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**EFFECTS OF PHYSICAL MOVEMENT IN RHYTHM INSTRUCTION IN EARLY
INSTRUMENTALIST DEVELOPMENT**

by
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A Thesis

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Department of Music
College of Fine and Performing Arts
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at
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Thesis Chair: Dr. Rick Dammers

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ABSTRACT

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Effects of Physical Movement in Rhythm Instruction in Early Instrumentalist Development
2013
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The focus of this study was to investigate if including physical movement in instruction improves instrumental music student's rhythmic abilities. Within the rhythmic instruction, the research study specifically focused on student's rhythmic ability and note reading improvements.

Participants in this study included instrumental music students in grades four, five, and six, in a middle-class school district (N=18). The control group was given four weeks of traditional rhythm instruction, with a traditional counting method. The experimental group was given rhythm instruction incorporating physical movement over a period of four weeks. Prior to the lessons, both the experimental and control groups were administered a five minute pre-test of basic rhythms, on sight, with an accompanying pulse (music), on one notated pitch. After four weeks of treatment, the subjects concluded the instruction by taking a post-test. The score improvement between the movement-based instruction and the traditional instruction was evaluated by three judges. There were no significant differences found between the experimental and control groups.

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CHAPTER 1

INTRODUCTION

Over the years, educational systems from all over the world have constantly evolved. Educators from many nations have sought out different methods and approaches to enhance the quality of education in their classrooms. To contribute to the range of musical learning in our schools, music educators have looked to many methods formulated by well-known leaders in music education pedagogy, such as Carl Orff, Zoltan Kodaly, Emiles-Jaques Dalcroze, and others. One of the major components of the pedagogical approaches developed by these pioneers has been that of physical movement.

Music educators generally use physical movement as a tool to teach specific musical concepts such as internalization of the beat, pulse, and musical expression. However, because movement can be defined and used differently among people in various cultures and societies, it is necessary to discuss how it can be applied in musical learning through: defining physical movement as it applies to music, exploring a variety of methods and approaches of physical movement in music education, and movement in a cultural context.

What is physical movement?

To specifically integrate physical movement into a musical context, it is imperative to understand and define movement in connection to music. Is movement merely an innate motor response due to activity or is it actual coordination of previously learned motor skills? In this

research investigation, two studies written by Jody Crollick and Leela Zion, will be used to properly define physical movement.

Physical movement, whether performed with small or large muscles, is initiated by a “sense” that is comprised of sensory nerves located within the muscles, tendons, and ligaments of the body (Zion, 1996). Physical movement in this context is treated as an innate activity or a natural movement that reacts without the process of thinking. Crollick terms this concept as kinesthesia. Kinesthesia is developed over time. As an individual repeats a movement he/she becomes more effective at completing that movement, which involves the combination of spatial and temporal awareness (Crollick, 2005). Because temporal awareness is strongly connected to concepts of rhythm, this term will be defined and further described why it is specifically important to movement within music.

Temporal awareness is defined as an awareness of the passage of time, and essential ingredient of pace, judgment and a sense of rhythm (Oxford Press Online Dictionary, 2005). Temporal awareness could otherwise be known as rhythmic perception. Rhythmic perception is the element essential to the development of internalization of beat/pulse in music learning. It is the body’s ability to coordinate movement in specific time (Zion, 1996).

In the study of rhythmic perception, Crollick (2005), investigates the influence of formal music training and significant athletic experience on rhythmic (temporal) perception. She found that subjects with music training and athletic abilities had a higher degree of rhythmic perception than, whereas, subjects with just music training, or just athletic abilities did not. Through the research, it can be seen that there is a significant connection between internalization of the rhythm and physical body movements. Combining physical movement and music training may enhance the quality of rhythm instruction.

Approaches of physical movement in music education

Noted leaders in music education, Carl Orff, Zoltan Kodaly, and Emiles-Jaques Dalcroze, and movement theorist Rudolf Laban, all saw the significance in trying to develop rhythmic internalization in their students. Although, each individual method was notably different within their approach in music education, they all used physical body movement as a means of developing an understanding of musical concepts, such as rhythm.

Carl Orff's methodology emphasizes that natural body expressions should be the foundation for movement before the actual instruction of dictated movement. He held that feeling precedes intellectual understanding (Thresher, 1964). He theorizes that the body is the most natural instrument and encourages that children use movement as a natural response or spontaneous innate reaction. Orff's methodology includes the uses of physical movement, and how it can be used in the form of storytelling, speech pattern, song, or repetitious rhythmic patterns using the body or played on instrument(s).

Zoltan Kodaly, a Hungarian musician and teacher, developed an approach to music in reaction to the lack of musical heritage and music literacy among his countrymen. (Kostorko, 1994) Although, his aim was to teach children how to read and write through singing, Kodaly's method's of chants, finger plays, and singing games, provided opportunities for rhythmic internalization, which laid the foundation for rhythmic learning while having involved in a musical experience. Because Kodaly's method demonstrates the necessity for students to focus on internalization of the beat to experience music, it leaves one to believe that rhythm is the central component of movement.

Swiss musician and educator/theorist-Emile-Jaques-Dalcroze was widely known for his methods of movement in music education. Dalcroze noticed that most teachers had placed

much emphasis on reading and/or notating music. He wanted to place value on music students being able to internally express and understand music before exercising external musical functions, such as composing and/or playing an instrument. With much displeasure with his student's poor musical expression, Dalcroze noticed that all their musical performances seemed to show weakness in rhythmic understanding (Juntunen, 2004). He took note of three types of performances: Arhythmic-the absence of rhythm and undefined movement; Errhythmic, the right notes and pitches but lack of feeling-“robotic playing”; Eurhythmics, playing the right pitches, and appealing sense of balance motion and rhythm (Phuthego, 2005). Dalcroze, states that musical rhythmic is the “art of establishing an equilibrium between sound and movement and the static silence” (Dalcroze,1917-1918). According to the Oxford English Dictionary (1978), ‘eurhythmics’ come from the Greek word, eurythmy, which refers to the “rhythmical order or movement; graceful proportion and carriage of the body’. (Juntunen, 2004, p. 1).

Similarities exist between the concept of kinesthesia and Dalcroze's methodology of eurhythmics. Both focus on the muscular sense of energy, time and space, and the importance of rhythmic responses. If rhythmic perception of kinesthesia can be improved with repetitive training over time, so could the internalization of the beat when applying movement in eurhythmics. Kosturko states, “In eurhythmics, all musical rhythms can be found in the natural rhythms of the body (Kosturko, 1994)”. Hence, kinesthesia and eurhythmics if developed and applied within individuals, can be used for improvement of natural rhythms and internal pulse.

Rudolf Laban(1879) methodology contributed specifically to movement instruction. Laban, felt that students need to express the energy of movement visually, physically, and internally. He taught that they must master many patterns of movement so that he can make the best use of them when performing through dancing, singing, chanting, and playing an

instrument,(Kosturko 1994). His methods have helped shape teaching of movement and the value of energy and motion being able to produce systematic body reactions.

Movement in a cultural context

In many African nations, children learn at a very young age to play polyrhythms on instruments, sing on pitch, and dance. They have a living tradition, practiced from time immemorial by rote and acquired through the process of enculturation (Phuthego, 2005). In Phuthego's research article of, *Teaching and Learning African Music and Jaques-Dalcroze's Eurhythmics*, he explores how musical performance in African societies develops the same skills that the Dalcroze approach aims to develop. In comparison to the traditional American classroom, he states that the unconventional setting of the African society, still achieves the same kind of musical training. (p. 6) Ethnomusicologist, John Blacking, in his studies of Venda (African) music (Campbell, 2000), found that music was intimately linked with the eurhythmic movement of its musicians, for Blacking noted, "Venda music is founded not on melody, but on a rhythmical stirring of the whole body of which singing is but one extension" (Campbell, 2000).

Purpose and Problem

The purpose of this study is to examine the efficacy of large motor movement when teaching rhythms in tempo to young instrumentalists. The use of movement has not been widely used in the instrumental music setting. Some uses of movement, such as foot tapping and clapping are utilized with instrumental instruction, but the application of large muscle movement is typically not utilized. Can instrumental music educators use movement to help teach and improve rhythmic concepts in an instrumental music class within continual warm-up exercises? Could movement instruction and exposing students to rhythmic music affect the

beginning instrumentalist positively? For the purpose of this study, I present the following research question:

Will subjects perform rhythms more accurately and on tempo when instructed by traditional methods of instruction or physical movement?

Summary

From these studies, it is demonstrated that there is a strong connection between rhythm and movement, which can be a useful tool in music instruction. Music educators over time have advocated the need to teach students movement to improve rhythmic ability and/or beat internalization. Through applying these theories in classrooms across the world, many music educators have found that movement can help develop and teach musical concepts to their students. In our society, movement is generally incorporated more in the general music class. Based upon Dalcroze's theory that musical instruments is just an extension of the body, leaves one to hypothesize that developing internal rhythm within the body, through physical movement, will improve rhythm and pulse when playing a musical instrument.

This study incorporated rhythm instruction within an instrumental music setting using both traditional means of instruction and physical movement. This investigator hypothesizes that physical movement will help increase instrumental music students rhythmic skills.

Chapter 2

Literature Review

Physical movement has become a necessary tool in the broad field of music education. Many methods and instruction of movement practices have been drawn from the research of many important music educators, theorists, and researchers. Emile-Dalcroze, are widely known among music educators for his movement-based teachings. However, a significant number of other individuals have conducted studies and provided research supporting that movement is fundamental to music training in the general music classroom, and even in the instrumental music setting.

Dalcroze emphasizes the importance of having music students develop what he calls eurhythmics. That is to “imbue the whole body and being with the gradations of all musical sounds” (Dalcroze, 1935, p. 140). In eurhythmics, movement in the body is a natural “sixth sense” that can be developed in the growing musician. It “controls the multiple qualities of movements” (Dalcroze, 1920/1965, p. 41). However, the use of eurhythmics is widely accepted but it is not a method, but more so an approach, an experience, or philosophy. (Juntunen & Westerlund, 2001)

Movement within eurhythmics is expressed with free-form spontaneity, creativity, and without choreography. A research-study done by Bowles (1998) reported the music preferences of elementary students. This study involved distributing a questionnaire regarding music classroom activities to 2,251 kindergarten through fifth-grade students. In the survey, the

students had to identify their favorite music related activity. The results showed that instrument playing was their number one favorite musical activity, and they also found that student's preferred creative movement over (instructed) dance within and across grades. The notion that movement should be approached naturally and not systematically is highlighted in the research of Metz. In her study, *Movement as a Musical Response among Preschool Children* (Metz, 1989), she studied the behavior of two, three, and four year old children responding to music. After setting up a series of forty-minute sessions, a portion of the results reported that "music-related movements increased when musical objectives were related to the natural movements of the child" (Metz, 1989, p. 56).

These studies suggest that the music educator should rely on natural body responses when using movement as a teaching tool for musical concepts such as rhythm instead of traditional approaches, such as the counting method. It seems reasonable to suggest that the traditional counting method is the most common way musicians break down rhythmic notation. For example, a measure of sixteenth notes in 4/4 time is counted: 1-e-an-da, 2 e-an-da, 3e-an-da, etc. According the results from a study performed by Groves (1969), *Rhythmic Training and It's Relationship to Synchronization of Motor-Rhythmic Responses*, children who were given two-30 minute lessons for 24-weeks of rhythm training, did not have any "significant difference in the ability to synchronize body movements with rhythmic stimuli between children who had and those who had not had rhythmic training" (Groves, 1969, p. 414). It is important that a music educator must rely on the natural responses of movement and not approach movement in music education as dance.

Similarly, in a study undertaken by Kosturko (1994), she found that systematic movement pedagogy and spontaneous movement has no significant difference between the

means of rhythmic aptitude and large muscle coordination. In this study, subjects were first tested by Gordon's *PMMA* aptitude-the rhythm sub-test. She also administered the *Weikart's Rhythmic Coordination Screening Test*. The first group of first-grade subjects was given spontaneous rhythmic instruction and the second group systematic movement instruction, based on Laban's theory of movement. After a series of movement sessions, the results were based upon the subjects' re-testing of the same movement given in the pre-test.

In examining movement and how it is used in music education, we can look to African cultures that use music and dance simultaneously. From birth, African children are constantly exposed to complex rhythms, singing, and movement. Their movement is a natural response to what has been modeled for them. In one particular study, Joseph (2005), exposed pre-music educators at the university level, to African indigenous music, and the traditions of music and movement. The students did not learn African music in the same manner they were instructed traditional European music styles, however, they experienced and learned musical concepts in African music by singing, moving and dancing. After evaluation of questionnaires and surveys from students, most of the subjects stated that they "learned more about rhythm through African music-in terms of beat, accent, meter, and duration" than their normal Euro-centric music and traditional western approach.(Joseph, 2005, p.4).

Rhythm training has been the main focus in movement instruction. It has been music educators' intention for beginning musicians to feel the beat. A study conducted by Crollick (2005) showed that trained musicians and athletes have a higher degree of rhythmic perception than those who do not have specific musical training and athletic experience. Rhythm was measured by small muscle movements such as tapping, and clapping. A study performed by Boyle (1970) showed that teaching rhythm through physical motor skills, such as tapping while

playing an instrument or clapping rhythms before playing a piece helped improved rhythmic accuracy more than traditional methods of teaching rhythms such as aurally speaking out the counts. These results were found by testing subjects' ability to read music at sight with administering a pre-test and post test. A similar study performed McCabe (2006), describes the effectiveness of movement instruction with beginning instrumentalists and measured by their ability to sight-read rhythm patterns. This study had subjects to participate in rhythm training for 18 weeks using foot tapping, clapping, and conducting gestures. The control group was not allowed to use any body movement or clapping to mark the beat and learn rhythms. Results showed that both groups scores increased from pre-test to post-test, but the experimental groups gains were significantly greater. This study is important in the fact that it shows that movement is an effective way to teach rhythm. However, one can see that test scores will improve over time with both types of instruction. Will it improve without either instruction over a period of time?

More research conducted by Bebeau (1982), showed that the traditional form of teaching rhythm such as the mathematical, splitting the beat, and subdivision, is not the only conventional method. This study yielded evidence of favoring the speech-cue method rather than the Kodaly and Orff traditional counting methods. By evidence of infant babble and speech, words are embedded and applied in the early stages in life, not rhythms. The findings of this study demonstrate that students can learn and possibly enhance their rhythmic abilities by associating rhythms with words or syllables.

In conclusion, from these studies, it can be inferred that movement is a necessary part of learning music in all cultures and societies. Most studies have supported the notion that movement has a positive effect on the developing musician, yet movement has been more

useful with developing ones sense of time and space through the concepts of rhythm and pulse. Most studies, such as the McCabe study, has shown that rhythm reading, like language reading, tends to get better over time. Movement-based teaching however, has not shown a connection with the type of music being a factor in the development of rhythm and pulse. Phuthego's study presents the facts that African children are able to distinguish highly complex rhythms and movement through their traditional "unconventional" learning settings.

Summary

Could it be found that students in a Western-style classroom setting could use African music and movement to enhance and improve the rhythm and pulse in early instrumentalist? This study is designed to find significant increases in rhythm and pulse with the application of traditional African methods over Western traditional counting method. This study also seeks to find if rhythm reading simply increases over time during regular instrumental music instruction without focused rhythm training.

Chapter 3

Method and Design

Overview

The focus of this study is to investigate if large motor physical movement in rhythm instruction improves instrumental students' performance of notated rhythms. In this chapter, I have given a description of the steps taken toward the application of movement in rhythm instruction. This chapter will be broken down into a description of the selected sample, procedure, measurements, evaluation of data, and a brief summary.

Sample

This sample was taken from various instrumental music students from grades four, five, and six, from a school district in the eastern region of the United States. The children were largely from a white, middle-class socio-economic population. Two out of the three elementary schools in this district were selected by the investigator to participate in the research project. The groups were broken down into an experimental group and a control group. Students from one school were selected as the experimental group ($n=9$) while students from the other were selected as the control group ($n=9$). Data for each student were labeled by an assigned number to ensure confidentiality. The assigned number was composed of the each subject's initials, month and day of birth. A list was formulated to record subject's name, assigned code, audio recording number, and subject's grade level to accurately identify the different degrees of training of each participant. All the participating instrumental music students were instructed in a group setting, regardless of age or instrument.

Procedure

Both the experimental and control groups were administered a five minute pre-test of basic rhythms (see appendix A), on sight, with an accompanying music or beat from metronome, on one notated pitch. The beat was set to $mm=69$. Each subject was given a four beat count off for each rhythm example. The pre-test was administered individually during the group instrumental music lesson during the school day. The data were recorded directly on a laptop through a digital voice recorder.

Following the pre-test, the control group was given four weeks of traditional rhythm instruction, with a traditional counting method. They performed various exercises that required speaking the counts of the rhythms and playing the same rhythm examples on their instrument. Students performed exercises of the basic rhythms that were on the pre-test. Subjects were given practice exercises combining the use of whole, half, quarter, eighths, and dotted- quarter notes. For example, the students would count eighth notes such as: 1 and 2 and 3 and 4 and, etc. Subjects were allowed to use minimal movement, such as clapping and stomping the eighth notes while speaking them aloud. Subjects were also permitted to tap a foot in order to maintain beat, but were not forced or encourage to. Exercises were performed with music accompaniment from CD track, metronome, and/or a drum beat played by the instructor. There were four instructional sessions that ran for thirty minutes after school. These sessions were an addition to their regular band instruction.

In the experimental group, the subjects were given four weeks of rhythm instruction using physical movement accompanied by a CD of percussion music, metronome, and/or a drum beat played by the instructor. The music accompaniment was African-like percussion that gave a strong downbeat, which created an easier implementation for rhythmic movement. This

instruction focused on learning varied rhythms from the pre-test with the body; while transferring exercises on their instruments at the end of each session. Like the traditional counting instruction, the rhythm exercises given in this instruction consisted of basic variations of combining the use of whole, half, quarter, eighths, and dotted- quarter notes. A portion of the first session consisted of movement exercises that focused on creating body and space awareness. To establish a comfortable environment for movement, subjects used exploratory independent body movements to link rhythms within the body. Motor movements such as head nods, walking in the space around the room, and swaying 'like a flower', were used to free physical body movement when utilizing expressions of the rhythms. The movement varied between large and small muscle movement. Subjects were permitted to use small muscle movements, such as clapping or tapping, as a natural body response to music. In week two through four, subjects explored body movements as a medium to express rhythms. They were given the opportunity to demonstrate their own individual body movements, and to also use other physical movements initiated by the instructor. These body movements were general but specifically chosen based upon its effectiveness for demonstration of rhythms. Marching and stomping movements were used mostly for quarter notes and/or downbeats, while clapping was used for smaller subdivisions and/or upbeats. The focus rhythms for each lesson, such as a dotted quarter note, were visually shown on a poster board. The notated rhythms were played on their instruments at the end of each session on a single pitch.

Both groups were given a post-test (Appendix B) after the last session of the four weeks of instruction. The post- test was slightly different from the pre-test in that it consisted of the same simple rhythms but different combinations. The post-test was administered individually exactly as the pre-test. The tests were recorded on a digital recorder.

Measurement

Both the pre- and post-tests consisted of twenty-four measures that were broken down into six, four-measure rhythm examples. Every student was recorded playing the rhythms, on a single pitch, on their instrument. These recordings were individually evaluated by all three judges. Each rhythm that was played incorrectly, per measure, was marked as an error. The highest possible error score was twenty-four and the lowest was zero. Each score was judged by three judges and recorded on a grading scale adapted from the Watkins-Farnum Performance Score Summary Form A. The three judges consisted of the investigator- and two other professional musicians. Judge number two was a choir director and voice coach. She received her formal education at a four-year university in music. She was a vocal coach for ten years. Judge number three was a secondary choral educator, who was teaching grade 9-12. He received his formal education at a four- year university and also held a graduate degree in music education. The judges were given a list of rules (Appendix C) that introduced the research and a listening example. Each judge then individually listened to the tests and evaluated the pre- and post-test recording.

Summary

In conclusion, this chapter has shown the method and design used to investigate if movement positively affects instrumental students in rhythm instruction. Through these procedures, the investigator hoped to see if incorporating physical movement within an instrumental music class could help improve student's rhythmic ability and note reading skills.

Chapter 4

Results

Introduction

In this chapter, the results of the study will be presented in two sections: reliability, and mean, standard deviation and change. These sections will describe the findings, scores, and details of the experiment addressing the research question. This chapter will close with a brief summary.

Reliability

Three judges participated in judging the rhythms for the pre-test and post-test. The judges were initially given a list of rules and one listening example. The judge's individual pre-test and post-test scores were highly reliable with correlation of $r=.996$ between each judge. ($p<.001$). These scores indicate that all pre test scores were very consistent among the judges. The post-test ratings do indicate the difference of .005 between the judges; however the post-test correlations were still very strong.

Table 1

Judges Correlation Post-test scores

	Judge 1	Judge2	Judge3
Judge 1	-	.995	.995
Judge 2	-	-	.990
Judge 3	-	-	-

Means, Standard Deviation, Change

In total, eighteen subjects participated in the research study. Both the experimental and control group were the same size ($n=9$). The highest each subject could score on the pre-test and post-test was a twenty-four and a zero being the lowest possible score. On the post-test, the control group had an average of 9.5 ($SD=3.08$), and a 9.4 ($SD=3.35$) for the experimental group. The small mean difference of .5, indicated that there was not a statistically significant difference between the change scores of two groups. The experimental group change score of 2.7 was slightly higher than the control group's mean score of 2.2 after the treatment, but still not statistically significant.

Table 2

Change score from mean average after treatment for movement and traditional group

	Mean	Standard Deviation	Change
Control	9.5	3.08	2.2
Experimental	9.4	3.35	2.7

The two point change score shows that each group increased slightly, however both scores illustrate that there was no significant change found after the treatment.

The scores for both groups resulted with an increase in scores by approximately two points each. The test results do indicate that some subject's scores remain consistent between the pre and post-test. Yet, it must be noted that these students either scored a perfect score or very close to perfect score.

Summary

In conclusion, the reports of the reliability, and mean, standard deviation and change demonstrate that slight changes occurred after the treatment was applied. The results for each of the variables increased a little over two points, however, no statistically significant differences were found.

Chapter 5

Discussion

Introduction

The purpose of this study was to examine the improvement of rhythm and pulse when incorporating movement while teaching rhythms to beginning instrumentalist. The following research question of this study was explored:

Will subjects perform rhythms more accurately and on tempo when instructed by traditional methods of instruction or physical movement?

This chapter will discuss the results of the study and why the findings can be effective when implemented in the field of music education. With the implementations, I will also list some recommendations for further studies, and conclude the chapter with a brief summary.

Results

In discussing part of the research question, “Will subjects perform rhythms more accurately and on tempo when instructed by traditional methods of instruction or physical movement?”, illustrates a small change of 2.7 for the mean difference score in the experimental group. In comparing the change scores between the two groups, the results from the test can not specify if the student’s ability to play on tempo increased as a result of the treatment. It could be speculated that the students were more comfortable with reading and playing the rhythms after the four weeks of treatment that the tempo naturally improved. As an observer, it should be noted that the students who tapped their foot while playing the

rhythms scored better and played more accurately on the beat. The tapping of the foot occurred among individuals in both groups.

In addition, the traditionally instructed subjects' scores indicated improvement based on the 2.2 increase. Both results from the experimental and control group show that implementing consistent rhythm training to beginning instrumentalist, whether using traditional or movement based instruction, can increase rhythmic learning and help subjects to play on tempo. Both forms of instruction resulted with improvement and subjects did not get worse. However, the difference between the control and experimental group was so small that it does not indicate which method is more effective.

Limitations

The research study did experience two limitations that could have contributed to the failure in supporting which method was more effective.

The study experienced a ceiling effect because of the high scores that the subjects received on the pre-test. It was difficult to test improvement on post- test when subjects received perfect scores prior to the treatment.

Experimental mortality was another limitation in the research study. This was caused by a decline of subjects during the four weeks of treatment. Various events such as, "take your child to work day"-and girl scouts trips, decreased the number of participants greatly.

Implementations and Recommendations

It is my recommendation for this study to be repeated with an increased length of the treatment period and to add more subjects. Subjects, being school-age children, often have many factors that can take them out of an instructional session. Adding more weeks could have permitted more children to be involved without skipping instructional sessions. Also, larger group populations will increase the power of statistical procedures.

I would also suggest that in further studies that grade levels will be individually evaluated. The score difference between the fourth grade students and sixth grade subjects was noticed. Subjects in the higher grades made fewer errors on the test. For example, the control group had one sixth grade student, while the experimental group had two. Uneven distribution of grades could have contributed to the slight increase within the experimental group.

Although the results did not indicate that movement-based teaching is more effective than traditional rhythm based instruction, the experience of teaching rhythm using movement was very stimulating, exciting, and even different for the students. The control group children seemingly were more distracted while performing the activities, whereas the movement students had a tendency to be more attentive. This occurred especially while subject's learned new movements in addition to repeating old rhythms during the exercises.

This study did not support the suggestion that either method was more effective. However, incorporating movement does not take away and possibly can benefit an instrumental music program. Directors may want to take a portion of their rehearsal to teach new rhythms at various tempos to help students internalize the pulse within the group and not just individually during lessons. Small movements such as foot tapping while playing could be a useful tool for instrumentalist. Some band directors disagree with foot tapping, however, foot-tapping or any movement for that matter should be

the response of how the student internalizes the beat. Perhaps teaching small movements with or without playing can be incorporated in band practice. Movement could be a secondary tool, if not a primary way of keeping a steady beat, which may help improve the ensemble's pulse or tempo.

Summary

Teaching rhythm in its usual traditional manner does not indicate lower rhythm reading or unsteady pulse; however, using untraditional methods to teach rhythm may be more appealing to younger instrumentalist or a music educator seeking to improve their ensemble's tempo and rhythm reading. This research study did not support movement to be a more effective way to teach rhythms and steady tempo, but a teaching tool that can be useful to all music educators. Further study is encouraged on this subject.

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Appendix A

Judges,

Thank you for taking your time to participate in my research project. You have been chosen to evaluate rhythm and tempo accuracy played by student subjects on a digital voice recorder. Please remember that each subject is a beginner instrumentalist, so minor mistakes must be taken into consideration. Below, I will list some of these considerations to ensure evaluation consistency among evaluators.

Each subject was given a pre and post-test, which was recorded on a digital voice recorder. There are six, four measure examples, of rhythms in the pre and post-test. There are a total of 24 measures in each test. Please listen to each example at least two times through. Carefully, listen for errors based on :

1. Incorrect rhythm
2. Correct rhythms placed on the wrong beat (wrong time). Ex.1/tr.1

Here are some guidelines for judging errors:

1. Please ignore pitch problems and sound production problems; only if the measure is played correctly. Ex.1/tr.2
2. Do not mark measure wrong if subject is unsure when to end and continues playing the rhythm. Ex.1/tr.3
3. Slight tempo errors are excused if student eventually gets back on the beat and plays the right rhythms.
4. Do not mark wrong if there are articulation differences occurring.Ex.4/tr.4
5. If student misses a beat in one measure and continues to the next measure on the wrong beat, then only mark the first measure wrong not the next measure, provided that they play the rhythm correctly. Ex.3/tr. 4

You will be given a pre-test and post-test for each individual. Please make a slash through the measure that is played incorrectly (I advise you to use a pencil). Check for accuracy on the second listening. Count the total number of errors made out of the twenty-four measures and write it in the box on top of the test.

Each participant of the studying will be identified by the recording number and code name. Please write the recording number and/or the code name at the top of each sheet.

Thank you for your time and help.

Jessica Horne

