AN EXAMINATION OF STUDENTS' ABILITY TO TRANSFER RHYTHMIC CONCEPTS TAUGHT IN ELEMENTARY GENERAL MUSIC CLASSES TO MIDDLE SCHOOL, BEGINNING BAND INSTRUCTION

THESIS

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ABSTRACT

The present study investigated students' ability to transfer rhythmic skills learned in elementary general music classes to a beginning band setting. Specifically, students' rhythmic reading skills and their ability to maintain a steady pulse were examined. Other variables of interest included differences in rhythmic accuracy among fifth grade students choosing to enroll in band, orchestra or choir as sixth graders, and accuracy of students who had taken private lessons versus those who had not. Rhythmic accuracy based on the mode of response chosen by the subjects (i.e., speaking, clapping, counting) was considered, as well as subjects' accuracy on rhythms displayed in stick notation versus traditional notehead notation.

Subjects included fifth and sixth grade music students (N= 39) from a suburban school district in central Ohio who completed a dependent measure designed by the researcher, consisting of 16 rhythm patterns, eight using stick notation and the identical eight patterns using traditional notehead notation. Fifth graders scored significantly higher than sixth graders in regard to rhythmic accuracy (p < .001) and ability to maintain a steady pulse (p < .05). Significant differences were also evidenced between subjects based on mode of performance (p < .05) with those speaking Kodály syllables scoring significantly higher than those who clapped. Finally, a strong, positive correlation was found between steady pulse and rhythmic accuracy (p < .01).
Results are discussed according to principles of transfer of learning. Suggestions for improvements in teaching for transfer of rhythmic skills during the transition from elementary general music to beginning band are provided.
Dedicated to my parents, my inspiration in music education.
ACKNOWLEDGMENTS

This project was inspired by a conversation with my mother, whose passion for improving the music education of her students was immeasurable during her thirty years as a music teacher. I wish to express heartfelt gratitude to my parents, my foremost music educators. Their love of music and their belief that music is vital to life has guided me throughout my own life, and for that I thank them.

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CHAPTER 1

INTRODUCTION

Rhythm is fundamental to music-making, and is therefore a skill essential to the establishment of independent young musicians. According to Cooper and Meyer (1960, p.1), “To study rhythm is to study all of music. Rhythm both organizes, and is itself organized by, all the elements which create and shape musical processes.” Because these elements of rhythm are organized in a related, temporal fashion, a contingent logical/mathematical relationship is evidenced among rhythmic values. Consequently, this logical/mathematical relationship is often the basis on which rhythm is taught. While some approaches to rhythmic acquisition begin with shorter note durations leading to longer, others begin with longer note durations and break these down mathematically in succession.

In examining curricular approaches to teaching rhythm, techniques used in instruction often vary dramatically based on the grade level at which rhythmic concepts are being taught. For example, methods used to teach rhythmic concepts to elementary students often include the acquisition of rhythm patterns through syllables (e.g., the Kodály system) or through words (e.g., the Orff approach). Further, Edwin Gordon devised an approach that also uses a syllabic system, and relies upon the student’s ability to read rhythms as a series of patterns, just as words are read from a page. In comparison
to the syllabic approach to rhythmic learning usually employed in elementary general music classes, students’ rhythmic instruction in performance-based ensembles (e.g., band, choir, orchestra), which usually begin in fifth grade or thereafter, may be quite different. The approach used to teach rhythmic reading in these performance-based ensembles is often a number system, in which each note corresponds to a beat, multiple beats, or a division of the beat based on placement within the measure. Most method books intended for use by beginning bands (e.g., *Essential Elements 2000* by Lautzenheiser et al.; *Standard of Excellence* by Pearson; *Accent on Achievement* by O’Reilly and Williams), are reflective of this approach to rhythmic reading, in which students are presented with notation and the corresponding counting system written underneath (see Figure 1):

![Rhythmic Notation Example](image)

1 & 2 & 3 & 4 &

*Figure 1. Example of rhythmic counting system as found in beginning band method books.*

Though not all method books use this system (e.g., *Jump Right In*, by Grunow, Gordon, Azzara and Martin; *Do It!* by Froseth), the most prevalent method books for beginning band instruction employ this type of approach.

Because students are newly encumbered with a musical instrument and do not have the necessary technical skills to play difficult rhythms, these method books do not introduce rhythms of a commensurate level of difficulty as those presented using the speech cue approaches listed above. Thus, although students have already achieved mastery of complex rhythms (e.g., sixteenth note and eighth-sixteenth combinations)
based on the dictates of the elementary general music curriculum, unless students are exposed to more difficult rhythms in another context, they will likely not perform such complex rhythms until the second year of band or later. If students are not given ample opportunity for repetitive exposure to and practice of these rhythms in various contexts, it is unlikely that they will transfer these skills after a period of latency (Gick & Holyoak, 1987).

Need for the Study

The disparity between the difficulty of rhythms prescribed by the Kodály, Orff, and Gordon approaches during elementary school and those presented in beginning band method books illustrates a philosophical and pragmatic rift. Students in elementary school may and often do become very competent readers of complex rhythms, but often using one of the aforementioned speech cue approaches. Upon entering a beginning band program, these students are oftentimes presented with an entirely different approach to rhythmic reading, and will likely not experience rhythms of the same difficulty even upon completion of the first band method book. This lack of practice in reading difficult rhythms, coupled with a lack of transfer of learned skills, may result in the subsequent necessary re-teaching of material by the instrumental music teacher in later years, as previously learned skills atrophy over time.

Gick and Holyoak (1987), in addressing ways to maximize transfer of learning, cite a need for similar concepts to be taught in similar ways, using a set of general principles that apply to the broad concepts. Relative to the present inquiry, if rhythms are taught using one set of principles at the elementary grades, and beginning band teachers
do not use these same principles, students are unlikely to transfer their previous knowledge to the situation in which they have instruments. Therefore, it is crucial to determine whether this transfer is taking place in the transition from elementary general music to beginning band.

Extant research in rhythmic teaching and learning largely focuses on the superiority of one syllabic system or procedural approach over others, yet very little research exists on the degree to which transfer occurs among methods. The specific transition from elementary to middle school is not addressed in the existing literature, even though this transition represents both a philosophical and pragmatic shift in practice. Further, studies that investigate transfer of learning relative to musical concepts typically evaluate students over a relatively short period of time, so the role of long-term transfer is not known. Therefore, a need exists for longitudinal and cross-sectional data that investigates the role of transfer of learning during this crucial transition.

**Purpose of the Study**

The primary purpose of the present study was to determine whether students transfer rhythmic reading skills taught in elementary general music to beginning band instruction. In an attempt to address all areas of rhythmic acuity, subjects were assessed based on their accurate performance of rhythmic patterns as well as their ability to maintain a steady pulse. Other variables of interest included differences in rhythmic accuracy among students entering band, orchestra or choir, and accuracy of students who had taken private lessons versus those who had not. Further, rhythmic accuracy based on students’ chosen mode of performance was also considered, as well as their accuracy on
rhythms displayed in stick notation versus traditional notehead notation. By investigating this, it is hoped that teachers of general music at the elementary level and teachers of first year performance-based ensembles will find ways to collaborate in order to design instructional tasks that will actively teach transfer. Specifically, the study sought to answer the following questions:

1. Are there significant differences between fifth and sixth grade students regarding their ability to perform rhythm patterns equivalent in difficulty to those taught in elementary general music?

2. Are there significant differences in rhythmic performance among fifth grade students who intend to join band, orchestra, or choir in sixth grade?

3. Are there significant differences in rhythmic performance based upon subjects’ chosen response mode (i.e., clapping, counting, saying)?

4. Are there significant differences in rhythmic performances based on the use of stick notation versus traditional notation?

5. Are there significant differences in the rhythmic performances of students who have had private lessons on an instrument versus those who have not?

6. Are there significant differences between the ability of fifth and sixth grade students in their ability to maintain a steady pulse while performing rhythm patterns?

7. Is there a correlation between steady pulse and rhythmic accuracy?
Definition of Terms

The following operational definitions were used in the study:

Transfer of Learning: The performance of new skills and acquisition of new knowledge is affected by previously-learned skills and knowledge (Cormier & Hagman, 1987).

Speech cue approach (also referred to as simplified speech cue approach): One of the word-based or syllabic systems associated with rhythmic reading (Bebeau, 1982).

Stick notation: Rhythmic notation associated with the Kodály approach to rhythmic learning, in which notes are represented by sticks only, with no use of noteheads (see Figure 2).

\[ \frac{3}{4} \]

Figure 2. Example of stick notation.

Traditional notehead notation: Most common form of musical notation, in which notes are represented by sticks and noteheads appropriate to the note’s duration (see Figure 3).

\[ \frac{3}{4} \]

Figure 3. Example of traditional notehead notation.
Limitations

The present study was limited by the following:

1. The study employed a cross-sectional, rather than a longitudinal design.
   Therefore, similar groups of students are studied, but differences may exist in
   the pre-existing groups.

2. Subjects in both schools studied were instructed using only the Kodály
   approach to rhythmic reading. Thus, the results may not be generalizable to
   populations using other approaches.

3. Subjects were fifth and sixth grade students in one suburban school district in
   Ohio. As will be discussed further in chapter three, the district is found close
   to a growing metropolitan area, and is itself a wealthy and growing district.
CHAPTER 2
SURVEY OF LITERATURE

Elementary general music teachers often use approaches to teaching rhythm that do not rely solely on counting notation using numbers, but rather use syllabic systems such as those developed by Kodály, Orff, or Gordon. These approaches often begin by teaching students notes of relatively short duration, most often the quarter note. In beginning band and orchestra, teachers generally use one of a variety of available beginning method books (e.g., *Essential Elements 2000*, *Standard of Excellence*, *Accent on Achievement*, etc.). These method books approach rhythm from the traditional number system, in which students are taught to count rhythms, often from rhythms of longer duration before shorter durations. Because band courses often represent a logical extension of the music curriculum from elementary school into middle school, it is necessary to determine the extent to which rhythmic learning transfers from one situation to the next. By understanding this, a more seamless transition from the elementary grades to the middle school grades may be ensured. The primary purpose of the present study is to determine whether students transfer rhythmic reading skills taught in elementary general music to beginning band instruction.

The following survey of literature summarizes the aforementioned approaches to rhythmic learning, and examines the research that relates to the advantages and
disadvantages of each of these approaches. In addition, the scope and sequence of
rhythms presented in elementary basal series and the beginning instrumental method
book used by the middle school represented in the study will be examined. Finally, the
topic of transfer of learning and its relation to music learning will be discussed. The
present study attempts to augment the extant body of research through further
investigation of the role of transfer, specifically in the area of rhythmic reading.

Approaches to Rhythmic Learning

Bebeau (1982) classified the approaches to rhythmic learning into two categories:
the traditional method and simplified cue methods. The traditional method refers to the
counting method, which relies heavily on theoretical knowledge of note lengths and the
mathematical relationship between notes of different lengths. Students who are taught
rhythms using the traditional method must employ processes of decoding each time they
are presented with a rhythm. The simplified cue methods to which Bebeau (1982) refers
encompass approaches that encourage rhythmic learning through syllables or words,
rather than numbers. The Kodály, Orff, and Gordon approaches to rhythmic learning are
perhaps the most prevalent simplified cue methods. Each of these methods is based on
the premise that children recognize rhythm patterns, and thus each method relies on
syllables or words that label such patterns with consistency.

Traditional System

The traditional system of teaching rhythm, according to Bebeau (1982), refers to
the approach in which students are taught the theoretical, mathematical relationships that
underlie rhythm. Emphasis is placed on identifying symbols and defining their respective meanings. Choksy (1988) characterizes the traditional approach as a “subject-logic approach” (p.11), in which organization of content occurs in a top down manner. The traditional approach often begins with the introduction of the whole note, and subsequent divisions of the whole note. Students are instructed as to how note durations are related, and how many mathematical beats each receives in a given meter. This approach is characterized by the use of counting to perform rhythms (e.g., 1 & 2-e-&-a). Using this counting system, rhythms are spoken using numbers corresponding to their placement within a given measure; thus, two eighth notes on beat two would be spoken differently than would two eighth notes on beat four. Therefore, students must have a firm understanding of the concept of meter if they are to count rhythms consisting of more than one beat successfully.

Critiques of this approach cite the lack of consideration for child development as a significant factor because children are naturally mobile, and a sustained whole note is not representative of their natural walking, skipping, and running motions (Choksy, 1988). Further, reading rhythm patterns using the traditional approach requires a rather complex series of steps, including the visual identification of the meter signature as well as the type and name of symbol that represents one beat in the meter. Additionally, students must demonstrate understanding of the various note durations by sight, and must create a steady beat before performing the given rhythm in that tempo (Bebeau, 1982). Though Colley (1987) asserts that most music educators find this approach “insufficient
for conveying the durational relationships implied by the visual symbols” (p.221), this system of counting is widely accepted and used in secondary and collegiate level performance-based ensembles.

**Kodály**

Zoltán Kodály (1882-1967) was a prominent Hungarian composer and music educator. Kodály spent much of his career compiling and categorizing Hungarian folk music, and his belief that this music was vital to ensuring the longevity of Hungarian culture inspired his views regarding music education. In an effort to increase the level of music literacy in his country, and specifically knowledge of Hungarian national music, he developed an approach to music education rooted in folk music of Hungary as well as art music suitable for children (Sadie, 1980). His approach was also deeply rooted in choral education and the development of children’s singing voices. Though Kodály’s approach was conceived out of a desire to perpetuate the music indigenous to Hungary, the approach has been adapted to suit music education in the present day.

Using Kodály’s approach, music learning is focused on the natural development of the child, as opposed to the traditional numeric system, which Choksy (1988) believes is not reflective of a child’s developmental processes. Thus, beat competency is the first rhythmic skill that children must develop. Rhythms are equated to children’s movements; walking notes refer to quarter notes, and running notes refer to eighth notes (Choksy, 1988). Kodály’s approach emphasizes learning music through experience. Children participate in singing folk songs and playing games associated with those songs. Through these activities, children develop the ability to demonstrate steady beat and an
understanding of long note durations versus short note durations. Note durations are
taught based on their relationship to the beat; quarter notes are described as having “one
sound on a beat”, and eighth notes have “two sounds on a beat” (Choksy, 1988, p.36).
Students trained using the ideas of Kodály use a system of rhythm syllables, in which
syllables correspond to note duration. For example, quarter notes are spoken as ‘ta’, and
two eighth notes are spoken as ‘ti-ti’. Students are introduced to notation immediately
upon the introduction of a new rhythmic pattern. Thus, reading and notating are
intertwined processes from the beginning of rhythmic instruction in a Kodály-based
curriculum. The notation used is stick notation, which refers to notation without
noteheads (see definition of terms, chapter 1). Students should not only see a visual
representation of the rhythm, but should also be able to write the rhythms themselves.

According to Choksy (1988), the first rhythms introduced should be two and four
beat rhythms in duple meter. By the end of first grade, students should be familiar with
rhythms comprised of quarter notes, quarter rests and two eighth notes. These rhythmic
patterns are commonly found in the simple songs, chants, and games that are often a
natural part of childhood; therefore, children have experienced most of these rhythm
patterns prior to being introduced to the visual representation of the pattern. Emphasis is
placed on these patterns, rather than on individual notes, as Kodály believed that music
was composed of these patterns, not notes which are read individually. Students should
learn increasingly difficult rhythms, and by fifth and sixth grade, students should be able
to read, write and perform patterns using quarter notes, eighth notes, syncopation,
sixteenth and eighth-sixteenth combinations, and dotted-eighth sixteenth note rhythms
with accuracy (Choksy, 1988).
Kodály’s approach to rhythmic learning, with its emphasis on students’ natural development, utilizes a natural progression of rhythm pattern acquisition based on patterns found in familiar chants and folk songs. The use of that which is familiar and integral to children’s lives is central to Kodály’s goal of producing “a people to whom music was not a way to make a living but a way of life” (Choksy, 1988, p.11).

Orff

Carl Orff (1895-1982) was a composer and teacher in Munich at the Günterschule, a school focused on movement, rhythm, and dance training. According to Sadie (1980), Orff was most interested in what he called, “total theatre”; that is, “where music, words and movement might engage together in producing an overwhelming effect” (p. 707). This view undoubtedly contributed to the formulation of his approach to music education. Orff experimented to find the most effective techniques for music education, and realized that his students, many of whom had no previous musical training, experienced a great deal of success when music was approached through their natural processes of speech and movement. Orff called his approach “elemental music” (Warner, 1991, p.2). In addition to an emphasis on speech and movement, the music composed and subsequently used by Orff was simple. His body of work for children is collectively known as Schulwerk. Like Kodály, Orff’s approach was conceived with specific goals based upon the beliefs about children’s development and the emphasis placed on movement during the time period in which he taught. Present-day applications of the Orff approach utilize his ideas in ways that are reflective of current knowledge of child development, as follows.
Orff's approach to music education stresses the acquisition of musical skills through a sequence that commences with what he viewed as the child's natural response to music. He observed that children experience music through the simultaneous modes of movement and speech. Orff believed that rhythm was the central element in music and that children respond to rhythm very naturally, especially through speech. Thus, the rhythm patterns taught using the Orff approach are derived directly from children's speech patterns. Students' names, familiar words, names of geographic locations, playground chants, nursery rhymes, and other short phrases have a natural rhythm in which each syllable corresponds to a given note value. Students first speak these patterns, and later progress to performing the patterns through movement and body percussion, followed by playing instruments and singing. In this way, rhythm is first isolated as a musical concept, and when students have achieved a degree of mastery, the concept is integrated with other musical concepts such as melody and form.

Formal rhythmic learning using the Orff approach begins using what Kleetman (1970) refers to as "rhythmic building bricks" (p. 18), or rhythms consisting of quarter notes, eighth notes, and half notes, in one to two measures in 2/4 time. Students speak these rhythms using familiar words, and it is desirable for teachers to use the same words each time a particular pattern is spoken in order to develop consistency (Kleetman, 1970). After students are able to speak these rhythms using familiar names or phrases of nursery rhymes, they perform them by clapping, snapping, stamping, or patschen (i.e., body percussion). When students correctly perform the patterns using the aforementioned types of body percussion, they may perform them on the special group of barred instruments developed by Orff. Notation is introduced when "the association of word and rhythm is
quite secure" (Kleetman, 1970, p.25). Stick notation is often used with Orff training when rhythms are read without a melodic component. However, due to the emphasis on playing melodic instruments, notehead notation is utilized as well. As children progress in their ability to read and notate familiar patterns, word association is eliminated.

According to Steen (1992), the primary competency to be taught in kindergarten is finding and demonstrating the steady beat, or pulse in music. This occurs through imitation first, and then through the modes of speech and movement. Students also experience various meters at this level, but are not taught the theoretical background of meter. Additionally, students begin to respond to note values that are longer than one beat, as well as to silent beats. Finally, students begin to experience the difference between the pulse and the word level in kindergarten, though they do not yet read or notate patterns using word rhythm. Beginning in first grade, it is suggested by Steen (1992) that students should begin to read and take dictation of rhythms consisting of quarter notes, eighth notes, and quarter rests. The curriculum would continue to incorporate increasingly complex rhythms throughout the elementary grades. Steen (1992) recommends that students in fifth and sixth grades should be able to perform, read, and write sixteenth note-eighth note combinations, as well as dotted eighth-sixteenth rhythms, and patterns in 6/8 meter.

Thus, using an Orff approach to rhythmic learning, rhythms are initially learned primarily through imitation and, once mastered, are transferred to notational representation. When notation is used, students are taught the relationship of various note values to the underlying pulse, rather than the number of beats each note gets, as is true using a traditional system of rhythmic acquisition.
Gordon

Edwin Gordon's approach stems from the idea that children learn music through a series of rhythmic and tonal patterns, and that they acquire these patterns much as they acquire language as infants. He proposed that the ability to read rhythm patterns is predicated largely on the ability to hear rhythms as patterns, rather than as individual notes. His music learning theory ties these beliefs together, resulting in a theory explaining how rhythms are learned, and therefore how they are, in Gordon's opinion, taught most effectively (Gordon, 1997).

In *Learning Sequences in Music* (1997), Gordon discusses the importance of choosing a rhythmic solfege system that is "based on beat functions and not on time-value names of notes" (p. 81). For example, rhythmic solfege systems often assign one sound to a quarter note, regardless of meter or tempo. Gordon, however, asserts that macrobeats should be assigned a syllable, while microbeats should be assigned a different syllable, and so on. This type of a system enables students to understand how rhythms function in context, rather than in isolation. Further, Gordon stresses that a counting system is not necessary. For Gordon, the traditional counting system which is so often used in music classrooms is confusing for students, who do not always understand the reasoning behind the numbers. Using a number system requires that a student have significant theoretical knowledge of note values, time signatures and notation in general. Gordon argues that this approach is backwards, and that students instead must audiate rhythm before concerning themselves with the process of notation. Consequently, Gordon uses a rhythmic solfege system based on beat function. It is not necessary to delineate
each syllable used, as Gordon asserts that the actual syllables used make little difference, as long as they are based on beat function.

Unlike the traditional numeric approach to rhythmic learning, Gordon believes the final level of learning should be theoretical understanding. This is often the level with which many teachers begin. For example, students are taught how many beats a quarter note gets and what 6/8 time signature means. Gordon (1997) argues, however, that this should be the last thing students learn rather than the first. He further asserts that students who do not have this theoretical understanding “can nevertheless intelligently audiate, listen to, perform, read, write, create, and improvise music” (p. 133). Upon acquiring all the skills inherent in the previous levels of skill learning sequence, students should begin to make inferences as to why certain elements are named as such. For example, students begin to understand the relationship of note values among various durations implicitly. Therefore, the only need that remains is for students to learn the names of each of the types of notes. Gordon (1997) firmly believes that notation is only a tangible manifestation of the music, and is not central to a student’s understanding.

“It must not be forgotten that the sound of music existed long before music theory and music notation captured the minds of would-be musicians and teachers. Music theorists discover and describe what composers and artists create and improvise, not the other way around” (Gordon, 1997, p. 135).

This statement illustrates Gordon’s unyielding conviction that the theoretical knowledge of music is the ending point, not the starting point, for the acquisition of musical skills. This is perhaps one of the most controversial aspects of Gordon’s theory.
Related Music Studies

In relation to the present investigation where the elementary school used the Kodály approach to rhythmic learning, the extant research in music learning focuses largely on all four of the aforementioned approaches to rhythmic learning. Therefore, an understanding of these approaches is necessary to appreciate the research findings as a whole. Although the rhythmic acquisition theories of Carl Orff, Zoltan Kodály, and Edwin Gordon have been implemented by practitioners for many years, few studies have examined the effectiveness of any of these systems empirically. Two studies have investigated the success of these basic approaches to rhythmic learning and the corresponding syllabic and number-based reading systems (Bebeau, 1982; Colley, 1987). These studies have provided music educators valuable information about effective rhythmic teaching tools and techniques.

Bebeau (1982) compared the effects of the traditional number system and a simplified speech cue method on students’ rhythmic reading accuracy. The study consisted of two experiments. Subjects in the first experiment were third grade students \( (N = 27) \) who had not had instruction in the reading of rhythmic patterns as a part of their school music program. The second experiment was a replication of the first, employing a larger sample of third grade students \( (N = 80) \) from intact classrooms in a different elementary school. The procedures and materials used in the two experiments were identical. All subjects were pretested and divided into two treatment groups: one that would learn to count rhythms in 4/4 time using the traditional counting method, and one that would use a simplified method that incorporated speech cues. There was no significant difference between the pretest scores of the two groups. Students were
instructed in a series of 18 lessons, in which the lesson content for the groups was the same, but the method by which they were instructed to read rhythms varied. Following the 18 lessons, subjects completed a rhythm reading posttest that consisted of 23 items in 4/4 meter. Twenty-one of the items were no longer than three measures in length, while two items were eight and ten bars. The longer items were used to assess students' ability to maintain a steady pulse throughout. Students were instructed to clap the rhythms presented to them, and to try to keep a steady pulse.

Gain scores between pretest and posttest from both experiments were significantly greater for the speech cue group than for the traditional method group (Bebeau, 1982). In the first experiment, mean posttest scores for the speech cue group were significantly higher than those for the traditional group ($p < .01$). Specifically, the students who were instructed using the speech cue method performed their rhythms with greater accuracy than those who were instructed using the traditional counting system. Because all students clapped the rhythms rather than speaking them using their respective reading systems, this study is more than a comparison of syllabic versus counting systems. Instead, it is a comparison of teaching techniques and approaches. Additionally, the investigator noted that there was smaller within-group variance indicated by posttest scores among the speech cue group than in the traditional group. Based upon these findings, Bebeau (1982) concluded that the speech cue method may be a way for music educators to deliver rhythmic instruction more effectively.

Similar to Bebeau, Colley (1987) conducted a study that compared the effectiveness of the Gordon approach, the Kodály approach and the word approach to rhythmic reading. Subjects in this study were second and third graders ($N = 160$) from
intact classrooms among two elementary schools. Six of the classes received rhythm instruction using one of the three aforementioned methods, while two classes received no rhythmic instruction whatsoever. All subjects were pretested using three measures: a recognition test, a dictation test, and a performance test. The aural recognition test assessed students' ability to choose the correct notation for the rhythm pattern they heard. The dictation test required students to notate rhythms they heard. On this dependent measure, subjects were given the correct number of noteheads for each rhythm, and were asked to add the stems and the time signature. The performance test measured students' accuracy at clapping rhythm patterns. The investigator used the same 20 rhythm patterns in all three of the tests. As in Bebeau's study (1982), students in this study received instruction over a period of several weeks. Lesson content for all three experimental groups was the same, but was presented using one of the three approaches. At the end of the nine instructional sessions, subjects completed a posttest identical to the pretest.

Pretest scores indicated that the word method group was significantly better at the recognition and dictation tasks, so the researcher concluded that the four groups were unequal. However, the researcher used analyses of covariance to adjust for the pretest inequality. Results indicated that the gain scores for the word method and the Gordon method were significant, and the subjects instructed using the Kodály method did not make significant gains above the control group, which received no rhythm instruction. On the dictation test, students instructed using the word method made the most progress from pretest to posttest. Further, the word group made gains significantly greater than either the Gordon or Kodály group on the performance measure. Colley (1987) observed that students in the Kodály group had difficulty perceiving and performing metric stress. In
addition subjects in the Kodály and Gordon groups consistently had difficulty in syllabic recall on the performance test. Students in the word group were better able to recall the words used to correspond to each rhythm. Colley (1987) attributed this to the fact that "subjects in the word group conceptualized the patterns as intact units because the words themselves were intact units" (p. 233). The most consistent struggle using the word method was distinguishing between words that could correspond to two similar rhythmic patterns. In this situation, subjects had difficulty choosing the correct word. Overall, Colley's study (1987), like Bebeau's (1982), seems to point to some form of a speech cue system as advantageous when compared to other methods of rhythmic learning.

Shehan (1987) and Persellin (1992) conducted research to determine how the mode through which rhythms were presented affected subjects' retention of the rhythms. Shehan (1987) examined the effects of the mode by which rhythm patterns were presented to students on their ability to retain the patterns. Her subjects were students in second grade and sixth grade at parochial schools. Each subject performed four rhythm patterns on a woodblock, each eight beats in length. Rhythms were presented using four different modes, as follows: Audio-rhythm, in which the rhythm was played on a woodblock; Audio-mnemonic, in which the rhythm was spoken using Japanese syllables; Audio-visual, in which students were presented with a rhythm card and the rhythm was performed on a woodblock; Visual-mnemonic, in which subjects saw the notation and heard the Japanese syllables simultaneously. Each rhythm was presented as many times as was necessary for an accurate performance, and the number of trials necessary was recorded. The researcher found that the mode of presentation had a significant effect on the amount of trials necessary for an accurate performance. More trials were necessary
when rhythms were presented aurally with no visual aid. Additionally, the aid of the
syllables in the mnemonic presentation decreased the number of trials necessary for both
the visual-mnemonic and aural-mnemonic modes. Further, students in sixth grade
required less than half the trials required by the students in second grade to produce
accurate performances of the rhythms, regardless of means of presentation. Based on
these findings, Shehan (1987) concluded that a blend of visual and aural strategies may
be advantageous, and that the use of a mnemonic system may help in retention of
rhythmic patterns. Ultimately, one mode of presentation was not sufficient for most
students, and was concluded to be less effective than a multisensory approach.

Like Shehan’s (1987) study, Persellin (1992) examined the effects of means of
presentation on retention of rhythm patterns. However, Persellin (1992) investigated
seven modes of presentation: visual, in which students saw the pattern using icons
indicating the length of sound; auditory, in which the pattern was played on a bell;
kinesthetic, in which the rhythm was tapped on subjects’ forearms. The remaining modes
were combinations of these three, including visual/auditory, visual/kinesthetic,
auditory/kinesthetic, and visual/auditory/kinesthetic. Subjects in this study were first
(n = 70), third (n = 70), and fifth (n=70) grade students from two urban elementary
schools. Each student was presented six rhythm patterns, two of which consisted of four
beats, and four of which consisted of eight beats. Subjects were taught all six of the
rhythms using one of the seven modes of presentation. The number of trials necessary for
each subject to reproduce the rhythm by tapping or clapping was recorded, and students
were limited to ten trials per rhythm. As in Shehan’s (1987) research, Persellin (1992)
found that grade level had a significant effect on the number of repetitions necessary for
accurate performance of the rhythm, regardless of mode of presentation. First grade students required far more repetitions than third graders, and third graders required more trials than did fifth graders. Additionally, first grade students who received the visual mode of presentation scored significantly lower than first graders in any other category. Overall, students for whom rhythms were presented using the visual/auditory/kinesthetic mode required fewer trials than any other group. Persellin’s (1992) findings supported Shehan’s (1987) conclusion that a multisensory approach to presentation of rhythms is advantageous over a system that uses only one means of presentation. Persellin (1992) also asserted that the comparatively low scores in the visual-only group of first grade students indicates that young students may not be developmentally ready for notation, especially if they have not experienced rhythms through aural and kinesthetic modes.

Findings of Bebeau (1982) and Colley (1987) indicate that students who used word-based systems for rhythmic reading seemed to perform better. Shehan (1987) and Persellin (1992) further investigated rhythmic learning, but from the angle of the ways in which rhythms were presented to students. The mnemonic systems for reading, which were found by Bebeau (1982) and Colley (1987) to effect significant improvements, also proved to be useful in the studies investigating the mode of presentation, as students in Shehan’s (1987) study who were presented with the Japanese syllables required fewer trials for accurate performance of rhythm.

Rhythmic Scope and Sequence

In addition to the rhythmic curricula recommended by Kodály, Orff, and Gordon, elementary basal series and beginning instrumental method books recommend specific
sequences of rhythmic concepts and patterns that students at given grade levels should be able to perform and read. Further, the Academic Content Standards for the Fine Arts, adopted by the State of Ohio Board of Education in 2003, outline expectations for what students in each grade level should know and be able to do in music.

**Ohio’s Academic Content Standards For Fine Arts**

The Academic Content Standards for the Fine Arts are one of six documents that establish common goals and expectations for students in the state of Ohio in each of the following areas: the arts, foreign language, language arts, mathematics, social studies, and science (ODE, 2004). The standards for the fine arts include standards for music, visual art, drama, and dance. They were adopted by the State Board of Education in December, 2003, and are now mandatory standards in all of Ohio’s public school districts (ODE, 2004).

According to these standards, students in fifth grade should be able to “read, write and perform rhythm patterns (in 2/4, 3/4, and 4/4 meter) using sixteenth through whole notes including dotted half-note and syncopated rhythms” (ODE, 2004, p. 198). In sixth grade, the expectation is that students will still be able to read, write and perform rhythms in the aforementioned meters, and will also be able to read, write and perform rhythms in 6/8 time signature.

Though the standards are clear about the need for students to be able to read rhythms of a specific level of difficulty, a rift exists between the rhythms addressed by
elementary basal series and those addressed in beginning instrumental method books. The following is an analysis of the rhythmic scope and sequence of a standard elementary basal series.

**Elementary Basal Series**

*Spotlight on Music* is the newest series, published by MacMillan, McGraw/Hill (Bond et al., 2005). Though the elementary school in the present study does not use this or any basal series, such texts are often used by elementary general music teachers, and it is thus pertinent to the present research. The grade five textbook in this series supports the academic content standard expectations delineated above. Included in the fifth grade book are rhythms in 2/4, 3/4, and 4/4 time signatures, inclusive of eighth note, dotted quarter note, syncopated, and sixteenth note rhythms. The final rhythm unit in this text includes dotted-eighth sixteenth rhythms and rhythms in 6/8 meter as well. Though *Spotlight on Music* does not endorse any one approach to rhythmic learning, the suggested lesson plans often indicate that students should speak rhythms using the words of the given song, which is similar to the Orff methodology. Additionally, this series does not encourage counting of rhythms using the aforementioned numeric system, but relies a great deal on having students experience and create the rhythms before and while reading them from notation.

Though the elementary basal series rhythmic scope is consistent with the expectations of the Ohio Department of Education, prominent beginning band method books are far less consistent in meeting these expectations.
Beginning Band Methods

*Essential Elements 2000* is a prominent beginning band text, and is the text used by the middle school studied in the current investigation. Like the basal series, the band text introduces rhythms in 2/4, 3/4, and 4/4 time signatures, though the rhythms are far less complex than those presented in the basal series. Here, sixteenth note patterns are not introduced anywhere in the first book for the entire band. The percussionists are presented with four sixteenth notes and eighth/two sixteenth patterns halfway through the first book. The woodwind and brass instrumentalists are taught rhythms only as complex as eighth notes and syncopation.

Not only is the rhythmic scope of the band text at odds with the academic content standards set forth by the Ohio Department of Education (ODE, 2004), but the sequence is more similar to the approach Choksy (1999) refers to as “subject-logic” (p.9), rather than one centered on the child’s developmental processes. Though the beginning band book begins by introducing the quarter note and rest, it proceeds to longer durations of the half note and rest, followed by the whole note and rest. Two eighth notes are then introduced, followed by the dotted half. Since children are naturally mobile, it makes sense to begin with quarter notes, which are similar to their walking motions, but longer note durations are less natural (Choksy, 1999).

In addition, the *Essential Elements 2000* text as well as other band methods introduces the numeric counting system for rhythms upon presentation of the quarter note without any reference to a syllabic system. Though students in beginning band have likely read, written, and performed quarter notes before, it is likely that they have not
referred to them in the numeric system presented by the band text, especially if they have previously been instructed using one of the aforementioned speech cue systems of rhythmic reading.

In defense of the rhythmic sequence and scope of beginning band books, it is clear that, since students are encumbered with a new instrument in beginning band, they will likely not have the technical proficiency to articulate quick, more complex rhythm patterns, even though they may have learned the patterns in elementary general music. However, if students have successfully mastered sixteenth note rhythms and combinations of eighths and sixteenths, it seems logical that it would be to the advantage of instrumental music educators to reinforce these rhythms in beginning band, using the rhythmic reading system with which the students are familiar.

Transfer of Learning

Though students in beginning band may be reintroduced to rhythms already taught in general music classes, the use of a different system for rhythmic reading may negate any familiarity with the rhythms, unless the teacher actively teaches for this transfer. According to Cormier and Hagman (1987), “transfer of learning occurs whenever prior-learned knowledges and skills affect the way in which new knowledges and skills are learned and performed” (p. 1). For example, someone who has taken public transportation to get to the grocery store may apply their knowledge associated with that trip when they use the same means of transportation to get to the church just across the street from the grocery store. In education, transfer is not always as obvious as in the previous example, but is an important skill for students to acquire.
Gick and Holyoak (1987) assert that transfer tasks fall on a continuum based on the similarity of task one to task two. Tasks that are simply repetitions are deemed self-transfer, while tasks that are highly similar are thought to be near transfer. Situations in which task one and task two are extremely different constitute far transfer. Self-transfer thus requires little additional explanation, as the two tasks are exactly the same. Near and far transfer, however, require more direct instruction.

In addition, transfer, if it exists in a given learning situation, may be positive or negative. If it is positive, then performance on the first task, and the instruction related to it, helped the subject to perform better on the second task. However, if transfer is negative, then the instruction and knowledge related to task one was to the detriment of the performance on task two (Gick & Holyoak, 1987). The direction of transfer may be influenced by the perceived similarity of the two tasks. Tasks may be similar on the surface, but these surface similarities may not be salient to the task itself. For example, a trumpet player and a flute player may both play an F-sharp while sitting down, but the fact that they are sitting down is only a surface similarity, and has no bearing on the task itself. They could just as easily play the note standing up. However, the fact that they both take a large breath and expel the air into their instruments, causing vibrations and thus producing sound, are structural similarities, they are pertinent to the task. When students perceive only surface similarities, negative transfer may result, because the students are focusing on ancillary details. However, when structural similarities are considered, there is a greater likelihood that positive transfer will occur (Gick & Holyoak, 1987). Thus, music teachers may increase the possibility of positive transfer if they make students aware of the salient structural similarities of two tasks.
Gick and Holyoak (1987) describe four categories of factors that determine the magnitude and direction of transfer. First, the structure of the tasks is a determining factor, because the training for associated tasks involves the formulation of a number of general rules that apply to a set of facts. For example, when students read rhythms using Kodály rhythm syllables, they are taught that quarter notes are always spoken as ‘ta’ and eighth notes as ‘ti’. Thus, if a teacher creates tasks in which students must speak rhythms, the tasks should include rhythms in which students can apply these general rules.

Secondly, the students’ ability of encoding the training task is crucial to transfer (Gick & Holyoak, 1987). This factor requires that students learn the task to an acceptable degree, and that they experience the task many times and in varied contexts. Further, factors regarding the retrieval of learned information are influential on the magnitude of transfer. The teacher plays an integral role in helping students to retrieve pertinent information. If goals of the two tasks are similar, students are more likely to transfer prior knowledge, and if students are given cues that they should use prior knowledge, this increases the likelihood of positive transfer as well (Gick & Holyoak, 1987). Schuell (1988) further asserts that, since learning is cumulative, it is logical that the ability to retrieve previously learned material is imperative. Finally, students’ background knowledge bears on their ability to transfer as well (Gick & Holyoak, 1987). Gick and Holyoak (1987) cite this factor as one that has only recently come to the forefront of information about transfer of learning. “Perhaps the neglect is due to researchers’ excessive use of artificial materials, for which little prior knowledge was relevant” (p. 37). More recent research has investigated the role of transfer on more meaningful tasks relevant to daily life and to educational goals. By framing a new task with knowledge students already have and
readily use, teachers may further increase the probability that transfer will occur between the new task and a second related task.

Schuell (1988) cites type of knowledge as another factor in determining whether transfer will take place. He explains seven different types of knowledge: procedural, propositional, psychomotor, images, aural, attitudes, and emotions. He maintains that transfer is unlikely if the types of knowledge are different. For example, if a student has the propositional, or verbal, knowledge of sonata form, he could likely describe the sections of sonata form and how the sections are differentiated. However, he may find it difficult to identify a piece in sonata form upon hearing it because the knowledge required to do so has not been transferred to aural knowledge. Therefore, teachers must provide opportunities for transfer to take place when planning lessons (Schuell, 1988).

Transfer of Learning Related to Music

Music education provides a cumulative body of knowledge and skills that build upon each other. Structural similarities exist between tasks as simple as reading quarter notes in first grade to reading more difficult rhythms using quarter notes, eighth notes, and sixteenth notes at sixth grade level. Because of the many similarities between musical tasks, it is imperative that students transfer their skills appropriately.

Though it is tempting to believe that students readily make transfers without assistance, Schuell (1988) asserts that this happens far less than most educators believe it does. On the contrary, he believes explicit instructions must consistently be given in order for students to transfer knowledge effectively. Relative to music education, teachers can take steps that will increase their students’ ability to transfer on a regular basis. First,
the teacher must “identify situations to which transfer is desired” (Schuell, 1988, p. 163). This requires a firm grasp of musical concepts and the ability of educators to articulate a vision for students’ future musical achievement. Only then can educators foresee the tasks students may attempt in the future, and how their past and present learning relate to those tasks. Additionally, Schuell (1988) suggests that music educators should work to develop and teach general principles that apply in many contexts. Thus, instead of teaching students that a particular note is sharp and they should pull out their tuning slides, it would be better to teach them how to tell if notes are not in tune, and how to figure out whether to push or pull the tuning slide. This will allow students to deal with poor intonation themselves in the future. Again, this type of teaching requires a broad vision and cannot rely on quick fixes. Finally, music teachers must be sure that students learn material at a high degree of proficiency, and in many different contexts. When information and skills are practiced in varied contexts, students are less likely to link them to only one particular time and place, and can therefore transfer more easily.

Little research exists regarding transfer related to music learning. However, the ability of students to remember what they have learned is critical to the likelihood that they will transfer that information to other tasks. Students’ ability to remember rhythmic and tonal patterns was the subject of a study by Webster and Zimmerman (1983). The study also examined students’ ability to detect similarity among patterns, another factor in determining transfer. Subjects in this study were second grade students through sixth grade students ($N = 303$), each of whom listened to both tonal and rhythmic patterns. Following each initial phrase, four subsequent phrases were performed, and subjects indicated whether each phrase was the same as or different than the initial pattern.
Though results indicated that students performed better on the rhythmic conservation tasks as they got older, rhythm tasks were significantly more difficult than tonal tasks for students, regardless of grade level. Additionally, Webster and Zimmerman (1983) observed an order effect; younger students scored lower when they were presented with the rhythmic tasks before the tonal tasks. Webster and Zimmerman (1983) asserted that it may be advantageous to relate rhythmic concepts to melodic passages because students seem to remember tonal passages more aptly than rhythmic phrases.

Pierce (1992) investigated the effect of rhythmic learning procedures on the transfer of learned skills in middle school band students. Students in sixth, seventh, and eighth grade bands ($N = 64$) were presented with four melodies consisting of relatively familiar patterns. The student first performed a rhythm-only version of the melody in one of the four learning procedures: clap, count, sizzle, clap-count. Students were subsequently given instruction in one of the four learning procedures until they reached an acceptable level of performance, at which time they performed the rhythm or the melody two times, at one of four tempi, using a counterbalanced design. The second performance of each melody was evaluated as the dependent measure. Results indicated that the learning procedures were all effective, but the sizzle procedure required significantly less time for students to reach the acceptable performance level. Pierce (1992) attributed this finding to the fact that sizzling rhythms is most like playing a wind instrument, and that, unlike clapping and counting, sizzling accommodates note duration rather than just note beginnings. Further, Pierce (1992) found that subjects performed transfer trials at greater accuracy when they selected their own performance tempo, and were far less accurate at the metronomic faster and slower tempi. Perhaps the most
unexpected finding was that there was no significant difference between the performance accuracy of subjects who performed the rhythm-only version of the melody as their first transfer trial and those who performed two transfer trials of the melody as written. This is a step many instrumental music educators use in rehearsal as an attempt to allow students to be unencumbered by the melodic difficulties of the musical passage while acquiring difficult rhythms. Pierce’s research (1992) was an example of self-transfer or at very least ‘near transfer’ (Gick & Holyok, 1987), in which the learning and transfer tasks were almost the same, and were done in the same time frame and context.

Olijnek-Scheuzger (2006) also examined the effects of transfer activities related to the rhythmic performance of beginning instrumentalists. Unlike Pierce’s (1992) study, Olijnek-Scheuzger’s (2006) research examined the role of transfer over an extended time period. Students in fifth grade band and orchestra were instructed over the course of twelve weeks, and each rhythmic teaching session was approximately six minutes in length ($N = 76$). All subjects were instructed in rhythm using a series of six steps, consisting of movement, verbalization of rhythms, and use of flashcards in isolation and in patterns. None of these steps involved use of the subjects’ instruments. Subjects in the treatment groups were presented with four additional instructional steps, including airbowing and sizzling techniques, performance of rhythms on one pitch and a limited number of pitches, and finally performance of rhythms using a sheet music format. These additional steps were referenced as transfer steps. Following the twelve weeks of instruction, all students completed the dependent measure, which consisted of 11 items, all of which were rhythms comprised of the patterns in which they had received instruction. Test items were a combination of single-pitched rhythms and the identical
rhythms using multiple pitches. Results of this research indicated that the transfer steps provided to the treatment group did not significantly improve their performance over the control group. However, students in the treatment group performed more accurately with the accompaniment provided in the dependent measure. Further, both the treatment and control groups improved over the course of the twelve week instructional period. Although transfer steps were not found to significantly improve subjects’ performance, it was concluded that the approach to rhythmic learning shared by both groups was useful.

**Summary**

The aforementioned research related to transfer of learning in music indicates that more research is necessary in order to address inconsistencies in findings. Whereas research has shown that speech cue systems of rhythmic reading appear to be beneficial to students, it is not clear whether students use these rhythmic reading skills in the context of beginning band instruction if they do not continue to receive rhythmic instruction in the same way. Though Pierce’s (1992) study showed that students required fewer trials to reach performance level when they sizzled rhythms, thereby closely approximating the act of playing a wind instrument, the study did not investigate transfer over a long period of time, and using previously learned material. Conversely, Olijnek-Scheuzger’s (2006) research indicated that instruction specifically intended to effect transfer was ineffective over a long period of time. The present study seeks to augment the extant research by investigation of the period of transition from elementary to middle school.
The shift from elementary general music to beginning instrumental classes often involves a drastic change in instructional procedures related to rhythm. Students who receive instruction using one of the aforementioned speech cue approaches and then switch to the traditional number system engage in learning tasks that may not be perceived similarly. Lack of perceived similarities is one of the characteristics Gick and Holyoak (1987) describe as ‘far transfer’, especially without instruction that directly shows how the tasks are similar. In addition, the difference in complexity of rhythms addressed in elementary general music and in beginning band classrooms is vast. As evidenced by the rhythmic scope and sequence of the basal series, the recommended curricula of the speech cue approaches, and the relative simplicity of the rhythms addressed in beginning band methods, rhythmic tasks at the beginning band level are not commensurate with students’ ability and previous experience.

It was the intent of the present investigation to examine the nature of transfer from elementary to middle school music in regard to the rhythmic acuity of students. Specifically, the study sought to determine whether students transfer rhythmic reading skills taught in elementary general music to beginning band instruction. By investigating this, it is hoped that teachers of general music at the elementary level and teachers of first year performance-based ensembles will find ways to collaborate in order to design instructional tasks that will actively teach transfer.
CHAPTER 3

METHODOLOGY

Introduction

The primary purpose of the present study was to determine whether students transfer rhythmic reading skills taught in elementary general music to beginning band instruction. In an attempt to address all areas of rhythmic acuity, subjects were assessed based on their accurate performance of rhythmic patterns as well as their ability to maintain a steady pulse. Other variables of interest included differences in rhythmic accuracy among students entering band, orchestra or choir, and accuracy of students who had taken private lessons versus those who had not. Further, rhythmic accuracy based on students’ chosen mode of performance was also considered, as well as their accuracy on rhythms displayed in stick notation versus traditional notehead notation. This chapter provides a description of the subjects, the independent and dependent variables employed in the study, and all procedures involved in conducting the study.

Description of Schools Used in the Study

One elementary school and one middle school in a suburban school district outside of Columbus, Ohio were used in the study. According to Standard and Poor’s Educational Services (2006), 97.3% of adults who reside in the district had at least a high
school diploma, and 60.4% had at least bachelor’s degrees. In 2006, 70.2% of households in the district had a yearly household income over $50,000, with 36.4% earning a household income of more than $100,000. Further, 8.1% of the households in the district were single parent households with children, which is more than 3% lower than the state average (Standard & Poor, 2006).

The school district was comprised of 12,415 students who attended one of 19 schools, of which three were high schools, four middle schools, and twelve elementary schools (Standard & Poor, 2006). In 2006, 77.8% of the district’s students were classified as white, 12.5% Asian, 3.7% multi-racial, 3% black, and 2.8% Hispanic. During the 2005-2006 school year, the district instructed 6% of the students for whom English was not their native language (Standard & Poor, 2006).

The elementary school selected for the study was one of 12 in the district, and contained grades kindergarten through fifth. In order to examine students following similar music curricula, all students in the elementary school employed in this study were projected to attend the middle school chosen for this study in the following year. Approximately 500 students were enrolled at the elementary school at the time of the study. The school contained four classes of fifth graders of whom 65.7% were white, 4.5% African-American, 20.9% Asian or Pacific Islander, 5.0% Hispanic, and 4.0% Multi-Racial (ODE, 2006). The fifth grade students attended music class in their intact classes of fewer than 20 students once every four days, for 50 minutes each.

The graded course of study for music that was adopted by the school district was based on the Academic Content Standards for Fine Arts, which were adopted by the Ohio Board of Education in December, 2003 (ODE, 2004). The course of study indicated that
students in grade five would be able to “read, write, and perform rhythmic patterns in
duple and triple meter using a sequential system of notation” (School District, 2004).
The music teacher was an elementary music specialist in her eleventh year of teaching.
She was certified in Kodály and used the Kodály approach to tonal and rhythmic reading
almost exclusively. Students were familiar with Kodály rhythm syllables and stick
notation. In April, when the study was conducted, students were familiar with the
following rhythmic units in stick notation, and the corresponding syllables:

\[
\begin{array}{cccccccc}
\text{tuo} & \text{ta} & \text{ti} & \text{ta} & \text{ti} & \text{tam} & \text{ti} & \text{t-i-la-ti-la} & \text{t-i-la-ti-la} & \text{t-i-la-ti-la} \\
\end{array}
\]

*Figure 4. Rhythms and their corresponding Kodály syllables.*

The middle school used in the study was one of four middle schools in the
selected district. The average daily attendance at the school was 602 students, of whom
66.8% were white, 5.8% African-American, 17.2% Asian or Pacific Islander, 3.5%
Hispanic, and 6.8% Multi-Racial (ODE, 2006). The middle school students selected for
the study were in the sixth grade band. Selection of subjects from this class was limited to
only those who had attended the elementary school used in the study during the previous
year. All sixth grade students at this middle school were required to participate in band,
strings, or choir. The building functioned on an alternating-day schedule, so students
attended band class every two days. Students in the sixth grade met in homogeneous
groupings by instrument family - woodwinds met together, brass met together, and
percussionists met together. Each class period lasted for 50 minutes. The sixth grade band
was taught by an instrumental music specialist in her thirteenth year of teaching, and sixth grade percussionists were instructed by a music faculty member whose major instrument was percussion. Students began band instruments in September of their sixth grade year. Thus, the middle school subjects used in the present study were beginning band students. Students used the *Essential Elements 2000 Band Method, Book One*, throughout sixth grade. Additional sheet music of a similar level of difficulty was also used with these classes. The instrumental music teacher presented rhythms in the same sequence used by the aforementioned text, and used the corresponding number system as an instructional approach, employing clapping when counting rhythms.

![Rhythms and corresponding number system.](image)

*Figure 5. Rhythms and corresponding number system.*

**Selection of Subjects**

After IRB approval was obtained for the study, the researcher visited both schools in order to recruit subjects. In order to study as many subjects as possible, the investigator explained the study to four intact fifth grade classrooms and four intact sixth grade band classrooms. The investigator used the following script when explaining the research:

*I am collecting information about how students learn rhythm, in particular fifth and sixth grade students. I will be coming to your class*
sometime in the next couple of weeks to test some students in rhythm. This will take place during school, not before or after. I'll ask you to count, clap, or say some rhythms for a tape recorder, then I'll have someone listen to your tape to hear how you're doing. Your name won't be on your tape; it will be replaced with a number, so no one will know it's you that is performing. You don't have to participate, and nothing bad will happen to you if you don't. If you do participate, it could help music teachers learn how to teach students to learn rhythm better. You can ask questions before deciding whether you want to participate, and your parents will have to say it's okay, too. There is a special form to take home to them that explains the study and asks them to sign it. Please return the form to your music teacher. You may leave the study at any time. If you decide to stop participating in the study, nothing bad will happen to you. You will not get any treats or prizes for participating in the study; it will just be something we do during music class one time, and then you're finished. If you have any questions, you may ask me now or later, or you can e-mail me.

Parental permission forms were distributed to all students in the aforementioned classes, and forms were returned to the researcher. Students whose parents gave consent for participation were given a student background questionnaire (see Appendix A). Questionnaires were collected, and only those students from the middle school who indicated that they attended the elementary school being used for the study were allowed to participate. All elementary students who obtained permission and completed questionnaires were tested.

The aforementioned demographic data provide some evidence that the fifth and sixth grade students employed in the study were similar groups of students. In addition, a comparison of scores on Ohio Achievement Tests showed
similar scores between these two classes during the 2005-2006 school year (ODE, 2006).

Subjects

A volunteer sample of 39 fifth and sixth grade students participated in the study. Eighteen of the subjects were fifth grade general music students; 21 were in the sixth grade band. Seventeen of the subjects were female and 22 were male. Of the fifth grade students, 7 were female and 11 male. Of the sixth grade participants, 10 were female and 11 male. Among fifth grade subjects, nine had taken private lessons on an instrument, with the majority of those taking piano lessons. Among sixth grade participants, six students had received private lessons, of which piano and their own respective band instruments were the most popular. Among fifth grade participants, 10 indicated intent to join band in sixth grade. Of the remaining fifth graders, six were participating in the school strings program at the time of the study, while two indicated their intent to participate in choir the following year. Of the sixth grade participants, 14 played woodwind instruments at the time of the study, and 7 were brass players. Because percussionists were taught by a percussion specialist in homogeneous groupings separate from the band, they were not included in the study.

Independent Variables

Primary variables of interest included the students’ grade level (i.e., fifth or sixth grade); mode of performance on the dependent measure (i.e., clapping, speaking,
counting); type of notation (i.e., stick versus traditional notehead); and private lesson experience on an instrument. Additionally, a variable for fifth grade students included their intent to participate in a musical ensemble in sixth grade.

**Dependent Measures**

The dependent measure consisted of a rhythmic performance test developed by the researcher based on the rhythm patterns taught by the elementary music teacher at the elementary school selected for the study, as well as their respective courses of study. (See Appendix B) The elementary music teacher and the middle school instrumental music teacher evaluated the measure prior to its use in the study and deemed it appropriate, each indicating that their students had some familiarity with all of the rhythms employed.

The dependent measure consisted of 16 rhythms, each eight beats in length. All items were written in 2/4 or 4/4 time signature. The elementary teacher indicated that she did not teach triple meter extensively, so items in triple meter were not included on the dependent measure. Rhythms selected for the dependent measure consisted of half notes, quarter notes, eighth notes, dotted quarter notes, sixteenth notes, eighth-sixteenth note combinations, syncopation, and rests equivalent to the aforementioned note values. Eight of the rhythms used stick notation, while the other eight used traditional notehead notation. Rhythmic items were identical on the traditional and stick notation subtests.

**Procedures**

Immediately prior to the individual testing of subjects, the researcher conducted a review session with each intact classroom reviewing the clapping system and the Kodály
rhythm syllable approach to reading/performing rhythmic notation. These systems of
teaching rhythm were consistent with the method all students had used in their fifth grade
general music class. The review session was intended to ensure that all students
experienced recent exposure to the rhythms used on the dependent measure, as well as to
give all subjects the same amount of practice using the acceptable modes of performance
on the dependent measure (i.e., clapping, speaking, counting). For this review session, the
researcher provided a steady beat while a series of 10 rhythm flash cards was presented.
Each card contained a rhythm four beats in length. The rhythm patterns were taken
directly from the dependent measure, but were displayed to the students in a random
order. Five of the rhythm cards used stick notation, and five used traditional notation. The
researcher explained that the rhythms using stick and traditional notation were the same,
but appeared different because of the two types of notation. Students in the elementary
classrooms were instructed to speak using Kodály rhythm syllables, clap or count each
rhythm pattern. Because students had been instructed only using the Kodály syllables,
they collectively chose to perform the rhythms using that mode. The middle school
students were also instructed to use either the Kodály syllables or the number system
when speaking the patterns found on the rhythm cards. However, students in the middle
school varied in the mode they chose for performance in the rhythmic review session.
Each of the modes (speaking, counting, clapping) was used by the middle school
students.

Following the review session, subjects were removed from the classroom
individually for testing. The investigator explained the test to the students using the
following script:
I am going to give you 16 short rhythm patterns, one at a time. After I say the number of the exercise, I’ll say 'ready, go', and I would like you to clap, count with numbers, or speak with syllables like 'ta' and 'ti-ti', the rhythm I have placed on the music stand in front of you. You decide how you’d like to perform the rhythms. Please don’t stop in the middle of any of the rhythms, even if you make a mistake. If there are any rhythms you aren’t sure of, just do your best to perform them. I’m going to record your responses on a tape player; we’ll just leave the tape player running the whole time. Can you see the rhythm? Do you have any questions?

The investigator presented one eight-beat rhythm pattern at a time to each subject. To maintain consistency with the prior review session, in which flash cards were used, each rhythm was placed on a 3” by 14” flash card. To control for any possible order effect, half of the subjects in each grade level were presented with the rhythms in stick notation first, while the other half were presented with rhythms in traditional notation before the stick notation. Subjects were instructed to perform each rhythm using their method of choice which could include clapping, counting or speaking. Upon placing each rhythm on a music stand, the researcher allowed the subject no more than fifteen seconds to look over the rhythm before instructing the student to begin. The researcher prompted the initiation of subjects’ responses by saying, “ready go” in tempo (80 bpm), but did not provide students with an external pulse during their response. Subjects performed each of the examples only once. All student performances were audio-recorded.

**Evaluation**

Subjects’ audio-recorded performances were presented on CD to three assessors. Each assessor evaluated a total of 17 subjects, with 15% of all subjects common between
the three assessors in order to establish inter-rater reliability. Prior to being presented with the CDs, assessors attended a training session in which the researcher explained the evaluation process and provided examples of accurate evaluation. Each beat of each item on the rhythm assessment was assigned one point, except for dotted and syncopated patterns that spanned two beats. In these cases, the syncopated or dotted rhythms were assigned two points. Thus, each test item was worth eight points. Beats played correctly were given one point, and beats played incorrectly were given no points. In addition, evaluators rated the degree to which subjects performed the rhythms using a steady beat by rating each item on a Likert scale from 1-5 (1 = unstable pulse, 5 = very stable pulse). Scores were tabulated so that subjects received separate scores for steady pulse and for rhythmic performance accuracy. Subjects’ pulse scores were calculated as the mean of their pulse rating on each individual exercise, for a total of five points possible. At eight points per exercise, the rhythmic accuracy total possible points were 128.
CHAPTER 4

RESULTS

Restatement of Purpose

The primary purpose of the present study was to determine whether students transfer rhythmic reading skills taught in elementary general music to beginning band instruction. In an attempt to address all areas of rhythmic acuity, subjects were assessed based on their accurate performance of rhythmic patterns as well as their ability to maintain a steady pulse. Other variables of interest included differences in rhythmic accuracy among students entering band, orchestra or choir, and accuracy of students who had taken private lessons versus those who had not. Further, rhythmic accuracy based on students’ chosen mode of performance was also considered, as well as their accuracy on rhythms displayed in stick notation versus traditional notehead notation.

Specifically, the study sought to answer the following questions:

1. Are there significant differences between fifth and sixth grade students regarding their ability to perform rhythm patterns equivalent in difficulty to those taught in elementary general music?

2. Are there significant differences in rhythmic performance among fifth grade students who intend to join band, orchestra, or choir in sixth grade?
3. Are there significant differences in rhythmic performance based upon subjects’ chosen response mode (i.e., clapping, counting, saying)?

4. Are there significant differences in rhythmic performances based on the use of stick notation versus traditional notation?

5. Are there significant differences in the rhythmic performances of students who have had private lessons on an instrument versus those who have not?

6. Are there significant differences between the ability of fifth and sixth grade students in their ability to maintain a steady pulse while performing rhythm patterns?

7. Is there a correlation between steady pulse and rhythmic accuracy?

**Inter-Rater Reliability**

After all subjects were tested, responses were analyzed by the researcher and two assessors. Each judge received a compact disc containing 17 subject responses, as well as a rating sheet for each subject. Prior to being presented with the CDs, assessors attended a training session in which the researcher explained the evaluation process and provided examples of accurate evaluation. Items on the CD could easily be listened to repeatedly for accurate data collection. The rating sheets contained notational versions of all 16 rhythms presented on the dependent measure, all using traditional notehead notation (see Appendix C). Under each beat of rhythm was a dash; assessors placed an X on the dash to indicate that the subject performed that particular beat erroneously. Dashes left blank indicated accurate performance of the corresponding beat by the subject. Further, assessors indicated to the left of each item the degree to which subjects maintained a
steady pulse during performance using a 5-point Likert scale (1 = no steady pulse, 5 = always steady pulse at given tempo). Upon completion of the assessments, rating sheets were returned to the researcher, who subtracted from eight the number of Xs placed under each rhythmic exercise. The totals for each item were summed across all examples, rendering a maximum score of 128 points per subject (8 points per example X 16 items). Steady pulse ratings were averaged for each subject across all 16 items.

For the dependent variable of rhythmic accuracy, interjudge reliability was calculated using the number of agreements in judges' assessments for each individual beat, divided by the number of agreements plus disagreements (total beats) on a random sample of 15% of all subjects. Using this method, interjudge reliability was calculated to be .98. A similar method was employed for determining interjudge reliability for steady pulse. Each item on the dependent measure was scored on a scale of one to five in regard to steady pulse. Ratings between assessors that differed by one degree or fewer were counted as agreements, and pulse ratings that differed by more than one degree were counted as disagreements. The number of agreements was calculated for each exercise, divided by the number of total exercises on the same random sample of 15% of all subjects. Using this method, interjudge reliability for pulse was calculated to be .95.

Presentation of the Data

Results pertaining to research questions one through six are presented below. Data presented here are intended to delineate the differences in rhythmic acuity among fifth
and sixth grade music subjects as measured by a rhythmic reading test. In order to investigate the relationship between accuracy of rhythmic performance and steady pulse more thoroughly, the two variables were analyzed separately.

**Preliminary Analysis**

During the process of data collection, it was discovered that some of the fifth grade subjects were currently enrolled in the fifth grade strings program (n = 6). In order to ensure that results were not skewed by the fact that these subjects received school music instruction in addition to general music class, rhythmic accuracy scores of fifth grade subjects were subjected to an independent samples t-test in order to compare mean scores of fifth grade subjects involved in the strings program and those who were not. Results indicated there was no significant difference (t(16) = -.81, p = .45) between the rhythmic accuracy of the fifth grade string participants (M = 102.83) and those who did not participate in the string program (M = 107.94). Therefore, all further analyses of fifth grade subjects included these string subjects as part of the sample.

Of the 39 subjects, 19 completed the dependent measure beginning with stick notation, and 20 completed the assessment using notehead notation first. In an investigation to determine whether the order of presentation was related to the subjects’ rhythmic accuracy, it was found that subjects who completed the rhythms using stick notation first scored higher than those who began with the notehead notation. Table 1 shows means and standard deviations for subjects in regard to order of notation. Results of an independent t-test indicated a significant difference for subjects who completed
stick notation exercises first compared to those who completed notehead notation items first ($t(37) = 2.35, p < .05$).

Upon finding that order of presentation seemed to relate to subjects' accuracy, it was decided to compare order of notational presentation by grade level. Means and standard deviations for fifth grade subjects and sixth grade subjects are presented in Table 1 as well. Data from this stratification revealed a greater mean difference between fifth graders based on order than among sixth grade subjects. Data for both grade levels were subjected to independent t-tests to determine whether significant differences existed at each respective grade levels. Results of these analyses indicated that, for fifth grade subjects, those presented with stick notation first performed significantly higher than those presented with notehead notation first ($t(16) = 2.95, p < .01$). However, no significant difference was found for sixth grade subjects in regard to order of presentation ($t(19) = 1.37, p = .19$).

<table>
<thead>
<tr>
<th>Order</th>
<th>$N$</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Subjects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>stick first</td>
<td>19</td>
<td>102.50</td>
<td>14.60</td>
</tr>
<tr>
<td>notehead first</td>
<td>20</td>
<td>90.43</td>
<td>17.29</td>
</tr>
<tr>
<td><strong>Grade 5</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>stick first</td>
<td>9</td>
<td>113.44</td>
<td>9.02</td>
</tr>
<tr>
<td>notehead first</td>
<td>9</td>
<td>99.03</td>
<td>11.49</td>
</tr>
<tr>
<td><strong>Grade 6</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>stick first</td>
<td>10</td>
<td>92.66</td>
<td>11.27</td>
</tr>
<tr>
<td>notehead first</td>
<td>11</td>
<td>83.39</td>
<td>18.48</td>
</tr>
</tbody>
</table>

*Note.* Total points possible = 128

Table 1

*Mean Rhythm Scores by Order of Notation*
Research Question 1: Are there significant differences between fifth and sixth grade students regarding their ability to perform rhythm patterns equivalent in difficulty to those taught in elementary general music?

Mean scores of fifth grade subjects for rhythmic accuracy were higher and had less variability than the sixth grade subjects ($M = 106.24, SD = 12.47$ to $M = 87.81, SD = 15.82$, respectively). An independent samples t-test revealed that differences between the groups were significant ($t(37) = 3.99, p < .001$) - fifth grade subjects scored significantly higher than the sixth grade subjects in regard to rhythmic accuracy.

Research Question 2: Are there significant differences in rhythmic performance among fifth grade students who intend to join band, orchestra, or choir in sixth grade?

Table 2 presents means and standard deviations for rhythmic accuracy scores among fifth grade subjects intending to enter band, orchestra, or choir during the following school year. An examination of these means revealed that the rhythm scores of the subjects intending to enter choir were higher than those intending to join the band or string program. However, data were not subjected to inferential analysis because of a concern that small cell size for those choosing to enter choir ($n = 2$) would yield spurious findings.
<table>
<thead>
<tr>
<th>Ensemble</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Band</td>
<td>10</td>
<td>106.20</td>
<td>14.09</td>
</tr>
<tr>
<td>Choir</td>
<td>2</td>
<td>116.66</td>
<td>9.42</td>
</tr>
<tr>
<td>Strings</td>
<td>6</td>
<td>102.83</td>
<td>9.80</td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>106.24</td>
<td>12.47</td>
</tr>
</tbody>
</table>

Note. Total points possible = 128

Table 2
Rhythmic Accuracy by Ensemble Choice Among Fifth Grade Subjects

**Research Question 3:** Are there significant differences in rhythmic performance based upon subjects' chosen response mode (i.e., clapping, counting, saying)?

Means and standard deviations of subjects' rhythm scores based on their mode of performance (i.e., speaking, clapping, use of neutral syllable) are represented in Table 3. Initial results of an ANOVA indicated that subjects who spoke rhythms using syllables \(n = 25\) scored significantly higher than subjects who clapped or used a neutral syllable to perform the rhythms (\(p < .001\)). However, upon further examination, 100% of the subjects in fifth grade chose to speak the rhythmic patterns, while more variability of response mode was evidenced for sixth grade subjects. Because significance was already evidenced between groups based on grade level (see Research Question 1), it was concluded that this analysis could possibly be confounded by grade level. Therefore, data regarding subjects' mode of performance were analyzed among the sixth grade subjects only.
<table>
<thead>
<tr>
<th>Mode</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speak</td>
<td>25</td>
<td>104.82</td>
<td>11.15</td>
</tr>
<tr>
<td>Clap</td>
<td>12</td>
<td>81.63</td>
<td>15.74</td>
</tr>
<tr>
<td>Neutral syllable</td>
<td>2</td>
<td>78.00</td>
<td>12.72</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>39</td>
<td>96.31</td>
<td>16.97</td>
</tr>
</tbody>
</table>

*Note. Total points possible = 128*

Table 3
*Rhythmic Accuracy by Mode of Performance*

Among sixth grade subjects, those who spoke the rhythms using Kodály rhythm syllables (*n* = 7) attained higher rhythmic accuracy scores (*M* = 101.19) than those who clapped (*n* = 12, *M* = 81.63) or spoke using a neutral syllable (*n* = 2, *M* = 78.00). A 1 x 3 ANOVA revealed a significant difference among the various modes of response [F(2, 36) = 11.01, *p* < .05]. Data were subjected to a Scheffé post-hoc analysis, and results illustrated significantly higher scores were attained by subjects using Kodály rhythm syllables over clapping (*p* < .05). Use of a neutral syllable did not prove to be a significantly more accurate mode than clapping.
**Research Question 4:** Are there significant differences in rhythmic performances based on the use of stick notation versus traditional notation?

In order to answer this question, the dependent measure was divided into stick notation responses and traditional notation responses. Because there were eight examples using stick notation and eight using notehead notation, a total of 64 points was possible using each type of notation. Mean scores were therefore calculated on a scale of 64 instead of 128, as in other analyses.

The mean score for all subjects' rhythmic accuracy on stick notation items was only slightly lower ($M = 48.14$) than on items displayed in notehead notation ($M = 48.17$). Results of a dependent t-test between stick notation and notehead notation scores indicated no significant difference between scores ($p = .973$).

Considering that everyday practice would make fifth graders more familiar with stick notation and sixth graders more familiar with notehead notation, it was decided to investigate these data further based on grade level differences. In order to do this, data were subjected to a within and between, repeated measures analysis of variance, with type of notation as the within subjects factor and grade level as the between subjects factor. Means and standard deviations of subjects' scores by grade level and type of notation are represented in Table 4. Results of the repeated measures ANOVA indicated an interaction which approached statistical significance [$F(1,37) = 4.04; p = .052$]. Specifically, fifth grade subjects scored slightly higher on the rhythms using stick notation than on rhythms in notehead notation, and sixth graders scored slightly higher on the notehead notation than on stick notation.
<table>
<thead>
<tr>
<th>Grade</th>
<th>Notation</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Stick</td>
<td>53.88</td>
<td>6.20</td>
</tr>
<tr>
<td></td>
<td>Notehead</td>
<td>52.35</td>
<td>6.84</td>
</tr>
<tr>
<td>6</td>
<td>Stick</td>
<td>43.22</td>
<td>9.28</td>
</tr>
<tr>
<td></td>
<td>Notehead</td>
<td>44.58</td>
<td>7.16</td>
</tr>
</tbody>
</table>

Total

|       | Stick        | 48.14 | 9.56 |
|       | Notehead     | 48.17 | 7.95 |

_Note_. Total points possible = 64

Table 4
*Mean Scores by Grade Level and Notation Type*

**Research Question 5**: Are there significant differences in the rhythmic performances of students who have had private lessons on an instrument versus those who have not?

Subjects in the study were asked to report whether they had ever taken private lessons on any instrument. Of the total subjects, 15 reported having taken private lessons, and 24 reported having no private lesson experience. The rhythmic accuracy mean score for subjects who reported having taken private lessons on an instrument was slightly higher than for subjects who had not taken private lessons (_M_ = 100.46 to _M_ = 93.72, respectively). An independent t-test indicated that this difference was not significant (_t_(37) = 1.22, _p_ = .25).
Research Question 6: Are there significant differences between the ability of fifth and sixth grade students in their ability to maintain a steady pulse while performing rhythm patterns?

An examination of steady pulse means indicated that fifth grade subjects were able to maintain a steady pulse during rhythmic reading exercises ($M = 3.71$) more effectively than the sixth grade subjects ($M = 3.19$). Additionally, fifth grade subjects had less variability ($SD = .53$) than the sixth grade subjects ($SD = .78$) in regard to this task. These data were subjected to an independent t-test, which confirmed that the difference between the fifth and sixth grade subjects in regard to their ability to perform with a steady pulse was significant ($t(37) = 2.36, p < .05$).

Research Question 7: Is there a correlation between steady pulse and rhythmic accuracy?

Analysis using a Pearson Product-Moment Correlation elucidated a significant positive correlation between pulse and rhythmic accuracy scores ($r^2 = .73, p < .01$). Thus, subjects who maintained a steady pulse with greater consistency also tended to achieve higher rhythmic accuracy scores, while those who did not maintain a steady pulse achieved lower rhythmic accuracy scores.
CHAPTER 5
DISCUSSION

Summary

The primary purpose of the present study was to determine whether students transfer rhythmic reading skills taught in elementary general music to beginning band instruction. In an attempt to address all areas of rhythmic acuity, subjects were assessed based on their accurate performance of rhythmic patterns as well as their ability to maintain a steady pulse. Other variables of interest included differences in rhythmic accuracy among students entering band, orchestra or choir, and accuracy of students who had taken private lessons versus those who had not. Further, rhythmic accuracy based on students’ chosen mode of performance was also considered, as well as their accuracy on rhythms displayed in stick notation versus traditional notehead notation.

A survey of related literature revealed that methods of rhythmic instruction tend to vary by grade level. At the elementary level, methods of instruction often rely on the recognition of rhythm patterns using syllables (i.e., Kodály, Gorden) or words (i.e., Orff). In performance based ensembles, rhythmic instruction tends to follow the method and scope of rhythmic acquisition employed in beginning band method books. These method books primarily use the number system. Studies suggest that speech-based systems of
rhythmic performance and acquisition have yielded positive results (Bebeau, 1982; Colley, 1987; Shehan, 1987). Further, a study of the rhythmic concepts outlined in the Academic Content Standards prescribed by the State of Ohio Board of Education mandates that students in fifth grade should be able to accurately read, write and perform rhythms of greater difficulty than are covered in beginning band method books. Therefore, there is a gap in instruction in which students are not exposed to rhythms of commensurate difficulty in their beginning band experiences. Studies related to transfer of learning indicate that repeated exposure to the initial task and similar tasks, over a long period of time, increases the likelihood that transfer of learning will occur (Gick & Holycak, 1987).

In order to assess whether transfer of learning had taken place in regard to students' rhythmic reading/performance abilities, the present investigation employed a cross-sectional design to compare the rhythmic acuity of current fifth grade general music students and sixth grade band members. All students participated in a rhythmic review session consisting of rhythmic reading tasks using stick notation and notehead notation. Following the initial review session, subjects ($N = 39$) individually completed rhythmic reading tests consisting of 16 rhythms, eight using stick notation and eight using identical rhythms in notehead notation. Rhythmic reading tests were audio-recorded and evaluated by three separate assessors. Judges rated performances in terms of rhythmic accuracy and maintenance of a steady pulse.

Interjudge reliability was calculated at .98 and .95 for rhythmic accuracy and steady pulse measures, respectively. Results indicated significant differences between fifth and sixth grade rhythmic accuracy scores, with fifth graders ($M = 106.24$)
performing significantly higher than sixth grade subjects ($M = 87.81$). No significant differences were observed among fifth grade students based on their intention to join band, orchestra, or choir in the sixth grade. Significant differences were observed among subjects who spoke rhythms using Kodály rhythm syllables versus those who used another mode ($p < .001$). However, because all of the fifth grade subjects chose to speak the rhythms, there was no variability in mode of response among fifth grade subjects, thus rendering the comparison difficult to interpret. When mode of response for sixth grade subjects only was analyzed, speaking rhythms using rhythm syllables produced significantly higher accuracy scores than clapping ($p < .05$). No significant difference was found between rhythmic performance using stick notation or notehead notation, but significance was approached in a grade level by notation interaction ($p = .052$).

Specifically, fifth grade students scored slightly higher on the rhythms using stick notation, and sixth grade students attained slightly higher scores using notehead notation. Students who had taken private lessons did not score significantly above or below students who had not taken private lessons. In regard to steady pulse, fifth grade students’ ability to maintain a steady pulse ($M = 3.71$) was rated significantly higher ($p < .05$) than sixth grade students ($M = 3.19$). Additionally, a strong, positive correlation ($r^2 = .73$) was demonstrated between rhythmic accuracy scores and steady pulse scores overall. This correlation was found to be significant ($p < .01$).
Discussion

The results from the present investigation indicate that students perform rhythms with greater accuracy and a more consistent steady pulse in fifth grade than in sixth grade. Because the sixth grade subjects came from the same elementary, and the teacher at the elementary school employed the Kodály approach to music learning with consistency from year to year, the fifth and sixth grade subjects were considered to be similar. Therefore, it would be logical to assume that the sixth graders would have attained similar rhythmic accuracy and steady pulse scores in fifth grade as did the current fifth grade subjects. Thus, sixth grade subjects' significantly lower rhythmic accuracy and steady pulse ratings must be explained by something more complicated than innate rhythmic aptitude. Instead, it seems more likely that the absence of transfer of learning, which is directly influenced by similarity and familiarity of tasks, was related to lower scores among sixth grade students.

As discussed in chapter two, Cornier and Hagman (1987) state, “transfer of learning occurs whenever prior-learned knowledges and skills affect the way in which new knowledges and skills are learned and performed” (p. 1). In regard to the present investigation, both fifth and sixth grade subjects received rhythmic training using the Kodály approach to rhythmic learning. This approach involves a focus on the identification of rhythms as patterns found initially in the context of folk songs. The syllabic system used in this approach is a mnemonic device for recognizing rhythms. As with most beginning band classes, the sixth grade students in this study had 10 months of beginning band instruction, in which they read rhythms on a regular basis, but using a
counting system associated with their method books, in addition to their rhythmic training in elementary school. However, the instructional approach used in the beginning band class, unlike the Kodály approach, relied heavily on building students' theoretical understanding instead of reinforcing the pattern recognition learned in the previous year. Using this approach, students in the middle school employed in this study counted rhythms using a number system. Further, the middle school music teacher indicated the prevalent practice of clapping rhythms in her classroom in order to reinforce rhythmic learning. Additionally, the scope of rhythms introduced in the beginning band book used by these subjects was simplistic in comparison to the rhythms mastered in fifth grade, largely because of limited instrumental technique and focus on the development of instrumental skills. Consequently, the sixth grade subjects possessed previously-learned knowledge in two related areas, but it is plausible that the knowledge and skills attained in sixth grade had partially negated the familiarity with the approach taken in fifth grade (Cormier & Hagnian, 1987). According to Gick and Holyoak (1987), this would be a manifestation of negative transfer, in which the information students have hinders their successful completion of a transfer task.

Results of the present investigation relate to other principles of transfer as well. In agreement with the literature regarding transfer of learning (Gick & Holyoak, 1987; Schuell, 1988), the likelihood that transfer will take place is dependent upon several factors. One of these factors is consistent practice of the initial task and similar tasks over a period of time and in various contexts. Students in the fifth and sixth grade classes were familiar with the task of reading rhythms in isolation, out of the context of a piece of music. However, because the approach to rhythmic learning employed by the
beginning band method book excluded all rhythms using sixteenth notes, and delayed the introduction of syncopated patterns until very near the end of the book, the sixth grade students were not provided opportunities to practice their previously acquired rhythmic reading skills upon entering middle school. Consequently, the students no longer recognized the difficult rhythm patterns as familiar, which was perhaps compounded by the fact that they had fallen out of practice in recognition of rhythms as patterns rather than individual beats. This lack of practice of the task over time and in various contexts is likely a step that would have aided sixth grade students in successful completion of the dependent measure.

Lack of familiarity as a direct hindrance to transfer also seemed to manifest during the rhythmic review sessions with the intact classrooms. The researcher observed that all the elementary students chose to speak the rhythms, and did so with a high level of accuracy. It was clear that rhythmic reading, even in flash card format and out of the context of a song, was a skill they practiced often in class. On the contrary, the rhythmic review sessions with the sixth grade classrooms were much more tentative. The researcher estimates that approximately two-thirds of each sixth grade class chose to clap the rhythms, and the other third varied between speaking and counting with numbers. Students did not appear to recognize the rhythms at first sight, so responses were initially very soft and hesitant. The researcher had to provide much more prompting by requesting that individual students model rhythms for the class in these classrooms. It is the belief of
the researcher that the difficulty of the rhythm patterns, coupled with the lack of familiarity after 10 months outside of general music, caused the students to be tentative in their responses.

Another factor critical to effective transfer of learning is the similarity of the initial task to the transfer task (Gick & Holyoak, 1987; Schuell, 1988). The greater the similarity of the tasks, the more the possibility exists that transfer will take place. In the present investigation, the initial tasks could be defined as the rhythmic reading activities the students practiced in their respective music classes, and the transfer task as the reading of the rhythmic patterns on the dependent measure. Though all subjects had experienced the rhythmic reading process using Kodály rhythm syllables and stick notation as fifth graders, the sixth grade students had been reading simpler rhythms and using a number system/clapping instructional approach throughout sixth grade. Given a choice of response mode, the majority of these sixth graders chose not to employ the rhythm syllables they learned in elementary school, possibly because they had been practicing the task of reading rhythms in a way that was dissimilar to this approach. However, because the counting/clapping approach had only been employed using the simple rhythms associated with the beginning band method, students were not readily able to apply that approach to the more difficult rhythms. This parallels Pierce’s (1992) findings, which illustrated that the similarity of two tasks in rhythmic performance increased the possibility of transfer. In the case of the present study, the two tasks were more dissimilar for the sixth grade subjects than for the fifth grade subjects, because the approach to rhythmic learning used in fifth grade was more conducive to the reading of
the more difficult rhythm patterns; whereas the sixth grade subjects had become familiar with an approach that did not yet provide them the tools to decode these rhythms.

Viewed in another light, differences in regard to rhythmic accuracy could be a product of the lack of continuity between elementary and middle school curricula. Rhythmic instruction guided by the beginning band method book does not build upon students' previously learned rhythmic knowledge and skills, but rather assumes that students have little accumulated rhythmic knowledge. Perhaps this is attributable to a focus on teaching fundamentals of instrumental performance such as tone production, air support, articulation, etc. Nonetheless, in the present educational environment where curricular alignment receives a great deal of attention (as evidenced by the adoption of content standards in all subjects and the practice of curriculum mapping being employed in many school districts), a gap in the teaching of rhythmic concepts should receive greater attention. Middle school math teachers, for example, do not begin the year by ensuring that their students can identify Arabic numerals at sight and do simple addition; rather, they assume that students enter their classrooms with a skill set as prescribed by content standards and the district course of study. Likewise, music is a cumulative subject, and middle school and high school music teachers alike can assume that their students possess some musical skills upon entrance into their programs. In relation to the present investigation, had the beginning band method book assumed a level of rhythmic competency based on content standards and rhythmic scope typical of elementary basal series and employed an approach to rhythmic instruction that built upon these skills, it is plausible that sixth grade students could have maintained mastery of these rhythms while
learning an instrument. Consequently, the use of supplemental rhythmic exercises composed specifically for performance using syllables, a counting system, or using a neutral syllable would be effective for accomplishing this goal.

In regard to research question two, no significant differences in rhythmic accuracy were found when examining the type of ensemble fifth graders chose to enter during sixth grade (i.e., band, choir, strings). However, the mean score for the choir students ($M = 116.66$) was higher than either the band or the string groups. Due to small cell size of students entering choir ($n=2$), inferential statistics were not run on this data. Future studies may wish to examine this phenomenon employing more subjects who intend to enter choir as well as those sixth graders already enrolled in choir in order to explore this relationship further.

In response to research question three, the mode of performance chosen by the subjects was found to be significant among all subjects. However, the lack of variability among fifth grade subjects made performance mode a salient variable only among sixth grade subjects. Among these subjects, those who spoke the rhythms using rhythm syllables achieved higher rhythmic accuracy scores than those who did not. The fact that use of Kodály rhythm syllables was the most successful mode of performance parallels findings by Bebeau (1982) and Colley (1987), which found that rhythmic reading systems based on speech cues were more successful than number-based systems in rhythmic reading tasks. Additionally, this finding is consistent with literature on transfer of learning (Gick & Holyoak, 1987; Schuell, 1988), which claims that the students' perception of structural similarities between task one and task two is crucial to transfer.
What may be evidenced in the sixth grade subjects choosing to respond by using rhythmic syllables is a recognition that the dependent measure was a task similar to tasks they had completed and mastered at an earlier time (i.e., in fifth grade). It is also important to note that students who did not speak the rhythms and chose to clap or use a neutral syllable may also have been relying on perceived similarities, but they perceived the similarity to be between the dependent measure and the rhythmic decoding process they had learned in band, rather than in elementary general music. This process could be considered an example of far transfer, whereas the students who chose to speak the rhythms were more likely to experience an instance of near transfer (Gick & Holyoak, 1987). If the approach to rhythmic learning in band had closely paralleled the approach taken in elementary general music, these students may have had less difficulty in determining the most effective mode of response.

Another explanation for this finding may be that the sixth grade students who chose to speak the rhythms using rhythm syllables were more able to bring about transfer independently. According to Gick and Holyoak (1987), these students may have required little assistance to retrieve information pertinent to the task; a rhythmic review session facilitated by the researcher may have been sufficient. However, it is likely that the majority of the sixth grade students needed more direct instruction in order to retrieve that information. Further research using more subjects, a longitudinal design or longer training/review sessions would further clarify this finding.

Though research question four yielded no significant results, it is important to note that a grade level by notation interaction neared significance. Fifth grade subjects
performed rhythms slightly more accurately when displayed in stick notation than using notehead notation. Conversely, sixth grade students, who were accustomed to traditional notation, performed with slightly more accuracy when rhythms were displayed using notehead notation rather than stick notation. Again, this finding is consistent with extant literature on transfer of learning (Gick & Holyoak, 1987; Schuell, 1988) and research findings by Pierce (1992). Both of these sources maintain that similarity is crucial regarding transfer. In this instance, sixth grade students found the notehead notation more like the notation used in band, while fifth grade students were accustomed to stick notation. These perceived similarities were influenced by familiarity, because though sixth graders were once familiar with stick notation, they had only been exposed to notehead notation during the previous 10 months. Thus, they had not had repetitive practice reading stick notation in various contexts in recent times, diminishing the probability of transfer. However, they did perform the notehead notation more effectively.

An order effect did manifest itself overall, and, more notably, among fifth grade subjects. These subjects scored significantly higher on rhythmic accuracy when presented with stick notation items before notehead notation. Significance was not found among sixth grade subjects when isolated as a group. Again, this finding can be explained by considering theoretical principles of transfer (Gick & Holyoak, 1987). In general music, fifth grade students would have grown accustomed to reading rhythms using flash cards on which rhythms were displayed using stick notation only. Their exposure to notehead notation was limited to the occasional reading of melodic passages in folk songs, and some experience playing soprano recorders in class. Since the rhythms used on the
dependent measure were identical in stick notation and notehead notation, the students that received stick notation items first had the advantage of having already seen the notehead notation rhythms in stick notation, though they were not told the rhythms were the same. Conversely, sixth grade subjects, who had experience reading both types of notation, though most recently notehead notation, did not show significant differences in accuracy based on order.

The finding that participation in private lessons yielded no significant results in rhythmic accuracy may indicate that students are not influenced by private lessons in the area of basic rhythmic reading skills. Considering that private lessons often focus on technique and accuracy specific to an instrument, it may be that these experiences for students do not actively teach rhythmic concepts as directly as school instruction. For example, as students’ preparation for private lessons often involves working on the same piece for several weeks, rhythmic instruction may not take place after the initial lessons on a particular piece. Additionally, private lessons may require students to prepare repetitive technical exercises (e.g., scales, arpeggios, articulation studies), in which rhythm is repetitive and is therefore not the focus of the exercise. Further research that qualitatively investigates the nature of private lessons in comparison to classroom music instruction may shed light on the reasons for this finding.

Viewed in a different way, the mean score for students who had taken private lessons was slightly higher than for those who had not taken private lessons ($M=100.46$ to $M=93.72$, respectively). Because subjects in the study had relatively little private
lesson experience, it is possible that these scores would continue to diverge over time, yielding significant differences. Further research that collects longitudinal data may explicate this finding.

Steady pulse was analyzed as a variable separate from rhythmic accuracy, unlike Pierce's (1992) investigation in which rhythm and pulse scores were combined. Examining data in this way, the present investigation found that fifth grade students performed using a steady pulse with significantly greater consistency than did sixth grade students. Additionally, steady pulse was positively correlated with rhythmic accuracy. This finding may be interpreted in several ways. It may indicate the importance of maintaining a steady pulse in performing rhythms accurately. Further, maintenance of a steady pulse may have aided assessors in determining whether or not patterns were performed accurately, though it was the goal of assessors to separate these variables as much as possible. Finally, it is plausible that students' overall level of rhythmic acuity enables them to perform rhythms more accurately and at a consistently steadier tempo. Research in which students complete similar rhythmic assessments, some with an external pulse and some without, may further explicate this finding.

Further, since students who attained the highest accuracy scores were also the students who spoke the rhythms using rhythm syllables, it is possible that speaking elicits a more effective response mode than clapping. Students instructed using Kodály's approach are trained to identify rhythms as patterns in the context of the folk music they perform in class. They then become increasingly able to generalize these rhythmic reading skills in other contexts. When these students see four sixteenth notes, they do not perceive them as four separate notes, but rather as a pattern they call 'tika-tika'.

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Conversely, students instructed using numbers and a coordinating system of clapping must first identify the beat on which the four sixteenth notes fall, determine what to name these notes, and then transfer that information to their hands and clap it, as described by Bebeau (1982). Gordon (2000) asserts that use of the traditional number system does not encourage the recognition of rhythms as patterns, but rather individually based on beat placement; the approach is more theoretical than experiential. The use of numbers is simply a manifestation of this conceptualization of rhythm. This process was described by Bebeau (1982) as a much more complex process than is employed by any of the speech cue approaches to rhythmic reading. Consequently, it is plausible that students who chose to clap the rhythm did not complete this process instantaneously, to the detriment of a steady pulse.

**Conclusions**

The following conclusions are drawn from analysis of the data:

1. Some level of rhythmic acuity is lost, unused, or simply not transferred between elementary general music and beginning band.

2. Steady pulse is positively correlated with accurate rhythmic performance.

3. Speaking with rhythm syllables elicits more accurate rhythmic performance than clapping.

4. Subjects perform better on rhythms displayed using the notational system they use the most often.

5. Private lesson experience did not significantly improve students' rhythmic accuracy as fifth and sixth grade students in this study.
Recommendations for Educators

The following recommendations for educators are drawn from analysis of data and conclusions:

1. It is imperative that music educators and directors of curriculum communicate to ensure that content standards are being met by grade level and that the district course of study builds upon previously learned knowledge and skills.

2. Secondary level music teachers and elementary general music teachers should collaborate in order to effect transfer of learning successfully. This may include a discussion regarding the system of rhythmic reading preferred by the secondary teachers and formulation of a plan so that elementary teachers can begin the process of transfer late in elementary school, and the process can be completed at the secondary level. Communication and collaboration among music educators is crucial to success.

3. Beginning band method books should include supplementary rhythmic exercises meant for students to perform by speaking or counting rhythms that are more difficult than technique allows them to perform on their instruments. Alternatively, instructors of beginning band may wish to create their own exercises, specific to their district course of study.
Recommendations for Further Research

1. Further research of a similar nature involving a larger number and diverse population of subjects may yield more generalizable results.

2. An investigation of a similar nature in which a different approach to elementary music learning was employed may help differentiate between the transferability of other approaches.

3. An investigation using a longitudinal design may shed light on the nature of transfer as it applies to skills learned in elementary general music to other areas of music study.
REFERENCES


APPENDIX A

STUDENT BACKGROUND QUESTIONNAIRES
Tell Me About Yourself!

Name ___________________________ Gender: male/female

Please answer all questions that have music notes next to them. Answer the other questions only if they apply to you.

What grade are you in? (circle one) 5 6 7

Circle ALL the grade levels during which you attended Thomas Elementary.
Kindergarten 1st 2nd 3rd 4th 5th

What music class do you think you will take next year? (circle only one) Choir Band Strings

If you chose band or strings, which instrument do you think you might like to play? _____________________________

Have you taken private lessons on any instrument? Yes ______ No ______

If the answer is yes, what instrument? _____________________________

How long have you taken private lessons? (check only one)
_____1 year or less
_____more than 1 year but less than 3 years
_____more than 3 years
Tell Me About Yourself!

Name ___________________________ Gender: male/female

Please answer all questions that have music notes next to them. Answer the other questions only if they apply to you.

What grade are you in? (circle one) 5 6 7

What elementary school did you attend? ___________________________

Is that in Dublin? Yes No

Circle ALL the grade levels during which you attended that elementary school.
Kindergarten 1st 2nd 3rd 4th 5th

What instrument do you play? ___________________________

What grade were you in when you started playing your instrument? 3rd 4th 5th 6th 7th

What music class do you plan to take next year?
Choir Band Strings None

Have you taken private lessons on any instrument? Yes No

If the answer is yes, what instrument? ___________________________

How long have you taken private lessons? (check only one)
___ 1 year or less
___ more than 1 year but less than 3 years
___ more than 3 years
APPENDIX B

DEPENDENT MEASURES
Rhythms

\[ \frac{2}{4} \quad \frac{2}{4} \quad \frac{2}{4} \quad \frac{2}{4} \quad \frac{2}{4} \quad \frac{2}{4} \quad \frac{2}{4} \quad \frac{2}{4} \]

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APPENDIX C

ASSESSMENT DOCUMENT
Steady Pulse Rating:
1-5 (see below)

5-point Likert Scale for Steady Pulse
1=no steady pulse  2\hspace{1cm}3\hspace{1cm}4\hspace{1cm}5=always steady
average  and at given tempo

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