantly longer period of time twice weekly.

As integration of students with special needs grows in public schools, the need for adaptive practices is also growing. Teachers could incorporate some of the activity ideas from this study, such as adapted pattern instruction using drums, into their music classrooms. These activities were designed to be engaging for both hearing and students with hearing impairments, and could be ideal in an inclusive setting. Teachers may find these types of lessons helpful when accommodating those with hearing impairment.

#### Recommendations for Future Research

The researcher may conduct this research again, taking into consideration the suggestions listed above. This would include a longer period of instruction, a larger group of students with hearing impairment, having students with only hearing impairment and no other disabilities, and having all students perform a movement for the final performance. Music educators could conduct similar research within their own classrooms, observing students over the course of the year. Teachers that incorporate

hand drums into their classrooms may observe how these drums affect students with disabilities other than hearing impairment.

The need for adaptive practices is ever growing as students with disabilities become more mainstreamed into inclusive classrooms. Music educators should actively pursue ways to adaptive lessons to reach the needs of students with disabilities so that all children leave music programs with the skills they need to create and perform music on their own. Students with disabilities, such as hearing impairment, can achieve just as students with normal hearing and those without disabilities. Adaptive practices help teach the same lesson to all types of learners and can help all find success in music.

## APPENDICES

## APPENDIX A

### IRB Application Form for New Projects

#### Rhode Island College Institutional Review Board Application Form for New Projects

<b>Project Title (Limit 15 words):</b> The Effect of Adaptive Percussive Instruction on the Rhythm Achievement of Elementary School Students with Hearing Disabilities	<div style="text-align: center; border-bottom: 1px solid black; margin-bottom: 5px;">For Office Use Only</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;">Project #</td> <td style="width: 80%;"></td> </tr> </table>	Project #	
Project #			

<b>Part I: Principal Investigator Information</b>  <div style="margin-bottom: 10px;">             Last name  <input style="width: 90%;" type="text" value="Trial"/> </div> <div style="margin-bottom: 10px;">             First name  <input style="width: 90%;" type="text" value="Danielle"/> </div> <div style="margin-bottom: 10px;">             Faculty/staff title OR Undergrad/grad status  <input style="width: 90%;" type="text" value="undergraduate"/> </div> <div style="margin-bottom: 10px;">             Department OR Academic program  <input style="width: 90%;" type="text" value="Music, Theatre, and Dance"/> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div style="width: 45%;">             Campus address  <input style="width: 90%;" type="text" value="600 Mt Pleasant Ave Box 739"/> </div> <div style="width: 45%;">             Campus Phone  <input style="width: 90%;" type="text" value="456-8000"/> </div> </div> <div>             Email  <input style="width: 90%;" type="text" value="Dtrial_8919@ric.edu"/> </div>	<b>For student investigators, provide the following information about the research supervisor:</b>  <div style="margin-bottom: 10px;">             Last name  <input style="width: 90%;" type="text" value="Guilbault"/> </div> <div style="margin-bottom: 10px;">             First name  <input style="width: 90%;" type="text" value="Denise"/> </div> <div style="margin-bottom: 10px;">             Faculty/staff title  <input style="width: 90%;" type="text" value="Assistant Professor"/> </div> <div style="margin-bottom: 10px;">             Department  <input style="width: 90%;" type="text" value="Music, Theatre, and Dance"/> </div> <div style="display: flex; justify-content: space-between; margin-bottom: 10px;"> <div style="width: 45%;">             Campus Address  <input style="width: 90%;" type="text" value="245 Nazarian"/> </div> <div style="width: 45%;">             Campus Phone  <input style="width: 90%;" type="text" value="456-9517"/> </div> </div> <div>             Email  <input style="width: 90%;" type="text" value="dguilbault@ric.edu"/> </div>
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<b>Part II: Funding Sources</b>		No funding	
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Primary Funding Source

☐ Pending   
 ☒ Awarded

Funding source

De Stefano Fund

Title as submitted to that source

The Effect of Adaptive Percussive Instruction on the Rhythm Achievement of Elementary School Students with Hearing Disabilities

Funding number (if applicable)

Funding dates OR Expected start date

11/16/10

Secondary Funding Source

☐ Pending   
 ☐ Awarded

Funding source

Title as submitted to that source

Funding number (if applicable)

Funding dates OR Expected start date

### Part III: Type of Research

*Indicate which of the following is true for your project (check all that apply):*

<input checked="" type="checkbox"/>	I would like to try and present the results to colleagues at a conference or in a publication (either on- or off-campus).		
<input checked="" type="checkbox"/>	Research methods involve ONLY the following (check all that apply):		
<input type="checkbox"/>	<input type="checkbox"/>	Collection of biological specimens or physiological data by <i>noninvasive</i> means	
<input type="checkbox"/>	<input type="checkbox"/>	Using records that were previously collected for non-research purposes (e.g., medical files)	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Research on individual or group characteristics that does not exceed minimal risk	
<input type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	I am trying to learn about ways to improve a program or service (e.g., Improve a community health program; A college cafeteria wants to learn about students' food preferences).		
<input type="checkbox"/>	<p>a. This research <input type="checkbox"/> is <input type="checkbox"/> is not approved by the program's Department or Agency Head.</p> <p>b. Results will be shared with (check all that apply): <input type="checkbox"/> people affiliated with the program; <input type="checkbox"/> people outside the program (explain) _____</p>		
<input checked="" type="checkbox"/>	I want to learn about effective teaching methods or other educational curriculum (e.g., Testing a new way to teach Math; Comparing two ways to teach writing skills). The results will be (check all that apply): <input checked="" type="checkbox"/> used only by me to improve my teaching; <input checked="" type="checkbox"/> will be shared with others.		
<input checked="" type="checkbox"/>	This is a student research project (indicate the type of student research below):		
<input type="checkbox"/>	<input type="checkbox"/>	a. Course assignment: List the semester, instructor's name, course number & name:	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	b. Undergraduate honors project	
<input type="checkbox"/>	<input type="checkbox"/>	c. Graduate thesis, dissertation, or other graduate research project	
<input type="checkbox"/>	<input type="checkbox"/>	d. Other (describe):	
<input checked="" type="checkbox"/>	This project is being conducted at site(s) in addition to RIC. List all other worksites.		
<input type="checkbox"/>	<input type="checkbox"/>	Elementary School in <input type="checkbox"/>	
<input type="checkbox"/>	Are you requesting that an institution other than RIC serve as the IRB of record?		
<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	Yes (answer all of the following):

				a. Are you the Principal Investigator?		Yes		No
				b. Will any data be collected at RIC?		Yes		No
				c. Name the site that you want to serve as the IRB of record:				
				d. Name the Principal Investigator at that site and their job title				
				e. List email and phone number for the PI at the other site				

#### Part IV: Project Information

Describe your research question and list your specific hypotheses (200 words or less):

The problem of this study is to determine whether or not elementary school students who have music instruction that includes percussion instruments and body percussion will receive higher ratings on the rhythm achievement scale than students who do not have instruction using these adaptive measures.

In order to improve music instruction, the purpose of this study is to examine the effect of adaptive instruction involving body percussion and large percussive instruments on the rhythm achievement of students with hearing impairments. Specifically, this research will focus on the following: Does the addition of instruction involving body percussion and percussive instruments affect the developmental rhythm aptitude of students with hearing impairment?

Intended number of participants:	Male:	3	Female:	2
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List all eligibility/selection requirements for participants:

Parent consent; enrolled at [REDACTED] Elementary; If parents or students do not want to participate, the music instruction will go on as planned. Students who are not participating in the study would still participate in all classroom activities but would not be involved in the posttest nor would they be asked to perform the criterion movements at the end of the study.

Describe the procedures used to recruit participants including: What is the location of recruitment? Who will approach potential participants and how? What recruitment materials will be used (letters, flyers, newspaper ads, etc.)? ***You must send copies of all recruitment materials with your application. Name the file(s) with your last name and a brief description, e.g., "SmithRecruitmentFlyer.doc" and email as a separate file.***

After permission has been granted, I will visit [REDACTED] Elementary School to talk to the children and pass out the parental consent forms (see attached). I will be the one to visit the class rooms to explain the study to the students and distribute consent forms in order to avoid risk of coercion. The classroom teachers will collect the forms once the parents have returned them. There are no recruitment materials.

Describe how you will conduct the consent process, i.e., how/where you will explain to participants the nature of the study and their rights as participants in the study.

Once permission is granted from the district, I will visit each classroom to explain and distribute parental permission forms. These forms will be signed by the parent or legal guardian indicating permission or no permission to participate in the study. The forms will be returned to the music teacher and collected by the researcher.

Students who are not participating in the study will still participate in all classroom activities. Those students, however, would not be involved in the pretest and posttest (they will take the test with everyone but they will not be scored or video recorded) nor would they be asked to perform the criterion movements at the end of the study. The students will participate in the movement



instruction. Movement is a regular component in any quality music program.

Describe the procedures that participants will experience from the moment they consent to being in the study to the moment when their participation is completed. If different groups will experience different procedures, be sure to clearly explain those differences. Be sure to explain both *what* will happen and *where* it will happen.

This research will involve three (3) intact classrooms at [REDACTED] Elementary School. Students will participate in a general music class. The control classroom will receive lessons that DO NOT include percussive instruments or body percussion. Students will receive lessons that focus on rhythm achievement through movement and chants. The treatment classrooms will receive lessons that focus on rhythm achievement through movement, chants, body percussion, and large percussive instruments.

Research will be conducted two times weekly for 30-45 minutes for 12 weeks.

List and briefly describe all materials that will be used to collect data. For each measure, indicate whether it was created specifically for this study or is an established, validated measurement tool. ***You must send copies of all questionnaires and interviews with your application. Name the file(s) with your last name and a brief description, e.g., "SmithQuestionnaires.doc" and email as a separate file.***

Rhythm achievement rubric created by researcher to measure rhythm achievement. I will also use a digital video recorder to tape the criterion movement performances

Describe any incentives (e.g., money, gift cards) or compensation (e.g., paying participants' bus fare to get to the study) that participants will receive. Explain how the incentive/compensation is affected if participants withdraw from the study before completing it.

none

Describe any direct benefits that participants will experience as a direct result of the study (e.g., in a study of work stress, participants may receive free stress management lessons). Do not list simply "learning more about oneself" as a benefit.

No benefit to the student.

## Part V: Risks

### A. *For all studies, answer each of the following questions:*

Describe how participants' privacy will be maintained during the data collection phase, especially for studies that interview participants and/or that involve the collection of sensitive information.

I will record first names of children only. In the case where two students in a class have the same first name I will add a number ( Susie 1; Susie 2). There will be no written record of full names.

Describe how you will ensure that the information your participants provide will remain confidential once the study period is over. Studies that are making video or audio recordings especially need to address how this information will remain confidential as participant identity can be easily revealed with these methods. Your answer should identify where the data will be stored during and upon completion of the study. Federal law requires that data be stored for a minimum of three years following completion of the study.

Research records will be kept in a locked file, and access will be limited to the researchers, the college review board responsible for protecting human participants, and regulatory agencies. The original data will be destroyed within three years. The only viewing the video recordings will be the judges and myself. The judges will know the children only by an assigned number; they will not know the child's name

Describe any dual roles or other potential conflicts of interest that you or any other investigators on the project may have.

none

### B. *Special Considerations (address any that apply)*

Describe and justify any deception that you will use including (a) withholding important information about the study purpose or procedures from participants or (b) providing any information that will misinform or mislead participants in any way.

Describe (a) any potential risks associated with the deception described above, (b) what procedures you have in place to safeguard participants' well-being, and (c) how you will undo the deception at the end of the study.

Describe and justify any procedures that request participants to abstain from any food, liquid, or medication during the study period. Indicate whether the abstention is preferred or mandatory. Finally, discuss what procedures you have in place to safeguard participants' well-being.

Describe and justify any procedures that request or require participants to ingest any food, liquid, or

medication during the study period OR have any substance applied externally to any part of their body. Finally, discuss what procedures you have in place to safeguard participants' well-being.

Describe and justify any procedures or data collection that may be considered sensitive or embarrassing in nature OR that pertain to illegal behavior of the participant or of another person. Finally, discuss what procedures you have in place to safeguard participants' well-being.

Describe and justify any procedures or data collection that may be considered more physically or psychologically stressful than what would occur in the participants' normal, daily activities. Finally, discuss what procedures you have in place to safeguard participants' well-being.

Describe and justify the collection of any medical information protected by the Health Insurance Portability and Accountability Act (HIPAA). Finally, discuss what procedures you have in place to protect participants' privacy. *YOU MUST COMPLETE THE HIPAA PORTION OF THE CITI TRAINING BEFORE SUBMITTING THIS APPLICATION*

Describe all other potential risks, whether major (e.g., injury) or minor (e.g., physical or psychological discomfort). Consider any risks to participants' physical or psychological well-being, self-esteem, reputation, personal relationships, effects on employment, etc., that may result from participating in your study. Finally, discuss what procedures you have in place to safeguard participants' well-being.

Students wearing hearing aids may experience discomfort from the sound and vibrations of the percussive instruments unless hearing aids are turned down or removed.

## Part VI: Informed Consent

Check all that apply and follow the instructions listed.

☒ Under 18 yrs of age: Permission must be obtained from the parent/legal guardian. In addition, assent forms are used for children typically starting about 7 years of age up to 18 yrs. The Assent Form contains the same elements as the adult consent form, but is written at an age-appropriate level. See the website for an example of a child assent form. Children under 7 years of age are typically asked for verbal assent only. Provide a script of how you will ask for the child's verbal assent.

☐ Limitations/inability to give consent such as dementia, mental illness, mental retardation,

brain injury, physical illness (e.g., coma), etc. You may be required to obtain the consent of a legal guardian in addition to or in lieu of the participant's consent. Consult with the IRB Chair if you need assistance making this determination and explain how you will handle the ethical concerns associated with consent in these cases. Explain below (a) the nature of the participants' limitations and (b) how you will obtain legal consent.

☐ Vulnerable to implicit or explicit coercion from authority (e.g., RIC students, prisoners). For any study in which the investigator has a position of authority over the intended participants, the procedures must remove the investigator from the recruitment process, for example, a professor recruiting students from his/her class. Typically, a person other than the investigator – a non-authority figure – should introduce the study without the investigator present and allow participants the freedom to decide without any implicit or explicit pressure from the authority figure. Explain how you will handle the ethics of recruitment and consent in these cases.

☐ Pregnant women. When conducting research with pregnant women, investigators must consider the potential impact of the study procedures on the unborn fetus. Below, discuss the potential risks to the fetus and the safeguards that will be in place to ensure its well-being.

☒ Use of video or audio recording. The consent form must indicate that these activities will occur, and must include specific consent statements from the participant indicating that they consent to these procedures. If recording any information in a group of people, explain how you will protect the people who do not want to be recorded.

If students or their parents do not give permission to be video recorded, I will arrange the group in a particular manner so that those students remain outside the eye of the camera but are still involved in the group.

☒ Use of non-English consent form or other materials. When a non-English consent form or materials are used, the following process must be followed: (1) have a copy of the document in its original English format, (2) translate the document into the foreign language by one person (it may be the investigator) and (3) translate it back into English by a 3<sup>rd</sup> party unaffiliated with the study. The translator must certify that they understand the ethics of research and that they are the person who translated the material back into English. All three copies – original, translation, back-translation – must be submitted to the IRB. Below, explain your and your translator's qualifications for translating.

1<sup>st</sup> Translator – Kevin Gravier is a linguistics honors student at RIC, He is currently studying abroad in Spain. Back Translator – Janmarie Rivera-Cintron, a native Spanish Speaker and college student at the University of Massachusetts Dartmouth.

☐ Waiver of the documentation of consent (participants will know about the study but will not sign a consent form). You must provide justification for this request:

<input type="checkbox"/>	<i>Complete waiver of consent (participants will not be informed at all about the study). You must provide justification for this request:</i> <input type="text"/>
<input type="checkbox"/>	<i>Changes to informed consent not listed above (describe):</i> <input type="text"/>
<i><b>If <u>NONE</u> of the situations above apply to your study, then send copies of your consent form(s). Name the file(s) with your last name and a brief description, e.g., “SmithParentConsentForm.doc” and send separately.</b></i>	

## Part VII: Checklist and Statement of Responsibility

Be sure to email this form and all of the following. Your application will not be considered complete and will not be forwarded unless all of the following are sent. All files should be named with your last name and the type of file, for example, "SmithConsentForm" or "SmithQuestionnaires". Send all files to [IRB@ric.edu](mailto:IRB@ric.edu).

### Required materials (all projects):

<input checked="" type="checkbox"/>	1. A copy of all consent forms used with adults OR For projects with children, a copy of Parent Permission Form(s) and Child Assent form(s).
<input type="checkbox"/>	2. A copy of all recruitment flyers or letters.
<input checked="" type="checkbox"/>	3. A copy of all questionnaires, interview questions, data recording pages, or other measurement instruments.
<input checked="" type="checkbox"/>	4. A copy of the debriefing statement and/or lists of referrals given to all participants

### Additional materials (only if relevant to your project):

<input checked="" type="checkbox"/>	1. For projects collecting data at a non-RIC site, you must send a PDF of the letter of agreement from the Department or Agency Head who can grant permission for your data collection at that site.
<input type="checkbox"/>	2. For multi-site projects requesting Collaborative Review, you need to send a PDF copy of the official IRB approval letter on letterhead from the other institution.
<input checked="" type="checkbox"/>	3. For student research projects, a letter from the faculty/staff supervisor confirming his/her agreement to supervise and to be responsible for your project. Faculty members who are supervising multiple students can send one letter that lists all of the students' names.

I understand that typing my name below serves as an electronic signature. By signing below, I am confirming that I have completed the CITI training, that I understand the requirements for the ethical conduct of research, and that I am accepting the responsibilities associated with this research project. All of the information reported here is accurate, and no relevant information has been omitted.

\_\_\_ Check here if you are collecting medical record data to confirm that you have completed the CITI training pertaining to HIPAA.

CITI certification number:	1910733	CITI expiration date:	10/11/11
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Signature:	Danielle Trial; Denise Guilbault	Date:	12/25/2011
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For office use only:	
Primary reviewer's comments	<input type="text"/>
Secondary reviewer's comments	<input type="text"/>
IRB Chair's comments	<input type="text"/>

## APPENDIX B

### IRB Action Letter

To: Denise Guilbault  
From: Christine A. Marco, Ph.D.  
Date: Monday, March 14, 2011  
Re: IRB Proposal

This is to advise you that the IRB has reviewed the study listed below and has some questions or concerns. If you are the faculty advisor of a student proposal, the student's name is listed below. Please share this information with your student as it is being sent only to you.

**Proposal title:** The Effect of Adaptive Percussive Instruction on the Rhythm Achievement of Elementary School Students with Hearing Disabilities

<b>Protocol #:</b>	1011-50
<b>Principal Investigator:</b>	Denise Guilbault
<b>Co-Investigator/Student:</b>	Trial, Danielle

#### Concerns/Questions:

1. The reviewers wanted more information about the use of hearing impaired children. The project title indicates that this is a study of people with hearing disabilities, but this is not explained in the rest of the materials. Please elaborate on the use of this population. Also, the reviewers were not sure whether non-hearing impaired children would be recruited. Please clarify the use of each of these populations.
2. The consent form needs to indicate in the first paragraph if a hearing disability is a selection criteria.
3. Some of the materials refer to "[REDACTED]" but some refer to "[REDACTED]" schools. Please clarify the location of the school and whether it is covered by the letter from the [REDACTED] School District.
4. An assent form is needed for the children to sign. Please refer to the IRB website if you would like to see a template/example.
5. The reviewers commented on a number of typographical errors in the consent form. Please proofread and submit it with the changes mentioned above.
6. The application indicates an intention to publish or present the data, but the letter from the school district states that this is not allowed. Please clarify which is the case.

Please respond to these concerns via email to [IRB@ric.edu](mailto:IRB@ric.edu). If you have any questions, you may contact me at the same email address. Also, please remember that you cannot begin any research activities until after you have received the official approval letter.



To: Denise Guilbault-Langworthy  
From: Christine A. Marco, Ph.D., Chair IRB  
Date: April 29, 2011  
Re: Approval of IRB proposal

This is to advise you that the study referenced below has been APPROVED by the Institutional Review Board (IRB). If you are advising a student research project, the student's name is listed below. Please share this information with the student as it is being sent only to you.

Proposal title: The Effect of Adaptive Percussive Instruction on the Rhythm Achievement of Elementary School Students with Hearing Disabilities

Protocol #:	1011-50
Principal Investigator:	Denise Guilbault-Langworthy
Student Investigator (if applicable):	Danielle Trial
Approval date:	4/29/2011
Expiration date:	4/28/2012
Deadline for Progress Report:	30 days before expiration

Your responsibilities as the Principal Investigator on this project are as follows:

1. The approved consent materials with the official IRB approval stamp are attached to this email. **You must use only this version with your participants.**
2. You may implement only those methods approved by the IRB. If you wish to make any changes to the protocol, including the elimination of previously-approved methods, you must submit an Amendment/Change Request Form. Approval from the IRB must be issued before any of the changes are implemented.
3. If any unanticipated problems or adverse events occur during the study, you must submit an Unanticipated Problems/Adverse Events form within three (3) days of your knowledge of the event.
4. Approval has been issued for one (1) year. If you wish to continue the project beyond the expiration date, you must complete and submit a progress/final report at least 30 days before the expiration date. If approval to continue the project is not finalized by the expiration date, you must discontinue all work pertaining to this protocol and wait until approval is given before resuming data collection.
5. You must keep all research data and consent documents within your possession in a secured location for at least three (3) years after the completion of the study, including publications or presentations of any reports.

All forms mentioned above are available at [www.ric.edu/irb](http://www.ric.edu/irb). Completed forms and/or questions should be emailed to [IRB@ric.edu](mailto:IRB@ric.edu).

## APPENDIX C

### Publication Clarification

#### Publication Clarification

After speaking with Marco Andrade, head of Research and Accountability for [REDACTED] Public Schools, we came to the following agreement. I may be able to publish my research findings (as required by the honors project for the fulfillment of departmental honors projects) only after he has read and approved my written paper. He will make certain that no student information is compromised before allowing it to be published. He will submit any changes or alterations that he sees fit and supply me with written permission from the district allowing it to be published at the end of the semester.

## APPENDIX D

### Letter of Permission

Date:

To whom it may concern,

I am writing to ask permission to conduct a music research study at your school. The study is an investigation of the effects of percussive instruments in a music class for the deaf and hearing impaired.

This study is important in that it may help music educators improve instruction so that their music classes may include students with hearing loss. As a student, studying to be a music educator, at Rhode Island College, we are taught the importance of individualized instruction in class to enable all students to participate. I am seeking to develop a means of educating students with hearing impairment through the use of vibration conducting percussive instruments and body percussion.

The intent of this study is to develop a means of educating deaf and hearing impaired in music through the use of adaptive measures so that future music educators can welcome these students into their classrooms.

During a (12/16) week period, junior high school students' lessons will include rhythm lessons in a number of different meters following the guidelines set by the Rhode Island Music GSE's, the MENC National Standards, and RIBTS.

At the conclusion of the study, students will be asked to perform patterns they have learned and demonstrate proficiency in music at their grade level according to the RI GSE's.

All aspects of the children's involvement will be kept confidential. All records of this research will be kept private. Any sort of report I might publish or presentation I make will not include any information that identifies the students. All lessons will be video recorded (with parental permission) for my own use and assessment. The only people viewing this footage will be myself, and the Rhode Island College Music, Theatre and Dance honors committee, which consists of three professors within the department, and my project adviser, Dr. Denise Guilbault.

I will keep research records in a locked file in Dr. Guilbault's office at Rhode Island College, and only she I will have access to these records. If there is an audit of the study, the college review board responsible for protecting human participants and regulatory agencies may have access to the data. The original data will be destroyed by 12/31/2013.

Results of this study will be edited by myself and bound and published in the Rhode Island College Library. This publication will not include any student information or identification. All references to the students will be under assumed names.

The Institutional Research Board (IRB) at Rhode Island College requires the agreement letters from the school administration before IRB approval is given. Please submit a signed letter on letterhead stating that you give permission for the data to be collected. If you wish, you may insert a statement saying that approval is contingent on receiving IRB approval for the project. The letter may be faxed to Dr. Denise Guilbault at (401) 456-9545 or sent as an email attachment to me at [dttrial\\_8919@ric.edu](mailto:dttrial_8919@ric.edu)

If you have any questions about this study, please call me at (508) 525-0226 or Dr. Guilbault at (401) 456-9517 or email [dguilbault@ric.edu](mailto:dguilbault@ric.edu) or my email listed above.

Sincerely,

Danielle Trial

## APPENDIX E

### Data Request and Management Form

#### DATA REQUEST AND MANAGEMENT FORM

Consistent with the proposed study outlined in the Information Packet and per the guidelines provided for within the Data Sharing and Confidentiality Agreement, the following data will be requested and/or collected:

Organization Requesting Data:	<div style="background-color: #cccccc; padding: 2px;">Name Rhode Island College</div> <div style="background-color: #cccccc; padding: 2px; margin-top: 5px;">Address 600 Mount Pleasant Ave Providence, RI 02908</div>
Primary Contact Person:	<div style="background-color: #cccccc; padding: 2px;">Name Danielle Trial</div> <div style="background-color: #cccccc; padding: 2px; margin-top: 5px;">Phone <span style="background-color: black; color: black;">[REDACTED]</span></div> <div style="background-color: #cccccc; padding: 2px; margin-top: 5px;">Email dtrial_8919@ric.edu</div>
Data Needed by:	<div style="border-bottom: 1px solid black; height: 15px; width: 100%;"></div> <p style="font-size: small; margin-top: 5px;"><i>NOTE: All effort will be made to deliver data by date identified. Approval of request, however, provides no guarantee.</i></p>

**FERPA Disclaimer:**

*All data requests are completed in compliance with FERPA regulations. As such, required filters will be used to generate student information data requests that are consistent with regulation compliance. Per the district's FERPA compliance efforts, no student level data will be released prior to October 30. Aggregate data can be provided prior to this date.*

**Data Requested** (check all that apply):

<b>Student Information</b> <input type="radio"/> Enrollment <input type="radio"/> Demographics <input type="radio"/> Directory (address/phone) <input type="radio"/> Attendance <input type="radio"/> Tardiness <input type="radio"/> Behavior <input type="radio"/> Suspension <input type="radio"/> Dropout <input type="radio"/> Graduation <input type="radio"/> Other	<b>Student Achievement</b> <input type="radio"/> NECAP <input type="radio"/> NECAP Science <input type="radio"/> ACCESS <input type="radio"/> SAT10 <input type="radio"/> PSAT <input type="radio"/> SAT-RF <input type="radio"/> DIBELS  Type of Score <input type="radio"/> Scaled <input type="radio"/> Score/NCE	<b>Data Level</b> <input type="radio"/> District <input type="radio"/> School* <input type="radio"/> Grade <input type="radio"/> Individual Student (unidentified) <input type="radio"/> Individual Student (identified by ID#) <input type="radio"/> Aggregated <input type="radio"/> Disaggregated
--	---	---

_____ _____	<input type="radio"/> Proficiency Level  Subtest(s): _____	Grade Levels (K-12): _____  Academic Year(s): _____
*If specific school-level data is requested, be sure to identify those schools within the description below.		

Description of Data Requested (be as specific as possible):

Purpose for Data Request / Focus of Inquiry

Expectations for use of results (how will you or how do you plan to use/disseminate your findings)

Individual(s) Having Access to Any Student-level Data Shared:

Name	Title	Purpose for Accessing Data
>		
>		
>		

Data to Be Collected by Researcher (check all that apply):

<b>From Students:</b> <input type="radio"/> Assessment of Knowledge/skill <input type="radio"/> Survey/Questionnaire <input type="radio"/> Focus Group Interview <input type="radio"/> Individual Interview <input type="radio"/> Focus Group Interviews <input type="radio"/> Observations of Behavior <input type="radio"/> Artifacts (specify) _____ _____ <input type="radio"/> Other _____	<b>From Parents:</b> <input type="radio"/> Assessment of Knowledge/skill <input type="radio"/> Survey/Questionnaire <input type="radio"/> Focus Group Interview <input type="radio"/> Individual Interview <input type="radio"/> Focus Group Interviews <input type="radio"/> Observations of Behavior <input type="radio"/> Artifacts (specify) _____ _____ <input type="radio"/> Other _____	<b>From Educators:</b> <input type="radio"/> Assessment of Knowledge/skill <input type="radio"/> Survey/Questionnaire <input type="radio"/> Focus Group Interview <input type="radio"/> Individual Interview <input type="radio"/> Focus Group Interviews <input type="radio"/> Observations of Behavior <input type="radio"/> Artifacts (specify) _____ _____ <input type="radio"/> Other _____
--	---	---

—	—	—
---	---	---

NOTE: Copies of all instruments identified must be included with submission of the Information Packet. No instrument should be administered within the district without the express approval of the District's Office of Research, Planning and Accountability. Completion of this form does not represent approval.

For Office Use Only:		
<b>Data Sharing Agreement</b> Type: <input type="radio"/> New submission >Information Packet <input type="radio"/> Submitted <input type="radio"/> Approved <input type="radio"/> Annual renewal <i>(consistent with initial Information Packet)</i> >Information Packet <input type="radio"/> On-file, current <input type="radio"/> Approved <input type="radio"/> Modified annual renewal >Information Packet <input type="radio"/> Revised, current <input type="radio"/> Approved  Date Approved: _____	<b>Consent Forms</b> Required: <input type="radio"/> Yes <input type="radio"/> No  Type: <input type="radio"/> Student <input type="radio"/> Parent/Family <input type="radio"/> Educator  Forms Approved: <input type="radio"/> Yes <input type="radio"/> No  Signed Consent Provided: <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> On File	<b>Data Request</b> Alignment with Information Packet Submitted: <input type="radio"/> Yes <input type="radio"/> No  Approved: <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> May resubmit with modifications Specify: _____ —  Decision Date: _____  Signature: _____
<b>Principal Agreement Required</b>	<input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> On File

## APPENDIX F

### Research Request

Teaching and Learning	No. 12
Office of Research, Planning and Accountability: Research Requests	
January, 2010	Page 1 of 3

### ADMINISTRATIVE GUIDELINES FOR RESEARCH REQUESTS

Requests to conduct research in the [REDACTED] School District shall be judged by a representative committee of the District's professional staff and shall be given a final review and approval by the Superintendent.

#### A. GENERAL GUIDELINES

1. These guidelines and procedures shall apply to all research requests, including requests to conduct research only within the school or organizational unit by an employee of the District. Each principal and department head shall ensure that all employees are aware of the requirements and that any employee who wishes to gather data for research shall do so only after receiving approval according to these procedures.
2. Research is generally considered to be a critical investigation or experimentation based upon a hypothesis and includes data collection from or about [REDACTED] School District students and/or staff. Research may include strategies such as the use of a survey or questionnaire or the examination of student data. Therefore, the District must be aware of and abide by the legal restrictions regarding confidentiality in general and surveys specifically.
3. The District Research Review Committee shall be comprised of administrators and teachers from various levels and various learning communities. The Director of the Office of Research, Planning and Accountability shall act as the chair of the committee.

#### B. SUBMISSION OF REQUEST

1. All individuals, whether District employees or non-District personnel, who wish to conduct research in the District shall complete the following:
  - a. **Research Study Request** [FORM A] - All information must be complete with the required supporting documentation (e.g., copies of survey forms,



observation checklists, etc.). If data will be collected on or from individual students, parent/guardian permission will be required and copies of a parental permission letter must be attached. Incomplete requests will be automatically rejected. The requester shall submit an original and two copies of these documents.

- b. **Research Agreement** [FORM B] - A signed **Research Agreement** is required in order for the request to be considered. The requester shall sign one copy of the **Research Agreement** and submit it as a cover sheet to the Research study Request [FORM A] and its supporting documents.
- c. **Data Sharing and Confidentiality Agreement** [FORM D] – A signed **Data Sharing and Confidentiality Agreement** is required prior to the commencement of any approved research.

The Researcher and any assistant or other person with access to confidential information shall sign one copy of the **Data Sharing and Confidentiality Agreement** and submit it to the Office of Research, Assessment and Evaluation prior to commencing any approved research.

- d. If the requester is not a District employee, the requester shall also obtain the endorsement and signature of a professional person sponsoring the research (e.g., college professor, physician) on the **Research Endorsement of Non-District Personnel** [FORM C]. The researcher shall also sign the agreement.
  - e. Survey Administration Request and Approval [FORM E]-A signed and fully completed Survey Administration Request and Approval [FORM E] is required whenever the requester proposes collecting information directly from students and/or staff of the [REDACTED] School Department. A copy of the survey/questionnaire instruments proposed for use in the data collection should be attached.
2. The researcher shall address all requirements as follows:
- a. **All** information must be complete with required support documentation. Incomplete requests will be automatically rejected.
  - b. If a survey or questionnaire is to be administered, the parent information letter must so state and clearly explain the topic, nature and purpose of the questions. Researchers must consult the PSD procedures on administration of Questionnaires and Surveys and complete the survey administration Request and Approval (Form E).
  - c. Attach copies of survey forms, observation checklists, or any other data collection instruments.
  - d. If data will be collected about individual students, written permission from the parent/guardian will be required and a copy of a permission letter must be attached. **NOTE: This does not apply to [REDACTED] teachers and staff**

conducting research on students in their classes. The [REDACTED] School District does not accept or acknowledge implied consent.

- e. The permission must:
  1. Be in both English and Spanish.
  2. Specify the data to be collected and/or the student data records to be released.
  3. Specify the reason for the data collection or release.
  4. Identify the persons and institution to whom the information will be released.
  5. Describe any feedback to be provided to the parent/guardian or benefits to the participants.
  6. Have a place for parent/guardian signature and date of approval.
3. The requester shall submit forms and all support materials to the following office:  
Director of the Office of Research, Planning and Accountability  
[REDACTED] School Department  
[REDACTED] St., Suite 105  
[REDACTED], RI 02903
4. The District Research Review Committee shall convene three formal meetings during the school year for the purpose of reviewing research requests: June, September, and February. Requests must be received by the first day of the month to be reviewed. The Supervisor of the Office of Research, Assessment and Evaluation may convene special called meetings as necessary.
5. The Supervisor of the Office of Research, Assessment and Evaluation shall forward to the Superintendent all requests which have been reviewed and approved by the committee.
6. The Supervisor of the Office of Research, Assessment and Evaluation shall note the approval/disapproval by the committee or the Superintendent on the **Research Agreement** form, sign the form, and send a copy of the form to the researcher.
7. When requesting participation by schools or departments, each person who receives approval to conduct the research shall present a copy of the **Research Agreement** (showing approval) and **the Research Study Request** form to the principal/department head. Approval of a request to conduct research only allows the requester to proceed with the research as described; it is not an endorsement and **does not compel any personnel of the district to participate** in research studies.
8. The Director of the Office of Research, Planning and Accountability shall maintain a permanent file of approved research requests.

## Checklist



**FORMS TO BE COMPLETED & ATTACHED.** Please check to indicate that form has been included in your application packet

- ☐ FORM A: Research Study Request
- ☐ FORM B: Research Agreement
- ☐ FORM C: Research Endorsement for Non-District Personnel
- ☐ FORM D: Data Sharing and Confidentiality Agreement
- ☐ FORM E: Survey Administrator Request and Approval

[Questions regarding this procedure should be addressed to Director of the Office of Research, Planning and Accountability]

## RESEARCH AND SURVEYS PACKET

### Research Requests Administrative Regulations

**Form A:** Research Study Request

**Form B:** Research Agreement

**Form C:** Research Endorsement for Non-District Personnel

**Form D:** Data Sharing and Confidentiality Agreement

Surveys and Questionnaires Administrative Regulation

**Form E:** Survey Administration Request and Approval

Survey Notification and Permission Form

**OFFICE OF RESEARCH, PLANNING AND ACCOUNTABILITY  
RESEARCH STUDY REQUEST  
FORM A**

Name Danielle Trial Date \_\_\_\_\_

Address                      St. Providence, RI 02909

Telephone                     

Fax \_\_\_\_\_ E-Mail  
dttrial\_8919@ric.edu

Sponsoring Institution or Organization Rhode Island College  
Address 600 Mount Pleasant Ave. Providence, RI 02908

1. Study Title:

*The effect of adaptive instruction on the rhythm achievement of elementary school students with hearing disabilities*

2. Proposal Abstract:

In order to help music educators to teach persons with hearing disabilities, the purpose of this study would be to investigate the effect of instruction using percussive instruments on the rhythm achievement of students. Two classes will receive music instruction involving movement and chanting with the addition of body percussion and percussion instruments as adaptive measures for students with hearing impairment. The third class will receive a more standard general music instruction involving movement and chanting. The purpose is to determine if the adaptive measures of vibration conductive instruments and body percussion have an affect on the students with hearing impairment achievement in rhythm.

3. Major hypotheses or questions to be tested:

In order to improve music instruction, the purpose of this study is to examine the effect of adaptive instruction involving body percussion and large percussive instruments on the rhythm achievement of students with hearing impairments. Specifically, this research will focus on the following: 1. Does the addition of instruction involving body percussion and percussive instruments affect the developmental rhythm aptitude of students with hearing impairment?

4. Attach copies of forms, questionnaires, tests, or other instruments that you plan to use in collecting your data. If commonly recognized, standardized instruments are to be used, a short description may replace actual copies of these materials.
5. Describe the District population and the data to be collected, including the numbers of professionals, students, schools, etc. in the sample. List also any specific schools or other specific populations needed as data sources.

This research will be conducted at [REDACTED] Elementary School. It will involve the students in three (3) intact classrooms that contain students with hearing disabilities. Data collection will include: student's developmental rhythm aptitude scores and rhythm achievement scores.

6. Describe your plans for conducting the study including administration of instruments, other data collection activities, and the timetable you will follow.

This research will take place over the course of 12 weeks. I will visit each classroom twice weekly for 30-45 minutes. Data collection activities will include classroom activities that involve body percussion, movement, and percussive instrument performance. This study will involve the use of: The Intermediate Measures of Music Audiation (IMMA) developmental music aptitude test (Gordon, 1986), and a 5 point scoring rubric to determine rhythm achievement.

7. Describe the statistical or other analyses techniques to be used in the treatment of your data.

The aptitude test will use each student's gain scores to determine whether instruction made any difference in the child's developmental aptitude. This research will also use an Analysis of Variants to determine whether or not instruction had an affect on rhythm achievement.

8. In what forms and to whom will you report your findings?

My findings will be reported to the Rhode Island College Honors Department in the form of a student thesis report. The report will be bound and available on the shelves Adam's Library on the college campus. It will be available for students and community members to sign out.

9. Describe anticipated contribution to theory or field.

I expect to inform music teachers of successful adaptive measures used to include students with hearing disabilities in their classroom. This will hopefully encourage music teachers to include some of these measures in their daily instruction to teach to the needs of all students, and ensure that all have the opportunity to succeed.

10. How will this study contribute to the [REDACTED] School Department?

[REDACTED] emphasizes inclusion classrooms that provide the least restrictive environment for students. This project will hopefully provide teachers with the means to teach to all students, and include students with hearing disabilities in the music classroom.

11. Do any of the procedures or equipment to be used constitute a potential emotional or physical hazard to subjects? If yes, explain:

No.

12. Ultimate purpose of research study (publication in journal, thesis, dissertation, etc.):

The ultimate purpose of this research is to complete the college honors project, culminating in a senior thesis and poster session.

---

Signature

---

Date

- a. The requester shall submit an original and two copies of this form and all attached documents.
- b. The requester shall attach two copies of a parental permission letter if data will be collected on or from individual students.

## RESEARCH AGREEMENT FORM B

### *Guidelines for Research:*

1. Research involving school level personnel, especially that which involves principals and teachers, and students, may not be conducted during the first 20 school days or the last 20 school days of the school year.
2. Research involving students and personnel of the District must protect the dignity, well-being, and confidentiality of the individuals(s), including the rights guaranteed legally and constitutionally and by District policies. A ***Data Sharing and Confidentiality Agreement*** must be signed prior to the commencement of research.
3. The research **shall not** unduly interfere with the classroom instructional process or the regular operations of the school or District.
4. Personal, social, and psychological research of any nature must not be in conflict with the rights of individuals or groups.
5. If data will be collected on or from individual students, written permission from the parent/guardian of every student shall be required prior to student participation in the project.
6. Approved research shall be conducted in accordance with Policies, Rules, and Regulations and Administrative Procedures of the District. The researcher shall cooperate with the staff member(s) designated by the District to coordinate the research. **It is the researcher's responsibility to become familiar with the District's operating policies.**
7. Approval of a request to conduct research is not an endorsement and does not compel any personnel of the district to participate in research studies.
8. An approved research study may be terminated at any time by the Superintendent.
9. The District shall not incur any costs associated with the proposed research project.
10. District staff shall not be asked to distribute or collect any information or data or otherwise engage in duties outside their normal responsibilities.

If my request to conduct research as presented in my Research Study Request is granted, I agree to abide by the Guidelines for Research in the [REDACTED] School District as stated. I understand that I am requesting assistance in a research project and I am not requesting information pursuant to an Open Records request.

---

Signature

Date

Please indicate affiliation by placing a check mark in the box:

☐ District Employee      ☐ Non-District Personnel

\*\*\*\*\*  
\*\*\*\*\*

**District Research Review Committee recommendation:**

☐ Approved      ☐ Not approved      Date of review:  
\_\_\_\_\_

Signature: \_\_\_\_\_ Date:  
\_\_\_\_\_  
Office of Research, Planning and Accountability

**Original - file Copy to requester**

**If approved, the requester shall submit a copy of this agreement and the Research Study Request to the principal or department head of each school in which research is proposed to be undertaken.**



**RESEARCH ENDORSEMENT FOR  
NON-DISTRICT PERSONNEL  
FORM C**

1. To be completed by the researcher requesting approval to conduct research in PSD

*I, Danielle Trial, do hereby agree that I will abide by the Policies,*  
(print name)

*Rules and Regulations and the Administrative Procedures of the [REDACTED] School District and will furnish a copy of the report describing the findings of the study to the Supervisor of the Office of Research, Assessment and Evaluation, [REDACTED] School District.*

\_\_\_\_\_  
Signature of Researcher

Date

2. To be completed by the requester's professor, the chairperson of an advisory committee, or other professional person sponsoring the research:

*I am familiar with the proposed study and judge that the researcher submitting this proposal is professionally qualified to undertake this investigation. Further, the research design is valid and appropriate.*

\_\_\_\_\_  
Signature of Sponsoring Professional

\_\_\_\_\_  
Position or Title

\_\_\_\_\_  
Name of Department and Institution or Organization

**DATA SHARING  
AND CONFIDENTIALITY AGREEMENT  
FORM D**

This Data Sharing and Confidentiality Agreement (the “Agreement”) is between The [REDACTED] School District (“PSD”) and/or Danielle Trial (“Researcher”).

PSD has certain proprietary information described on Appendix A which is attached to and made a part of this Agreement (the “Proprietary Information”) and in furtherance of the purposes described on Appendix B which is attached to and made a part of this Agreement, it is necessary for PSD to release to the Researcher said Proprietary Information.

As a condition to the release and use of the Proprietary Information, PSD and the Researcher agree as follows:

1. The Researcher acknowledges the confidential nature of the Proprietary Information and as such agrees that:
  - a. Proprietary Information will not be released to any third party (including any subcontractors or affiliates of the Researcher) unless there exists a Data Sharing and Confidentiality Agreement between PSD and the third party with respect to the Proprietary Information.
  - b. The Researcher will limit access to the Proprietary Information to its employees to the extent necessary for the purposes set forth in Appendix B.
  - c. Any Product (as defined in Paragraph 4 below) will not include the names or addresses of any individual or any information that could be specifically linked to any individual and any Product shall not present information in any manner that would directly or indirectly reveal individual names, addresses or other confidential information specifically linked to an individual.
2. Recipient and PSD each agree that they shall comply with all Federal and State of Rhode Island laws and regulations governing the confidentiality of the Proprietary Information.
3. Recipient agrees that it shall use the Proprietary Information only for the purposes set forth in Appendix B.
4. Except as may be provided in Appendix B, Recipient agrees that it will not share, publish or otherwise release any findings, conclusions, analyses, reports, or products of any nature (all of the foregoing shall be referred to as the “Products”) derived from the Proprietary Information without prior written approval from the Superintendent of Schools or her/his authorized representative.

5. Recipient shall obtain no right of any kind in the Proprietary Information, which shall at all times remain the property of PSD. Upon completion of the purposes set forth in Appendix B or prior termination of the relationship between the Recipient and PSD, the Recipient shall return all Propriety Information to PSD and/or shall destroy all Proprietary Information (including all computer or electronic files).
6. Recipient agrees that under no circumstances shall it use the Proprietary Information or any Product for monetary gain.
7. This Agreement shall not apply to any information (a) that is now or hereinafter becomes, through no act or failure to act on the part of the Recipient, generally known on a non-confidential basis to the public, and (b) that is hereinafter rightfully furnished to the Recipient by a third party as a matter of right and without restriction on disclosure.
8. The obligations set forth in this Agreement shall survive the completion of the purposes set forth in Appendix B and the termination of any working relationship between PSD and the Recipient

IN WITNESS WHEREOF, both the [REDACTED] School District, through its duly authorized representative, and Recipient, through its duly authorized representative, have executed this Agreement as of the last date written below.

\_\_\_\_\_.

By: \_\_\_\_\_  
Name:  
Title:

Date: \_\_\_\_\_

[REDACTED] School District

Date: \_\_\_\_\_

By: \_\_\_\_\_  
Name: Marco Andrade  
Title: Director

**SURVEY ADMINISTRATION REQUEST AND APPROVAL  
FORM E**

Researcher's name: Danielle Trial Title: \_\_\_\_\_

Organization/agency/department: Rhode Island College

Check one:

☐ Teacher/school staff      ☐ PSD Central Office      ☐ Outside  
organization/agency

Address (if not PSD school/Central Office): 600 Mount Pleasant Ave. [REDACTED] RI  
\_\_\_\_\_

ZIP: 02908 Phone: [REDACTED]

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

- **Complete the information below and on the reverse of this form.**
- **Attach a copy of the survey/questionnaire instrument to this request form.**

*Please explain the following – use additional page if necessary:*

1. The purpose of the survey/questionnaire:

This research will not involve any surveys

2. The topics covered:

3. The method of administration of the survey (when, where, by whom will it be given):

4. The target participants (grade level, etc.):

5. The intended uses of the results:

6. The procedures that will be used to protect the privacy of students:

7. The procedures for disposal or retention of the surveys after they have been used for the purpose listed.

***Does the survey include controversial/sensitive/personal topics?   ☐ Yes            ☐ No***  
***If YES, send to the Director of the Office of Research, Planning and Accountability following approval by principal.***

**Review by Principal**

☐ Approved

☐ Not approved

Date of review: \_\_\_\_\_

Signature of Principal: \_\_\_\_\_

Review by Supervisor of the Office of Research, Planning and Accountability

Date of review: \_\_\_\_\_

Does survey content require expressed written approval by parent/guardian?   Yes            No  
Concerns:

This request and the attached survey have been reviewed:

Signature of (Office of Research, Planning and Accountability or designee)

\_\_\_\_\_

## APPENDIX G

### Consent Form Retranslation and Authentication

#### **Form of consent Rhode Island College**

An investigation of the effect of adaptive instruction on teaching music to elementary students with hearing problems using inclusive education.

*A parent/legal guardian* \_\_\_\_\_:

Authorization is requested to involve your child in a study because he / she is in a class that uses the model of inclusive education policy which follows the criteria necessary for your school for this study. We also will ask your child if he/she would like to participate to ensure that all agree.

*Description of the study:*

This study will examine the progress of students in a class based on the inclusive education of students with or without hearing impairments with the use of body percussion (like clapping), percussion instruments, and other adaptive measures.

*What the study consists:*

With your permission, your son/daughter will:

- Quickly test their auditory ability.
- Receive musical instruction in a logical sequence that includes adaptive measures (such as percussion instruments and body percussion) directed to the success and understanding of rhythm.
- Learn to move and act in different bars and identify rhythmic syllables.
- Act in different bars (using movement, cymbals, or an instrument) that will be learned during 12 weeks of instruction. To evaluate the study, students will be recorded and then the video will be destroyed. No names are known

*Risks or discomforts:*

The risks associated with this study are minimal, that is, they are equal to which someone would experience during a typical day. The most prevalent risk is that your child will feel a little uncomfortable with a new person in the classroom. Any student with a hearing aid feels uncomfortable about the high frequency of percussion instruments. In most cases, they should remove or lower the earpiece volume to avoid discomfort

*Benefits of this study:*

The possible benefits for children who participate in this study is an augmentation of their auditory rhythm ability level and a level higher of their auditory rhythm. This information can help guide research and improve the music to accommodate all students in classes using the models of adaptive education.

\_\_\_\_\_ Initial here to indicate that you have read and understand this page.

Confidentiality:

The role of your child in this study is confidential, none of the information will have their name attached. Recordings will be monitored and evaluated by two to three qualified professionals in Rhode Island College. All documents will be kept by the researcher's academic counselor in a safe place for at least three years after completion of the study, after this time everything will be destroyed.

Decision to leave the study at any moment:

The decision to participate in this study is the voluntary decision of you and your child. Your child will be asked if he / she wants to participate and both you and your child will have the option to leave the study at any time without negative consequences.

Contact and questions:

If you have questions about the study, please contact Danielle Trial by e-mail: [dttrial\\_8919@ric.edu](mailto:dttrial_8919@ric.edu) or the work counselor Dr. Denise Guilbault by phone at 401-456-9517 or by email: [dguilbault@ric.edu](mailto:dguilbault@ric.edu)

If you can not contact the researcher or counselor, or would like to talk to anyone other than these people on (1) your rights as a participant, (2) related injuries or problems connected with the investigation, or (3) other issues you have about your participation in this study, please speak with the president of the Institutional Review Board to [IRB@ric.edu](mailto:IRB@ric.edu) or by telephone: 401-456-8228, or mail: Chair, IRB; c/o Office of Research and Grants Administration; Roberts Hall; Rhode Island College; 600 Mount Pleasant Avenue; Providence, RI 02908

Declaration of permission:

I have read this consent form and my signature below signifies that I understand the information that was presented to give permission for my child to participate in this research. I am over 18 years of age and I am the parent or legal guardian of this child.

Name of the participant (son/daughter):

\_\_\_\_\_

\_\_\_ I do not give \_\_\_ I give permission to the investigator to observe my son/daughter during the study. \_\_\_\_\_

Parent's Initials

\_\_\_ I do not give \_\_\_ I give permission to shoot video during the research study. \_\_\_\_\_

Parent's

Initials

Signature of parent/legal guardian \_\_\_\_\_

Name of parent/legal guardian \_\_\_\_\_

Name of researcher \_\_\_\_\_

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

### Retranslation Authentication

I, Janmarie Rivera-Cintron, certify that I have fully understood the contents of the Spanish permission consent form and have translated to English.

Janmarie Rivera-Cintron



## APPENDIX H

### Parental Consent Form

### CONSENT DOCUMENT

### Rhode Island College

*An investigation of The Effect of Adaptive Instruction on the Rhythm Achievement of Elementary School Students with Hearing Disabilities in an Inclusion Setting*

**To the parent or legal guardian of \_\_\_\_\_:**

I would like to ask permission for your child to participate in the research project described below. Your child was selected for this study because he/she is in an inclusive classroom that meets this projects criteria at his/her school. Your child will also be asked whether he/she wants to participate and his/her wishes will be followed.

**Description of the Project:**

This study examines the rhythm achievement of students in an inclusive setting of hearing and students with hearing impairments through the use of body percussion, percussive instruments, and other adaptive measures.

**What will be done:**

If you allow your child to participate in this study, here is what will happen:

- Your child will take a brief rhythm aptitude test
- Your child will receive sequenced music instruction involving adaptive measures (such as percussive instruments and body percussion) geared toward rhythm achievement and comprehension
- Your child will learn to move and perform different meters and identify rhythm syllables
- After 12 weeks of instruction, your child will be asked to perform in different meters (either through movement, syllables, or on an instrument) that they have learned throughout this study. This will be video recorded for assessment and then destroyed. No names will be given.

**Risks or discomfort:**

The risks associated with this project are minimal, meaning that they are about the same as what someone would experience in their typical daily activities. The most likely risk is that your child may feel a little uneasy with a new person in the room. Any students with hearing aids *may* experience some discomfort due to higher frequencies of the percussive instruments. Know that, in most cases, the hearing aid need simply be turned down (or removed) to avoid this discomfort.

**Benefits of this study:**

The possible benefits for children participating in this study may be increased rhythm aptitude levels and higher levels of rhythm achievement. The information may help the researcher to understand more about adapting music instruction to accommodate all students in an inclusive setting.

\_\_\_\_\_ Initial here to indicate that you have read and understand this page

<b>RIC Institutional Review Board</b>
Approval # <u>1011-50</u>
Expiration Date: <u>4/24/2012</u>

Confidentiality:

Your child's part in this study is confidential. None of the information will identify him/her by name. The video recordings will be observed and rated by two to three trained professionals at Rhode Island College. All records will be stored by the researcher's academic project adviser in a secure location for a minimum of 3 years after completion of the study, after which time they will be destroyed.

Decision to quit at any time:

The decision to take part in this study is up to you and your child and is completely voluntary. Your child will be asked separately whether he/she wants to participate. Both you and your child may decline to participate or may change your minds at any time with no negative consequences.

Contact and Questions:

If you have any questions about the study, you may contact Danielle Trial by phone at 508-525-0226 or by e-mail at [dtrial\\_8919@ric.edu](mailto:dtrial_8919@ric.edu) or project adviser Dr. Denise Guilbault by phone at 401-456-9517 or by e-mail at [dguilbault@ric.edu](mailto:dguilbault@ric.edu)

If neither the researcher nor adviser can be reached, or if you would like to talk to someone other than the researcher about (1) your rights as a research participant, (2) research-related injuries or problems, or (3) other issues/concerns you have about your participation in this study, please contact the Chair of the Institutional Review Board at [IRB@ric.edu](mailto:IRB@ric.edu) or by phone at 401-456-8228, or by writing Chair, IRB; c/o Office of Research and Grants Administration; Roberts Hall; Rhode Island College; 600 Mount Pleasant Avenue; Providence, RI 02908

Permission Statement:

I have read this permission form. My signature below means that I understand the information and agree to give permission for my child to participate in this study. I am over 18 years of age, and either the parent or legal guardian of the child.

Child's name: \_\_\_\_\_

Please initial each section separately as you have the right to agree to each part of the proposal on an individual basis.

I \_\_\_\_ Do \_\_\_\_ Do NOT give permission for my child to be observed for this study \_\_\_\_\_

Parent initials

I \_\_\_\_ Do \_\_\_\_ Do NOT give permission for my child to be video recorded \_\_\_\_\_

Parent initials

\_\_\_\_\_  
Signature of parent/guardian

\_\_\_\_\_  
Signature of researcher

\_\_\_\_\_  
Print name of parent/guardian

\_\_\_\_\_  
Print name of researcher

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date

<b>RIC Institutional Review Board</b>
Approval # <u>1011-50</u>
Expiration Date: <u>4/24/2012</u>

## APPENDIX I

### Parental Consent Form - Spanish

#### Formulario de consentimiento

#### Rhode Island College

*Una investigación del efecto de instrucción adaptiva sobre la enseñanza de música a los estudiantes de primaria con problemas de oír usando educación inclusiva*

**A un padre/tutor legal de \_\_\_\_\_:**

Se le pide autorización para hacer participar a su hijo/a en un estudio porque él/ella está en una clase que usa el modelo de educación inclusiva que sigue el criterio necesario en su escuela para este estudio. También se preguntará a su hijo/a si le gustaría participar para asegurar que todos estén de acuerdo. Este estudio se lleva a cabo por Danielle Trial, una estudiante en Rhode Island College.

Descripción del estudio:

Este estudio examinará los avances de los estudiantes en una clase basada en la educación inclusiva de los estudiantes sin o con deficiencias auditivas por el uso de percusión corporal (como dar palmas), instrumentos de percusión, y otras medidas adaptivas.

En qué consiste el estudio:

Con su permiso, su hijo/a:

- Hará una prueba rápida de su habilidad auditiva
- Recibirá instrucción musical en una secuencia lógica que incluye medidas adaptivas (como instrumentos de percusión y percusión corporal) dirigida al éxito y la comprensión de ritmo.
- Aprenderá moverse y actuar en compases diferentes y identificar silabas rítmicas.
- Actuará en compases diferentes (usando movimiento, patillos, o un instrumento) que hará aprendido durante 12 semanas de instrucción. Para evaluar el estudio, se grabarán los estudiantes y después el video se destruirá. Ningún nombre será conocido.

Riesgos o incomodidad:

Los riesgos asociados con este estudio son mínimos, o sea son iguales a los que alguien experimente durante un día típico. El riesgo más prevalente que le sienta su hijo es un poco incómodo con una persona nueva en la aula. Cualquier estudiante con audífonos sienta incomodidad por la alta frecuencia de los instrumentos de percusión. En la mayoría de casos, se debe quitar o bajar el volumen del audífono para evitar incomodidad.

Beneficios de este estudio:

No hay beneficios directos para usted ni para su hijo/hija al participar en este estudio.

\_\_\_\_\_ Poner las iniciales aquí para indicar que ha leído y que comprende esta página.

<b>RIC Junta Institucional de Revisión</b>
# de aprobación <u>1011-50</u>
Fecha de expiración: <u>4/28/2012</u>

Confidencialidad:

El papel de su hijo/a en este estudio es confidencial, o sea nada de la información tendrá su nombre adjuntado. Las grabaciones serán observadas y evaluadas por dos a tres profesionales cualificados en Rhode Island College. Todos los documentos serán guardados por el consejero académico de la investigadora en un lugar seguro por un mínimo de tres años después de la terminación del estudio, después de este tiempo todo será destruido.

Decisión de abandonar el estudio en cualquier momento:

La decisión de participar en este estudio es la decisión voluntaria de usted y de su hijo/a. Su hijo/a será preguntado/a si quiere participar y tanto usted como su hijo/a tendrán la opción de abandonar el estudio en cualquier momento sin consecuencias negativas.

Contacto y preguntas:

Si tiene preguntas sobre el estudio, puede ponerse en contacto con Danielle Trial por correo electrónico: [dttrial\\_8919@ric.edu](mailto:dttrial_8919@ric.edu) o la consejera del trabajo la Doctora Denise Guilbault por teléfono a 401-456-9517 o por correo electrónico: [dguilbault@ric.edu](mailto:dguilbault@ric.edu)

Si le gustaría hablar con alguien aparte de estas personas sobre (1) sus derechos como participante, (2) heridas relacionadas o problemas conectados con la investigación, u (3) otros asuntos que tenga sobre su participación en este estudio, por favor hable con Dr. Christine Marco, el presidente del *Institutional Review Board* a [IRB@ric.edu](mailto:IRB@ric.edu) o por teléfono a: 401-456-8598, o por correo: Chair, IRB; c/o Office of Research and Grants Administration; Roberts Hall; Rhode Island College; 600 Mount Pleasant Avenue; Providence, RI 02908

Declaración de permiso:

He leído este formulario de consentimiento y mi firma abajo significa que entiendo la información y que quedo en dar permiso para que mi hijo/a pueda participar en esta investigación. Tengo más de 18 años de edad y que soy o el padre o un tutor legal del niño/a.

Nombre del participante (niño/a): \_\_\_\_\_

\_\_\_ No doy \_\_\_ Doy permiso al investigadora observar mi hijo/a durante el estudio \_\_\_\_\_  
Iniciales del padre

\_\_\_ No doy \_\_\_ Doy permiso al investigadora grabar video durante el estudio \_\_\_\_\_  
Iniciales del padre

\_\_\_\_\_  
Firma del padre/tutor legal

\_\_\_\_\_  
Firma de la investigadora

\_\_\_\_\_  
Nombre del padre/tutor legal

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Nombre de la investigadora

\_\_\_\_\_  
Fecha

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Fecha

<p><u>RIC Junta Institucional de Revisión</u></p> <p># de aprobación <u>1011-50</u></p> <p>Fecha de expiración: <u>4/28/2012</u></p>
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## APPENDIX J

### Verbal Assent

#### Verbal Assent Script Prior to Instruction

My name is Ms. Trial, and I am doing a study to learn about how students learn music.

If you choose to be in the study, then you will spend 20 minutes on Tuesdays and Fridays each week learning some songs and playing some instruments. After you have learned some songs, I will ask each of you to perform two of them for me. I will have a video camera so I can record the songs.

We already told your parents about the study, and they said you can be in the study if you want to. If you don't want to be in the study, you can say "No" and nobody will be upset at you and nothing bad will happen. Also you can change your mind at any time and nobody will be upset and nothing bad will happen.

If you think you were treated badly or have any problems with this study, you should tell your parents and they will know what to do.

Do you have any questions about the study?


Would you like to be in the study?

#### Verbal Assent Script for Video Recording

"Do you remember me asking you if you wanted to be in a study? This is part of that study. I asked you here to perform songs that we have been working on in class. Your performance will be video recorded. This will take about five minutes. Before we can begin, I need to know if you still want to be in this study. I will give you a moment to think about it. When you are ready, say 'yes' if you would like to perform the songs for the study or say 'no' if you would not like to perform."

Trial Consent Form  
Version 4/15/2011

<b>RIC Institutional Review Board</b>	
Approval #	<u>1011-50</u>
Expiration Date:	<u>4/24/2011</u>



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## APPENDIX K

### Repertoire List

#### **Duple Meter:**

Wheels on the Bus  
Old MacDonald  
Twinkle, Twinkle  
I'm Gonna Put on My Walkin' Shoes  
Canoe Song  
The Grasshopper and the Elephant  
Button You Must Wander \*

Hi, my Name is Joe (chant)

Hi, my name is Joe  
I got a wife and 3 kids  
And I work at a button factory  
One day, my boss came to me and said  
Hi Joe, are you busy? I said No.  
He said (Turn the button with your hand)

Each verse add a movement:

Turn the button with your other hand  
Turn the button with your foot  
Hit the button with your butt  
Turn the button with your nose  
Turn the button with your tongue  
Hit the button with your head etc...

Last verse:

Hi Joe, are you busy? I said YES!

#### **Triple Meter:**

My Pony Bill  
Row, Row, Row your Boat  
The Itsy Bitsy Spider  
Lets Go Fly a Kite  
Skin and Bones  
Goodbye Song (see attached music)  
Little Tom Tinker \*

#### **Unusual Meter:**

Top of my Head  
The Squirrel

\* indicates song for final exam. This song should never be used in class.

## Goodbye Song

Voice

C C C G7 C C F C G7

Goodbye, so long, farewell my friends. Goodbye, so long, farewell. I'll

C C C G7 C C G7 C

see you in a while my friends so goodbye, so long, farewell.

## APPENDIX L

### Keith Terry Body Percussion

The body percussion patterns used in this study were developed by Keith Terry. There are nine basic rhythm patterns that he refers to as body music. They involve clapping, patting the chest and front and back of thighs and stomping. Specific pattern instruction can be found on his instructional DVD “Body Music with Keith Terry Vol. 1.” More complex patterns are introduced in Vol. 2. Clips of the instructional video can also be found online. His influences range from Japanese Taiko and Balinese Gamelan to North American rhythm tap and Ethiopian armpit music.

Prior to the beginning of this study, the researcher had participated in a number of work shops, residencies and master classes with Terry. These classes involved the nine basic patterns, patterns involving other parts of the body such as the face, rubbing hands etc. and words and sound effects (using the basic syllables of the Takadimi method).

For further information see:

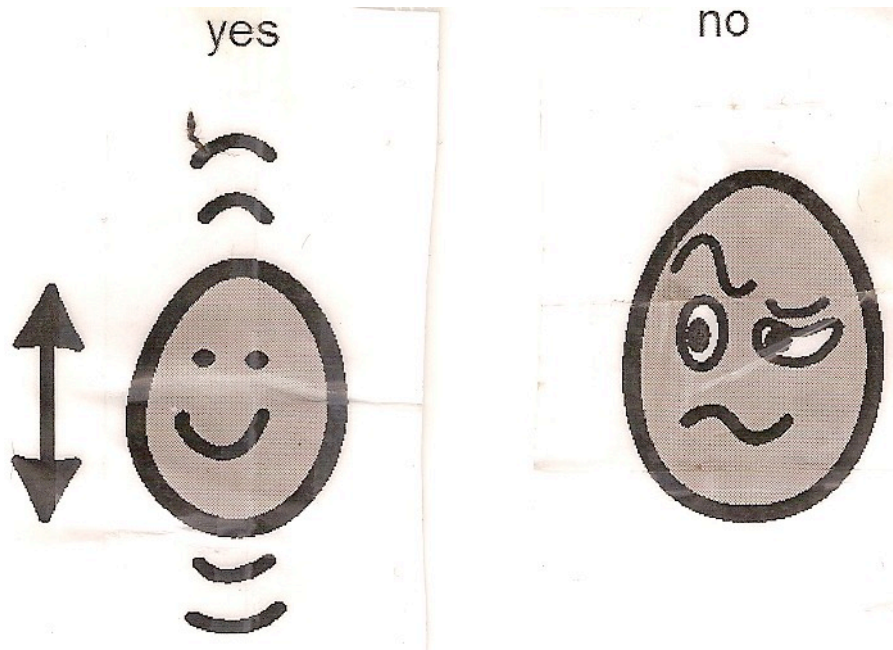
[www.Crosspulse.com](http://www.Crosspulse.com) – Terry’s official site

[www.takadimi.net](http://www.takadimi.net) – official site of the Takadimi rhythm method



## APPENDIX M

### Yes/No Pictograms for Control Group



## APPENDIX N

### Lesson Plans

Lesson Plans:

#### **Treatment Class**

Percussive instruments

Body percussion

Laban movement

Movement m/m

Adaptations: make certain that students wrap their legs around the drums so they can feel the vibrations. Students with hearing impairment should be given the largest tubano drums as these produce the largest vibrations.

Conclude every lesson with the Goodbye song. Students should tap microbeat on drum.

#### **Control Class**

Speaker vibration

Syllables

Laban movement

Movement m/m

Adaptations: Observe students movement. Student may not be capable of performing all movements described in lessons below. However, students may still move rhythmically (ex. Swinging feet, touching nose etc.)

Conclude every lesson with the Goodbye Song. Observe how students respond rhythmically. Demonstrate a movement for students that are not moving/responding.

## Initial Lesson

### **Treatment Class**

- Aptitude Test
- The name game with rhythm for each name
  - Each student says his/her name and taps the rhythm of the syllables on a drum. Class repeats back the name and the rhythm.
  - Each name and drum beat must be repeated so by the time the last student says his/her name, the students have a long pattern to play. (ex. Joe, Tommy Joe, Sally Tommy Joe etc)
- **Hi, My name is Joe**
  - Walk through all button movements to diagnose students range of motion and coordination
- Basics of Hand Drums
  - Discuss how to play hand drums. Hit in the middle for lower sound and more vibration, and on the edge for higher sound and less vibration.
  - Keep hands on your own drum. Wrap legs around the drum. Do not bring anything sharp near the drums.
- Demonstrate macrobeat in duple meter on a drum **Song: Wheels on the Bus**
  - Do not identify as macrobeat.
- Have students duplicate macrobeat on drum
  - Students perform macrobeat alone and with others
- Demonstrate macrobeat in duple meter on lap with spider fingers **Song: Wheels on the Bus**
- Have students duplicate macrobeat on lap

### **Control Class**

- Aptitude Test
- The name game with movement for each name
  - Each student says his/her name and creates a movement to accompany their name. Class repeats back the name and the movement.
  - Each name and movement must be repeated so by the time the last student says his/her name, the students have a long movement pattern (ex. Joe, Tommy Joe, Sally Tommy Joe etc)
- **Hi, My name is Joe**
  - Walk through all button movements to diagnose students range of motion and coordination
- Demonstrate macrobeat in duple meter on lap with spider fingers **Song: Wheels on the Bus**
- Have students duplicate macrobeat on laps
  - Students perform macrobeat alone and with others
- Demonstrate another movement to this beat
  - Show movements such as large dinosaur steps in rhythm etc.
- Students move. Visually keep the beat
  - Students duplicate your demonstrated movement.
  - Visually keep the beat by making large arm gestures and tapping thighs in time or large marching steps

## **Lesson 1**

### **Treatment Class**

Objectives: Students will perform macrobeats/microbeats in duple meter.

Students will move to macrobeats/microbeats in duple meter. Students will explore space and time.

- **I'm Gonna Put on My Walkin' Shoes**
  - Demonstrate walking to macrobeat.
  - Replace walking shoes with other words (i.e jumping shoes)
  - (jump) to macrobeat
  - Use student suggestions
  - AVOID Running Shoes!
- **Head, Shoulders, Knees and Toes**
  - Have students point to all body parts needed for this song. Use this as a segue to **Top of my Head**
- **Top of my Head**
  - Follow movements of song and tap these body parts in time to the macrobeat.
  - Gradually get faster
- Demonstrate macrobeat in duple meter on a drum **Song: Wheels on the Bus, and Twinkle, Twinkle** (Begin with Wheels on the Bus to remind students of last class. Continue with Twinkle, Twinkle)
- Have students duplicate macrobeat on drum
  - Students perform macrobeat alone and with others
- Demonstrate macrobeat in duple meter on lap with spider fingers
- Have students duplicate macrobeat on lap
- Demonstrate another movement to this beat
  - Show movements such as large dinosaur steps in rhythm etc.
- Students move, keep beat on gathering drum

### **Control Class**

Objectives: Students will perform macrobeats/microbeats in duple meter.

Students will move to macrobeats/microbeats in duple meter. Students will explore space and time.

- **I'm Gonna Put on My Walkin' Shoes**
  - Demonstrate walking to macrobeat.
  - Replace walking shoes with other words (i.e jumping shoes)
  - (jump) to macrobeat
  - Use student suggestions
  - AVOID Running Shoes!
- **Head, Shoulders, Knees and Toes**
  - Have students point to all body parts needed for this song. Use this as a segue to **Top of my Head**
- **Top of my Head**
  - Follow movements of song and tap these body parts in time to the macrobeat.
  - Gradually get faster
- Demonstrate macrobeat in duple meter on lap with spider fingers **Song: Wheels on the Bus, and Twinkle, Twinkle** (Begin with Wheels on the Bus to remind students of last class. Continue with Twinkle, Twinkle)
- Have students duplicate macrobeat on laps
  - Students perform macrobeat alone and with others
- Demonstrate another movement to this beat
  - Show movements such as large dinosaur steps in rhythm etc.
- Students move. Visually keep the beat
  - Students duplicate your demonstrated movement.
  - Visually keep the beat by making large arm gestures and tapping thighs in time or large marching steps

- Students duplicate your demonstrated movement
- Repeat using student movement suggestions
- Repeat with microbeat
  - Repeat above procedure using microbeats
- Repeat using student movement suggestions
- Repeat with microbeat
  - Repeat above procedure using microbeats

## **Lesson 2**

### **Treatment Class**

Objectives: Students will perform macrobeats/microbeats in duple meter. Students will move to macrobeats/microbeats in duple meter. Students will identify macrobeats/microbeats in duple meter. Students will switch between macrobeats/microbeats in duple meter.

- **Top of my Head**
  - Follow movements of song and tap these body parts in time to the macrobeat.
  - Gradually get faster
- **Hi, My Name is Joe**
  - repeat this song to work to develop coordination skills and movement to macrobeat
- Review duple meter. **Song: Twinkle, Twinkle**
  - Repeat parts of activities from previous lesson (moving to macrobeats and microbeats)
- **Song: Old MacDonald**
  - Continue performing macrobeat and microbeat while students sing.
- Demonstrate on lap with spider fingers
- Have students duplicate on lap
- Introduce triple meter **Song: My Pony Bill**
  - Instruct students to move like horses (they can be as creative as they like)
  - Keep the macrobeat on gathering drum while students move
- **The Itsy Bitsy Spider**
  - Demonstrate macrobeat on gathering drum but do not identify it as macrobeat
  - Have students repeat macrobeat back on drum
  - Repeat with microbeat

### **Control Class**

Objectives: Students will perform macrobeats/microbeats in duple meter. Students will move to macrobeats/microbeats in duple meter. Students will identify macrobeats/microbeats in duple meter. Students will switch between macrobeats/microbeats in duple meter.

- **Top of my Head**
  - Follow movements of song and tap these body parts in time to the macrobeat.
  - Gradually get faster
- **Hi, My Name is Joe**
  - repeat this song to work to develop coordination skills and movement to macrobeat
- Review duple meter. **Song: Twinkle, Twinkle**
  - Repeat parts of activities from previous lesson (moving to macrobeats and microbeats)
- **Song: Old MacDonald**
  - Continue performing macrobeat and microbeat while singing with students
- Introduce triple meter **Song: My Pony Bill**
  - Instruct students to move like horses (they can be as creative as they like)
  - Visually Keep the macrobeat while students move
- **The Itsy Bitsy Spider**
  - Demonstrate macrobeat on lap but do not identify it as macrobeat
  - Have students repeat macrobeat back on laps
  - Repeat with microbeat

### **Lesson 3**

#### **Treatment Class**

Objectives: Students will perform macrobeats/microbeats in triple meter.

Students will move to macrobeats/microbeats in triple meter.

- **I'm Gonna Put on My Walkin'**  
**Shoes**
  - Demonstrate walking to macrobeat.
  - Replace walking shoes with other words (i.e jumping shoes)
  - (jump) to macrobeat
  - Use student suggestions
  - AVOID Running Shoes!
- **Hi, my Name is Joe**
- **Twinkle, Twinkle/Wheels on the Bus**
  - review duple meter activities from past lessons
- **Song: My Pony Bill**
  - Demonstrate macrobeat in triple meter on a drum
  - Have students duplicate macrobeat on drum
    - Students perform macrobeat alone and with others
  - Demonstrate macrobeat in triple meter on lap with spider fingers
  - Have students duplicate macrobeat on lap
  - Repeat above procedure with microbeat

#### **Control Class**

Objectives: Students will perform macrobeats/microbeats in triple meter.

Students will move to macrobeats/microbeats in triple meter.

- **I'm Gonna Put on My Walkin'**  
**Shoes**
  - Demonstrate walking to macrobeat.
  - Replace walking shoes with other words (i.e jumping shoes)
  - (jump) to macrobeat
  - Use student suggestions
  - AVOID Running Shoes!
- **Hi, my Name is Joe**
- **Twinkle, Twinkle/Wheels on the Bus**
  - review duple meter activities from past lessons
- **Song: My Pony Bill**
  - Demonstrate macrobeat in triple meter on lap with spider fingers
  - Have students duplicate macrobeat on laps
    - Students perform macrobeat alone and with others
  - Demonstrate another movement to this beat
    - Show movements such as large dinosaur steps in rhythm etc.
  - Students move. Visually keep the beat
    - Students duplicate your demonstrated movement.
    - Visually keep the beat by making large arm gestures and tapping thighs in time or large marching steps
  - Repeat with microbeat
    - Repeat above procedure using microbeats

## **Lesson 4**

### **Treatment Class**

Objectives: Students perform patterns.

Students perform body percussion patterns.

- **Head, Shoulders, Knees and Toes**
- **Top of my Head**
- **Hi, My name is Joe**
- Continue with duple and triple meter
  - Briefly repeat activities from previous lessons using both duple and triple meter **Songs: Twinkle, Twinkle, Wheels on the Bus, Row, Row, Row your Boat, Itsy Bitsy Spider**
  - Begin identifying macrobeat and microbeat
- Begin introducing rhythm patterns from Rhythm book 1
  - Tap patterns on drum and have class repeat back on drums
  - Tap patterns on lap and have class repeat back on their laps
- Begin introducing class patterns and individual patterns
  - Individual patterns are only those in the book. Class patterns are any other patterns. Switch between class and individual patterns.
- Introduce body percussion movements 1-4
  - Work with 1 and 2 until these patterns are solid, then continue with 3 and 4

### **Control Class**

Objectives: Students perform patterns.

Students perform movement in duple and triple meter.

- **Head, Shoulders, Knees and Toes**
- **Top of my Head**
- **Hi, My name is Joe**
- Continue with duple and triple meter
  - Briefly repeat activities from previous lessons using both duple and triple meter **Songs: Twinkle, Twinkle, Wheels on the Bus, Row, Row, Row your Boat, Itsy Bitsy Spider**
  - Begin identifying macrobeat and microbeat
- Begin introducing rhythm patterns from Rhythm book 1 on neutral syllable with puppet
  - Follow instructions for neutral and rhythm syllables
- Begin introducing class patterns and individual patterns
  - Individual patterns are only those in the book. Class patterns are any other patterns. Switch between class and individual patterns.
- Work with creative student movement to songs in duple meter



## **Lesson 5**

### **Treatment Class**

Objectives: Students perform patterns, both individual and class patterns. Students move to duple and triple meter chants. Students perform body percussion patterns.

- **Head, Shoulders, Knees and Toes**
- **Top of my Head**
- **Hi, My Name is Joe**
- Introduce weight heavy and light **Song The Grasshopper and the Elephant**
  - Demonstrate moving like an elephant with big, heavy steps. Demonstrate this movement to the macrobeat.
  - Demonstrate moving like a grasshopper with small, light steps. Demonstrate this movement to the microbeat.
- Continue with duple and triple meter
  - Briefly repeat activities from previous lessons using both duple and triple meter **Songs: Twinkle, Twinkle, Wheels on the Bus, Row, Row, Row your Boat, Itsy Bitsy Spider**
  - Begin identifying macrobeat and microbeat
- Continue with rhythm patterns in duple meter
  - Perform pattern on drum
  - Perform pattern on lap
  - Class and individual patterns
- Continue working with first 4 body percussion movements

### **Control Class**

Objectives: Students perform patterns, both individual and class patterns. Students move to duple and triple meter chants. Students perform body percussion patterns.

- **Head, Shoulders, Knees and Toes**
- **Top of my Head**
- **Hi, My Name is Joe**
- Introduce weight heavy and light **Song The Grasshopper and the Elephant**
  - Demonstrate moving like an elephant with big, heavy steps. Demonstrate this movement to the macrobeat.
  - Demonstrate moving like a grasshopper with small, light steps. Demonstrate this movement to the microbeat.
- Continue with duple and triple meter
  - Briefly repeat activities from previous lessons using both duple and triple meter **Songs: Twinkle, Twinkle, Wheels on the Bus, Row, Row, Row your Boat, Itsy Bitsy Spider**
  - Begin identifying macrobeat and microbeat
- Continue with rhythm patterns in duple meter with puppet
- Continue working with creative movement to songs in duple meter

## **Lesson 6**

### **Treatment Class**

Objectives: Students perform class and individual patterns. Students perform body percussion patterns. Students improvise and perform patterns on drums.

- **Top of my Head**
- **Song: The Grasshopper and the Elephant**
  - Demonstrate moving like an elephant with big, heavy steps. Demonstrate this movement to the macrobeat
  - Demonstrate moving like a grasshopper with small, light steps. Demonstrate this movement to the microbeat.
- Continue with duple and triple meter
  - Briefly repeat activities from previous lessons using both duple and triple meter **Songs: Twinkle, Twinkle, Wheels on the Bus, My Pony Bill, Itsy Bitsy Spider**
  - Continue identifying macrobeat and microbeat
- Continue with rhythm patterns in duple and triple meter
  - Perform pattern on drum
  - Perform pattern on lap
  - Class and individual patterns
- Continue working with body percussion movements 1-4
- Begin putting body percussion patterns together

### **Control Class**

Objectives: Students perform class and individual patterns.  
Students improvise and perform patterns.

- **Top of my Head**
- **Song: The Grasshopper and the Elephant**
  - Demonstrate moving like an elephant with big, heavy steps. Demonstrate this movement to the macrobeat
  - Demonstrate moving like a grasshopper with small, light steps. Demonstrate this movement to the microbeat.
- Continue with duple and triple meter
  - Briefly repeat activities from previous lessons using both duple and triple meter **Songs: Twinkle, Twinkle, Wheels on the Bus, My Pony Bill, Itsy Bitsy Spider**
  - Continue identifying macrobeat and microbeat
- Continue with rhythm patterns in duple and triple meter

## **Lesson 7**

### **Treatment Class**

Objectives: Students perform class and individual patterns. Students perform body percussion patterns. Students improvise and perform patterns on drums.

- **Head, Shoulders, Knees and Toes**
- **Top of my Head**
- **The Grasshopper and the Elephant**
- Continue with duple and triple meter
  - Briefly repeat activities from previous lessons using both duple and triple meter **Songs: Twinkle, Twinkle, London Bridge, My Pony Bill, Lets Go Fly a Kite**
  - Continue identifying macrobeat and microbeat
  - Determine a signal for students to switch between macrobeats and microbeats in a given song
- Continue with rhythm patterns
- Have students create and perform patterns on drum
  - Class repeats these patterns
- Continue working with body percussion movements 1-4

### **Control Class**

Objectives: Students perform class and individual patterns.

Students improvise and perform patterns.

- **Head, Shoulders, Knees and Toes**
- **Top of my Head**
- **The Grasshopper and the Elephant**
- Continue with duple and triple meter
  - Briefly repeat activities from previous lessons using both duple and triple meter **Songs: Twinkle, Twinkle, London Bridge, My Pony Bill, Itsy Bitsy Spider**
  - Continue identifying macrobeat and microbeat
  - Determine a signal for students to switch between macrobeats and microbeats in a given song
- Continue with rhythm patterns with puppet
- Have students create a pattern (either verbal or movement, whichever the student is capable of)

## **Lesson 8**

### **Treatment Class**

Objectives: Students perform class and individual patterns. Students perform body percussion patterns. Students improvise and perform patterns on drums.

- **I'm Gonna Put on my Walking Shoes**
- **The Grasshopper and the Elephant**
- Continue with duple and triple meter
  - Briefly repeat activities from previous lessons using both duple and triple meter **Songs: Twinkle, Twinkle, London Bridge, My Pony Bill, Lets Go Fly a Kite**
  - Continue identifying macrobeat and microbeat
  - Signal for students to switch between macrobeats and microbeats in a given song
- Continue working with rhythm patterns (by this time, you should be introducing rhythm syllables)
  - Say pattern aloud, have students repeat pattern verbally, demonstrate pattern on drum, have students repeat, demonstrate pattern on lap, have students repeat
- Have students create and perform patterns on drum
  - Class repeats these patterns
- Continue working with rhythm patterns 1-4. Consider introducing 5 and 6 if students are ready.

### **Control Class**

Objectives: Students perform class and individual patterns.  
Students improvise and perform patterns.

- **I'm Gonna Put on my Walking Shoes**
- **The Grasshopper and the Elephant**
- Continue with duple and triple meter
  - Briefly repeat activities from previous lessons using both duple and triple meter **Songs: Twinkle, Twinkle, London Bridge, My Pony Bill, Lets Go Fly a Kite**
  - Continue identifying macrobeat and microbeat
  - Signal for students to switch between macrobeats and microbeats in a given song
- Continue working with rhythm patterns (by this time, you should be introducing rhythm syllables) with puppet
  - Say pattern aloud, have students repeat pattern verbally, demonstrate movement such as clapping, tapping feet etc. for students to duplicate
- Have students create a pattern (either verbal or movement, whichever the student is capable of)

## Lesson 9

### **Treatment Class**

Objectives: Students perform class and individual patterns. Students perform body percussion patterns. Students improvise and perform patterns on drums.

- **Hi, my Name is Joe**
- **Top of my Head**
- Introduce **The Squirrel**
  - Flick hands to the beat of chant.  
Move arms higher as squirrel runs up and move arms down as squirrel runs down.
- Continue with duple and triple meter
  - Briefly repeat activities from previous lessons using both duple and triple meter **Songs: Twinkle, Twinkle, London Bridge, Skin and Bones, Lets Go Fly a Kite**
  - Continue identifying macrobeat and microbeat
  - Begin identifying songs as duple or triple meter. Explain how to use rhythm syllables to determine the meter of the song.
  - Signal for students to switch between macrobeats and microbeats in a given song
- Continue working with rhythm patterns with syllables
  - Say pattern aloud, have students repeat pattern verbally, demonstrate pattern on drum, have students repeat, demonstrate pattern on lap, have students repeat
- Have students create and perform patterns on drum
  - Class repeats these patterns
- Continue working with rhythm patterns 1-6.

### **Control Class**

Objectives: Students perform class and individual patterns.

Students improvise and perform patterns.

- **Hi, my Name is Joe**
- **Top of my Head**
- Introduce **The Squirrel**
  - Flick hands to the beat of chant.  
Move arms higher as squirrel runs up and move arms down as squirrel runs down.
- Continue with duple and triple meter
  - Briefly repeat activities from previous lessons using both duple and triple meter **Songs: Twinkle, Twinkle, London Bridge, Skin and Bones, Lets Go Fly a Kite**
  - Continue identifying macrobeat and microbeat
  - Begin identifying songs as duple or triple meter. Explain how to use rhythm syllables to determine the meter of the song.
  - Signal for students to switch between macrobeats and microbeats in a given song
- Continue working with rhythm patterns with syllables with puppet
  - Say pattern aloud, have students repeat pattern verbally, demonstrate movement such as clapping, tapping feet etc. for students to duplicate
- Have students create a pattern (either verbal or movement, whichever the student is capable of)

## **Lesson 9**

### **Treatment Class**

Objectives: Students perform class and individual patterns. Students perform body percussion patterns. Students improvise and perform patterns on drums.

- **Head, Shoulders, Knees and Toes**
- **The Squirrel**
  - Flick hands to the beat of chant. Move arms higher as squirrel runs up and move arms down as squirrel runs down.
- Continue with duple and triple meter
  - Briefly repeat activities from previous lessons using both duple and triple meter **Songs: Canoe Song, London Bridge, Skin and Bones, Lets Go Fly a Kite**
  - Continue identifying macrobeat and microbeat
  - Continue identifying songs as duple or triple meter. Explain how to use rhythm syllables to determine the meter of the song.
  - Signal for students to switch between macrobeats and microbeats in a given song
- Continue working with rhythm patterns with syllables
  - Say pattern aloud, have students repeat pattern verbally, demonstrate pattern on drum, have students repeat, demonstrate pattern on lap, have students repeat
- Have students create and perform patterns on drum
  - Class repeats these patterns
- Continue working with rhythm patterns 1-6. Introduce 7 & 8
  - Have some students tap duple meter macrobeat on drum while others perform body percussion patterns.

### **Control Class**

Objectives: Students perform class and individual patterns.

Students improvise and perform patterns.

- **Head, Shoulders, Knees and Toes**
- **The Squirrel**
  - Flick hands to the beat of chant. Move arms higher as squirrel runs up and move arms down as squirrel runs down.
- Continue with duple and triple meter
  - Briefly repeat activities from previous lessons using both duple and triple meter **Songs: Canoe Song, London Bridge, Skin and Bones, Lets Go Fly a Kite**
  - Continue identifying macrobeat and microbeat
  - Continue identifying songs as duple or triple meter. Explain how to use rhythm syllables to determine the meter of the song.
  - Signal for students to switch between macrobeats and microbeats in a given song
- Continue working with rhythm patterns with syllables with puppet
  - Say pattern aloud, have students repeat pattern verbally, demonstrate movement such as clapping, tapping feet etc. for students to duplicate
- Have students create a pattern (either verbal or movement, whichever the student is capable of)
  - Sing a duple meter song that all students know. Have one student perform their individual pattern

## **Lesson 10**

### **Treatment Class**

Objectives: Students perform class and individual patterns. Students perform body percussion patterns. Students improvise and perform patterns on drums.

- **Top of my Head**
- **Hi, my name is Joe**
- **The Squirrel**
- Continue with duple and triple meter
  - Briefly repeat activities from previous lessons using both duple and triple meter **Songs: Canoe Song, London Bridge, Skin and Bones, Lets Go Fly a Kite**
  - Continue identifying macrobeat and microbeat
  - Continue identifying songs as duple or triple meter. Explain how to use rhythm syllables to determine the meter of the song.
  - Signal for students to switch between macrobeats and microbeats in a given song
- Sing a song in duple or triple meter that students are NOT familiar with. Ask them if they think the song is in duple or triple meter.
- Continue working with rhythm patterns with syllables
  - Say pattern aloud, have students repeat pattern verbally, demonstrate pattern on drum, have students repeat, demonstrate pattern on lap, have students repeat
- Have students create and perform patterns on drum
  - Class repeats these patterns
- Continue working with rhythm patterns 1-8.
  - Have some students tap duple meter macrobeat on drum while others perform body percussion patterns.

### **Control Class**

Objectives: Students perform class and individual patterns.

Students improvise and perform patterns.

- **Top of my Head**
- **Hi, my name is Joe**
- **The Squirrel**
- Continue with duple and triple meter
  - Briefly repeat activities from previous lessons using both duple and triple meter **Songs: Canoe Song, London Bridge, Skin and Bones, Lets Go Fly a Kite**
  - Continue identifying macrobeat and microbeat
  - Continue identifying songs as duple or triple meter. Explain how to use rhythm syllables to determine the meter of the song.
  - Signal for students to switch between macrobeats and microbeats in a given song
- Continue working with rhythm patterns with syllables with puppet
  - Say pattern aloud, have students repeat pattern verbally, demonstrate movement such as clapping, tapping feet etc. for students to duplicate
- Have students create a pattern (either verbal or movement, whichever the student is capable of)
  - Sing a duple meter song that all students know. Have one student perform their individual pattern

## **Final Lesson**

### **Treatment Class**

- Aptitude Test
- Final Examination:
  - Take students out of the room one at a time. Read debriefing statement to students to ensure they still wish to participate. Explain that you will sing a song they have never heard before. Ask them to listen once. The second time, they should join by playing either the macrobeat or microbeat on the drum. Do this with one song in duple meter and one song in triple meter.
  - **Songs: Button You Must Wander and Little Tom Tinker**

### **Control Class**

- Aptitude Test
- Final Examination:
  - Take students out of the room one at a time. Read debriefing statement to students to ensure they still wish to participate. Explain that you will sing a song they have never heard before. Ask them to listen once. The second time, they should feel free to move to either the macrobeat or microbeat. Do this with one song in duple meter and one song in triple meter.
  - **Songs: Button You Must Wander and Little Tom Tinker**





## APPENDIX O

### Rhythm Rating Scale

Rating	Criterion
5	regular responses, movement synchronous with a musical pulse
4	regular responses, synchronizing movement with a musical pulse most of the time
3	regular responses, but exhibiting difficulty in synchronizing movement with a musical pulse
2	unsynchronous, but apparently some awareness of a musical pulse and a sense of task
1	erratic response, no apparent awareness of a musical pulse

This rating scale is based off a scale developed by Darrel Walters for use with Professor James O. Frosteth's Primary Measures of Kinesthetic Responses to Tempo in Music. Darrel Walters.

#### Final Test

Sing a song that has not been done in class: 1 in duple (up tempo) and 1 in triple (more relaxed) and have students move to/play "the beat"

Control Class: Observe student movement (punch or spider fingers etc for beats)

Treatment Class: Play Drums

Student may move to macro or microbeat.

## APPENDIX P

### *Audie Answer Sheet*

**GAME  
SHEET**

**AUDIE-R**

---

Child's name (first and last)

---

Birthdate

---

Today's date

---

	YES	NO	?
1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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## REFERENCES

- Ankrim, J. C. (1953). Out of silence: music. *Music Educators Journal*, 40(2), 42-49.
- Bilir, S., Artan, I. & Bal, S. (1995). A study on the development of the concept of rhythm in 5 to 7 year old with profound hearing loss kindergarten children. *Educational Resources Information Center (ERIC)*, Retrieved from <http://www.eric.ed.gov/PDFS/ED390242.pdf>
- Blesedell, D. S. (1991). A study of the effects of two types of movement instruction on the rhythm achievement and developmental rhythm aptitude of preschool children. (Doctoral dissertation, Temple University). *ProQuest Dissertations and Theses*, 124 p. <http://search.proquest.com/docview/303965385?accountid=28991>
- Croom, P. L. (1998). Effects of locomotor rhythm training activities on the ability of kindergarten students to synchronize non-locomotor movements to music. (Doctoral dissertation, Temple University). *ProQuest Dissertations and Theses*, 119 p. <http://search.proquest.com/docview/304450617?accountid=28991>
- Crouch, S. (2005). Keeping the beat. *American Music Teacher*, 55(3), 22-25.
- Dalcroze, E. J. (1930, 1976). *Eurythmics art and education*. (F. Rothwell, Trans.). C. Cox, (Ed.). New York, NY: Arno Press.
- Darrow, A. A. (1984). A comparison of rhythmic responsiveness in normal and hearing impaired children and an investigation of the relationship of rhythmic responsiveness to the suprasegmental aspects of speech perception. *Journal of Music Therapy*, 21, 48-66.
- Darrow, A. A. (1985). Music for the deaf. *Music Educators Journal*, 71, 33-35.
- Darrow, A. A. (1987a). An investigative study: the effect of hearing impairment on music aptitude. *Journal of Music Therapy*, 24, 88-96.
- Darrow, A. A. (1987b). The beat reproduction response of subjects with normal and impaired hearing. *Journal of Music Therapy*, 16, 19-98.
- Darrow, A. A. (1989). Music for the hearing impaired. *Update: Applications of Research in Music Education*, 7(2), 10-12.
- Darrow, A. A. (1990). The role of hearing in understanding music. *Music Educators Journal* 77(4), 24-27.
- Darrow, A. A. (1993). The role of music in deaf culture: implications for music educators. *Journal of Research in Music Education*, 41(2), 93-110.

- Darrow, A. A. (2006). Sounds in the silence: research on music and deafness. *Update: Applications of Research in Music Education*, 25, 5-14.
- Darrow, A. A. (2007). Teaching students with hearing loss. *General Music Today*, 20, 27-30.
- Darrow, A. A. & Heller, G. N. (1985). Early advocates of music education of the hearing impaired: William Wolcott Turner and David Ely Bartlett. *Journal of Research in Music Education*, 33(4), 269-279.
- Deutsch, D. (1980). Music perception. *The Musical Quarterly*, 66(2), 165-179.
- Eddy, R. (2009). Beating time to success. Retrieved from <http://www.musicanddanceacademy.co.uk/content/NewsZone/research/Beating-Time-To-Success.htm>
- Edwards, E. M. (1974). *Music education for the hearing impaired*. South Waterford, ME: Merriam-Eddy.
- Fahey, J. D. & Birkenshaw, L. (1972). Education of the deaf bypassing the ear: the perception of music by feeling and touch. *Music Educators Journal*, 58, 44-51.
- Flohr, J. W. (1981). Short term music instruction and young children's developmental music aptitude. *Journal of Research in Music Education*, 29(3), 219-223.
- Froeth, J. O. (1971). Using MAP scores in the instruction of beginning students in instrumental music. *Journal of Research in Music Education*, 19(1), 98-105.
- Glennie, E. (2004). Touch the sound (video recording). DocuRama Productions.
- Gordon, E. E. (1967). The musical aptitude profile. *Music Educators Journal*, 53(6), 52-54.
- Gordon, E. E. (1980a). Assessment of music aptitudes of very young children. *The Gifted Child Quarterly*, 24, 107-111.
- Gordon, E. E. (1980b) Developmental music aptitudes among inner-city primary children. *Bulletin of the Council on Research in Music Education*, 63, 25-30.
- Gordon, E. E. (1984) *Rhythm register book one revised edition*. Chicago: GIA Publications.
- Gordon, E. E. (1989a). Audiation, music learning theory, music aptitude and creativity. In J. W. Richmond (Ed.) *Suncoast Music Education Forum on Creativity*, (pp. 75-89) Tampa: University of South Florida. (ERIC Document Reproduction Service No. ED380341).

- Gordon, E. E. (1989b). *Audie*. Chicago: GIA Publications.
- Gordon, E. E. (1993). *Learning sequences in music*. Chicago, IL: GIA Publications.
- Gordon, E. E. (1999). All about audiation and music aptitudes. *Music Educators Journal* 86(2), 41-44.
- Gordon, E. E. (2003). *A music learning theory for newborn and young children*. Chicago, IL: GIA Publications.
- Hammel, A. M., & Hourigan, R. M. (2011). *Teaching music to students with special needs*. New York, NY: Oxford University Press.
- Harman, M. (2009, April). Breaking the sound barrier. *Southwestern Musician*.
- Hash, P. M. (2003, September). Teaching instrumental music to deaf and hard of hearing students. *Research & Issues in Music Education*, 1(1) Retrieved from <http://www.stthomas.edu/rimeonline/vol1/hash.htm>
- Hedden, S. K. (1982). Prediction of music achievement in the elementary school. *Journal of Research in music Education*, 30(1), 61-68.
- Jahns, E. (2001, June). Teaching music to the hearing impaired. *Teaching Music*, 8, 37-40.
- Jellison, J. (1993). MENC's "tips" for teaching special learners. *General Music Today*, 6(3), 25-26.
- Jordan, J (1989). Rhythm learning sequence. In D. L. Walters & C. C. Taggart (Eds.), *Readings in music learning theory* (pp. 26-36). Chicago: G. I. A. Publications.
- Kratys, J. (1989). Orientation and intentionality as components of creative musical activity. In *Proceedings of the Suncoast Music Education Forum on Creativity* (pp. 93-104). Tampa: University of South Florida. (ERIC Document Reproduction Service No. ED380341).
- Lathom, W. (1972). A study of musical achievement of children in an economically depressed area. *Missouri Journal of Research in Music Education*. 3(1) 82-88.
- Legette, R. M. (2003) Music achievement causal attributions as perceived by elementary public school students. *Bulletin of the Council for Research in Music Education*, 155, 44-50
- Lehman, Paul R. (1968). The predictive measurement of musical success. *Journal of Research in Music Education*, 17(1), 16-31.

- Lenhoff, H. M. (2009). Soaking in the music. *Exceptional Parent*, 39(3), 40-45.
- May, E. (1961). Music for deaf children. *Music Educators Journal*, 47(3), 39-42.
- Missouri School for the Deaf, (2001, January). Benefits of music classes for students who are deaf or hard of hearing. *Deaf Education News*, Retrieved from <http://www.msd.k12.mo.us/rcd/DeafEdNewsArchive/January%20NL%202011.pdf>
- Murphy, M. M. (1957, October). Rhythmical responses of low grade and middle grade mental defectives to music therapy. *Journal of Clinical Psychology*, 13(4), 361-364.
- Pinkerton, F. W. (1963). Talent tests and their application to the public school instrumental music program. *Journal of Research in Music Education*, 11(1), 75-80.
- Pollatou, E., Karadimou, K. & Gerodimos, V. (2005). Gender differences in musical aptitude, rhythmic ability and motor performance in preschool children. *Early Child Development and Care*, 175(4), 361-369.
- Public Schools K12 (2010). Providence County Elementary Schools, Retrieved from <http://publicschools.k12.com/elementary-schools/ri/providence-county/>
- Robbins, C. & Robbins, C. (1980). *Music for the hearing impaired: A resource manual and curriculum guide*. Saint Louis, MO: Magnamusic-Baton.
- Richardson, C. P. (1990). Measuring musical giftedness. *Music Educators Journal*, 76(7), 40-45.
- Rileigh, K. K. & Odom, P.B. (1972). Perceptions of rhythms by subjects with normal and deficient hearing. *Developmental Psychology*, 7, 54-61.
- Rossing, T. D. (1992, March). Acoustics of drums. *Physics Today*, 40-47.
- Rossing, T. D. (1996). Modes of vibration and directivity of percussion instruments (Popular version of paper 3aAA2), *Acoustical Society of America 131<sup>st</sup> Meeting Lay Language Papers*. Retrieved from <http://www.acoustics.org/press/131st/lay10.html>
- Rutkowski, J. (1986). The effective of restricted song range on kindergarten children's use of singing voice and developmental music aptitude. (Doctoral Dissertation, State University of New York at Buffalo). *ProQuest Dissertations and Theses*, 413 p. <http://search.proquest.com/docview/303523594?accountid=28991>

- Rutkowski, J. (1996). The effectiveness of individual/small-group singing activities on kindergartners' use of singing voice and developmental music aptitude. *Journal of Research in Music Education*, 44(4), 353-368.
- Sheldon, D. A. (1997). The Illinois school for the deaf band: A historical perspective. *Journal of Research in Music Education*, 45, 580-600.
- Sherbon, J. W. (1975). The association of hearing acuity, diplacusis, and discrimination with music performance. *Journal of Research in Music Education*, 23(4) 249-257.
- Shibata, D. (2011, Nov. 28). Brains of deaf people rewire to "hear" music. *Science Daily*.
- Stellaccio, C. K. & McCarthy, M. (1999) Research in Early Childhood Music and Movement Education. (ERIC Document Reproduction Service No. ED436258).
- Taggart, C.C. (1989). The measurement and evaluation of music aptitudes and achievement. In D. L. Walters & C. C. Taggart (Eds.), *Readings in music learning theory* (pp. 45-53). Chicago: G. I. A. Publications.
- Taggart, C. C. (1994). A validity study of Audie: a test of music aptitude for 3-and-4-year-old children. *Bulletin of the Council for Research in Music Education*, 121, 42-54
- Terry, K. (2002). Body Music with Keith Terry, Part One (video recording) Keith Terry Productions.
- Terry, K. (2007). Body Music with Keith Terry, Part Two (video recording) Keith Terry Productions.
- Turner, W. W. & Bartlett, D. E. (1848). Music among the deaf and dumb. *American Annals of the Deaf and Dumb* (now the *American Annals of the Deaf*): 2(1), 1-6.
- Vettese, J. (1974). Instrumental lessons for deaf children. *Volta Review*, 76(4), 219-222.
- Walczyk, E. B. (1993). Music instruction and the hearing impaired. *Music Educators Journal* 80(1), 42-44.
- Walters, D. (1983). The relationship between personal tempo in primary-aged children and their ability to synchronize movement with music. (Ph.D dissertation, University of Michigan). *ProQuest Dissertations and Theses*, 171 p.  
<http://search.proquest.com/docview/303276095?accountid=28991>
- Warrener, J. J. (1985). Applying learning theory to musical development: Piaget and beyond. *Music Educators Journal*, 72(3), 22-27.



- Wecker, K. (1939). Music for totally deaf children. *Music Educators Journal* 25(6), 45-47.
- White, S. & Vanneman, A. (1999). Student musical activities and achievement in music: NAEP 1997 arts assessment. *U.S. Department of Education, Office of Educational Research and Improvement, NAEP Facts*. 4(1), 1-6.
- Wing, H. (1970). *Tests of musical ability and appreciation*. New York, NY: Cambridge University Press
- Zinar, R. (1987). *Music activities for special children*. West Nyack, NY: Parker.