

THE EFFECT OF AUDIATION
ON
ELEMENTARY STUDENTS'
RHYTHM IMPROVISATIONS

by

PAULA M. JESSEN

A thesis submitted to the Faculty of Graduate Studies
of the University of Manitoba
in partial fulfillment of the requirements of the degree of
Master of Education

DEPARTMENT OF CURRICULUM: HUMANITIES AND SOCIAL SCIENCES
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TABLE OF CONTENTS

		PAGE
	ABSTRACT	i
	ACKNOWLEDGEMENTS	iii
	LIST OF TABLES	iv
	LIST OF FIGURES	v
CHAPTER		
I	INTRODUCTION	1
	Statement of Significance	2
	Statement of the Problem	3
	Theoretical Assumptions	4
	Limitations	4
	Operational Definitions	5
II	REVIEW OF LITERATURE	7
	Research on Music Learning Theories	7
	Research on Improvisation	10
	Summary	17
	Implications	20
III	PROCEDURES AND METHODOLOGY	21
	Subjects	21
	Instruments	21
	Gordon's Music Aptitude Test	22
	Rhythm Improvisation Subtest	23
	Design and Procedure	24
	Treatment of Data	27
IV	RESULTS AND DISCUSSION	29
	Analysis of the Data	29
	Results	29
	Statistical Analysis	44
V	CONCLUSIONS AND RECOMMENDATIONS	53
	Introduction	53
	Summary of Findings	53
	Conclusions	58
	Recommendations	59
	Summation	60
	BIBLIOGRAPHY	62
APPENDICES		
A	Letter of Introduction	65
	Agreement Form	66
B	8 Lesson Plans for Learning Sequence Activities and Improvisation Activities.	67
C	Rhythm Improvisation Test	91
D	Data Analysis Form	92
E	Observations of Lessons	93

ABSTRACT

The purpose of this study was to determine the effect of audiation on the ability of grade 6 students to improvise rhythmically.

To achieve this purpose, two instruments were used to collect data from 63 subjects attending grade 6 in one public school. The first instrument, Subtest 8 of the Individual Performance Component of the 1983 Manitoba Music Assessment, was designed to analyze the subjects' rhythm improvisations on four criteria: completeness of beats, steadiness of pulse, sense of finality and originality. Gordon's "Intermediate Measures of Music Audiation" was used to measure each subject's music aptitude score. Data from these instruments were analyzed by computer and were presented in table form. Subjects were exposed to two teaching methodologies: Gordon's audiation learning sequences techniques and Orff-based rhythm improvisation activities. Results were analyzed using descriptive data.

On the basis of the findings and the limitations imposed by the study, the following conclusions were reached:

1. Audiation of a steady beat is a prerequisite to audiating rhythm.
2. Audiation techniques and improvisation techniques must be developed slowly.
3. A correlation exists between rhythm aptitude and three aspects of performance of rhythm improvisation:

completeness of beats, steadiness of pulse and sense of finality.

Further study over a longer period of time is recommended to see if there are other variables which would determine the affect of audiation on grade 6 students' ability to improvise rhythmically. The application of Gordon's audiation techniques needs further testing. Results of this study should be accepted cautiously recognizing the limitations of less than ideal teaching conditions. More frequent exposure to Gordon's methodology, coupled with a longer exposure in terms of number of lessons, may have yielded different data.

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LIST OF TABLES

TABLE		PAGE
1	Mean Total Scores of Rhythm Improvisation Test	46
2	Mean Subscores of Rhythm Improvisation Test	47
3	Intercorrelation of Rhythm Aptitude with Musical Performance Pretest Scores	50
4	Intercorrelation of Rhythm Aptitude with Musical Performance Posttest Scores	51

LIST OF FIGURES

FIGURE		PAGE
1	Mean Differences in Subscores of Rhythm Improvisation Test	48

CHAPTER I

INTRODUCTION

Recent analysis of curriculum areas in Canadian music programs has produced some interesting findings. The 1983 Manitoba Music Assessment Program (Province of Manitoba) sampled the musical skills of Grade 5 students via written and performance-based tests. Conclusions pointed to a weakness in the area of aural skills:

It would appear that concrete, directed listening, the focused aural perceptual experience which is the essence of musical listening and which is the source of aesthetic sensitivity to musical expression, is not a common emphasis in music classes. ...It would appear that facts and activities are the primary components of musical instruction, rather than carefully selected and sequenced experiences with music which converge upon musical sensitivity or musical concepts. (1985, p.36, 37)

Similar results were found in a nation-wide survey by Cooper (1989) who discovered that 11% of music teachers do not use listening activities in their classrooms and that 29% of music teachers do not plan creative activities for their music classes. He found that singing and playing musical instruments are the two main performance activities in Canadian music classes.

The lack of aural skills is further corroborated in a survey of elementary music specialists in Atlantic Canada where only 4.77% of instructional time was spent on improvising compared with 21.39% devoted to singing (Montgomery, 1990).

Statement of Significance

Explanations for the lack of aural skills teaching recur throughout the literature. Extraneous factors contribute to the problem of curricular balance. Often a lack of time is devoted to music instruction in the school timetable. Of the recommended minimum of 90 - 100 minutes a week devoted to the elementary music program, (Manitoba Department of Education, 1978) only 14% of Manitoba schools received that allotment in 1983 (Province of Manitoba, 1985). The remainder received less instructional time with only 3% receiving in excess of 120 minutes in a six day cycle.

Much classroom teaching time is devoted to performance and concert preparations. These are high profile, publicly supported programs "while music listening and the goals of developing music responsiveness, music understanding, and positive attitudes toward a variety of styles are neglected" (Reese, 1983, p.36).

One common conception that many music teachers develop is the necessity to prepare their students, upon leaving elementary school, for the band or guitar program in junior high. Under this assumption, the elementary music program takes on a music literacy thrust. According to Miller (1988) "few people who develop facility at reading music do so in the classroom; developing musical literacy among all students, therefore is not a practical goal of the general curriculum" (p.39).

The literature indicates that the direction music education should be headed is toward the aural tradition which is the keystone of musical understanding. Gordon (1984) believes that understanding music stems from an awareness of its basic aural elements - a sense of tonality and a sense of meter. The cultivation of an awareness of these elements leads to the development of aesthetic sensitivity which is advocated by Miller (1988) as a goal of music education.

The significance of this study is that it examines a new method of increasing aural skills in the area of rhythm. It is the intent that the findings could lead to increased use of aural musicianship in today's music classrooms.

Statement of the Problem

The purpose of this study is to contribute to the understanding of elementary children's aural musicianship by examining their exposure to:

- 1) a sequential teaching method of aural rhythm skills sequence developed by Gordon (1984) and
- 2) Orff-based instruction on rhythm improvisation skills.

In other words, to what extent does developing students' audiation contribute to their musical growth, specifically to the skill of improvisation?

The problem to be investigated in this study is the effect of audiation on the ability of Grade 6 students to

improvise rhythmically.

Theoretical Assumptions

This study assumes that improvisation is a valuable aspect of music education. Thomas states that "improvisatory experiences are way up on the cognitive ladder" (1980, p.58) and assume knowledge of musical concepts, as well as the ability to analyze and synthesize the elements of different concepts.

The study also assumes that improvisation is as important a skill as any other mode of teaching music and thus satisfies the goals of music education. According to Dobbins "improvisation provides the sole access to the advanced stages of musical development, in which music conversation within a group and spontaneous expression of musical ideas as a soloist become possible" (1980, p.37).

Limitations

Gordon's aural skills methodology is a developmental process which occurs slowly through repeated exposure over a long time frame. Due to time constraints only a portion of time recommended by Gordon for exposure to audiation methods was administered.

The sample in this study consisted of students available to the researcher at one school. Results of the study may not be generalizable beyond that school's

population.

Operational Definitions

For the purpose of this study, certain terms are defined as follows:

Audiation takes place when one hears music silently, when the sound is not physically present. One may audiate in recalling music or in composing music. (Gordon, 1984)

Aural/oral learning refers to perceiving music (the aural process). The aural process is hearing the sound of music that is physically present. The oral process is performing music through singing and/or moving. (Gordon, 1984).

Aural/oral rhythm skills sequence is a detailed sequential learning hierarchy developed by Edwin Gordon. A description of the pedagogical implementation of these sequences appears in Gordon's kit Jump Right In: The Music Curriculum.

Elementary students are those enrolled in Grade 6 in public school.

Orff-based instruction pertains to the elementary music teaching principles espoused by Carl Orff.

Rhythm improvisation is a developmental process where a student creates a new rhythm pattern from known rhythm patterns within a given parameter. The elements of

improvisation include completeness of phrasing, steadiness of pulse, sense of finality and originality. These elements are based on those used in the 1983 Manitoba Music Assessment and will be used to analyze the rhythm improvisations collected in this study.

CHAPTER II

REVIEW OF THE LITERATURE

Research on Music Learning Theories

The concept of hierarchical music learning sequences used in this study stems from the theoretical foundations of Mursell in the 1940's. He felt musicianship depended on musical content being taught in a cyclical sequence in which the experience of sound occurs before notation (Jordan-DeCarbo, 1986). Bruner (1960) later coined this cyclical sequence the "spiral curriculum". He espoused the theory that the foundations of any subject may be taught to anybody at any age in some form.

The construct of meaningful learning as postulated by Ausubel meant that the learner had to relate new material to relevant items in his cognitive structure. Gordon later referred to meaningful learning for aural cognition as audiation where "one hears music through recall or creation...and infers musical meaning" (Andrews, 1989, p.7).

A specific hierarchy of learning sequences was formulated by the learning theorist, Robert Gagné (1965). His hierarchy describes a 'route' for the learning of a topic. All students must master the relevant lower-order skills before learning the related higher-order skill. Gagne advocated planning a sequence of instruction to avoid omitting essential steps in the acquisition of knowledge in

a content area. His eight types of learning are:

1. Signal learning
2. Stimulus response learning
3. Chaining
4. Verbal association
5. Multiple discrimination
6. Concept learning
7. Principle learning
8. Problem solving

Edwin Gordon (1984) took the sequential levels outlined by Gagne and adapted them to musical learning. He divided learning into two parts:

1. Discrimination is rote learning and is the basis for the development of audiation skill.
2. Inference learning occurs during audiation when unfamiliar patterns are coordinated with familiar patterns.

Gordon's skill learning sequence hierarchy is as follows:

Discrimination Learning

Aural/Oral

Verbal Association

Partial Synthesis

Symbolic Association

Composite Synthesis

Inference Learning

Generalization

- aural/oral, verbal, symbolic

Creativity/Improvisation

- aural/oral, symbolic

Theoretical Understanding

- aural/oral, verbal, symbolic

Gordon developed a content learning sequence for each of rhythm and melody (tonal) skills. Students progress sequentially from the lowest level of learning to the highest level of learning. He also developed a logical sequence for spiraling which is a temporary skip from a lower (discrimination) to a higher (inference) level of learning.

Dittemore (1970) concluded from his study of elementary students' performances of songs that sequence does appear in the development of musical capabilities. He found that for rhythm, the sequence is the abilities to perform in:

1. duple and triple meter
2. mixed meter
3. unusual meter

Yarman (1972) examined this sequence more closely with young children in kindergarten and grade one. He found that kindergarten children in particular, would benefit from instruction in songs written in mixed and unusual meters. He further concluded that instruction in mixed and unusual meters does not hinder kindergarten children's performances of usual meter songs; in fact, it seemed to enhance their

performances.

Research on Improvisation

Willi Apel defines improvisation as "the art of performing music spontaneously, without the aid of manuscript, sketches, or memory" (1969, p.404).

An examination of the literature produced a wealth of material pertaining to jazz improvisation. "In our culture, the bulk of activity in improvisation is in jazz music" (Coker, 1964). This style of improvisation is best explored in a group situation where the performer can listen and can contribute to what's going on (Bailey, 1980). The principles of jazz improvisation technique have been widely documented and include: ear-training, call and response, theme construction and development, tension/relaxation, ornamentation and embellishment, repetition, extension, fragmentation, augmentation, diminution and inversion (Baker, 1980; Dobbins, 1980; Moore, 1985).

Jazz educators led the way in developing methods and materials for learning improvisation skills (Kuzmich, 1980). Then there began to emerge individual methodologies for teaching improvisation as a skill in the general music class. The common element among these methods is that they seem to involve phases of sequential learning experiences. Konowitz's (1973) phases include:

1. Exploratory: Improvisations are created with skills students already possess. Strategies include: using

instrumental colours to express feelings; exploring dynamics, accents, phrasing and tempo through instrumental sounds; and creating contrasting answers to rhythmic questions.

2. **Experiential:** Skills are expanded through improvisation experimentation. These skills include: composition, conducting, and recording. Students are involved in decision-making processes while exploring musical concepts.
3. **Developmental Involvement:** This phase develops skills that give more performance capability. These skills include: creating, doing, experimenting, relating and innovating. Students are urged to notate, orchestrate, perform, improvise and conduct. The student comes to realize that intellectual investigation, through listening, reading or analyzing, is part of creating a musical product.

Welwood (1980) explored improvisation with "found" instruments (any ready made object capable of producing a sound). His warm-up activities parallels Konowitz's phase 1 experiences while his small group improvisations matches Konowitz's phase 2 activities.

Emile Dalcroze (Abramson, 1980) developed a 3 part method for teaching improvisation:

1. **Eurhythmics:** Ideas like 'move your fingers' are transformed into movement. Students are taught to

perform one sound-motion while imagining, thinking and hearing another. Students rehearse a combination of movements first in the real body then imagine going through the movements in the kinesthetic body without moving the real body. The students then return to the same movement in the real body.

2. Solfège Rhythmique: Ear-training and sight reading exercises are used to develop an understanding of theory. The exercises include phrase-breathing, social integration, coordination and inner hearing. These skills are combined with the use of hand and body motion to teach the differences in instrumental and vocal tone qualities and production.
3. Music Improvisation: Performance is propelled by developing the students' powers of sensation, imagination and memory, rather than imitating the teacher's performance. The teacher improvises lessons and tasks and improvises music to illustrate these tasks. The student responds to the task and the music, then improvises solutions.

Thompson (1980) developed a three-phased process for teaching vocal improvisation:

1. Exploratory: Students investigate possibilities for timbre, pitch, rhythm, dynamics, and harmonies. This is developed through a) imitating environmental or recorded sounds; b) responding to visual stimuli; c) playing

pitches of a major chord on an instrument.

2. Invention - Students select certain sound elements and mold them into small ideas or patterns. These selections are a result of the students' sense of aesthetic beauty. The students' selections are based on cognitive and affective decisions.
3. Organizational - Invented patterns are combined into music structures. Decisions as to which patterns to select and the sequence of patterns are based on cognitive and affective reasoning.

Recently there has been an abundance of materials pertaining to teaching improvisation to children using the Carl Orff method. According to Orff, this emphasis on improvisation is a unique characteristic of his way of teaching music (Carley, 1985). Professor Wilhelm Keller of the Orff Institute explains improvisation as "the spontaneous 'working-through' of a defined problem.... Defined indicates a limited frame within which one must work toward a specific goal" (Nichols, 1977, p.116). Orff-based improvisation emphasizes the importance of an aural approach. Hearing and improvising music must precede reading notes (Gulda, 1977).

The literature indicates that many techniques for teaching improvisation at the elementary level exist. (Kenney, 1977; Aaron, 1980; Frazee, 1987; Hart, 1989) Isabel Carley (1985) espouses four types of improvisation:

1. Free Exploration: Students explore all areas (speech, movement and instruments).
2. Immediate participation in a given task: After students have learned basic vocabulary by imitating the teacher they begin to improvise their own creations which need not be remembered or repeated, e.g., question and answer technique.
3. Improvisation where small groups have different assignments to work out alone and bring back to class. Students remember what they've created and reproduce it in public. Texts and dramatic situations provide frameworks for a longer structure, e.g., folk and fairy tales.
4. Improvisation that involves the whole class in longer forms and uses all techniques. At this most advanced stage, spontaneous solo improvisation and group response occur.

Very few studies were found dealing with children's improvisations. In his study with junior and senior high school students, Briscuso (1974) found that instrumental jazz improvisation can be taught. The earliest research with young children's improvisations can be traced to Pond's work with three to six year old children at the Pillsbury Foundation in the 1930's. He observed that:

1. Deeply rooted awareness of auditory phenomena is primary.
2. Rhythmically, everything was rooted in that wave-

like movement of sound impulses created by spontaneous accentuations. Subsequently, beat subdivision made possible the invention of more complex rhythmic figures and rhythm patterns.

3. The children exhibited instinctive and ingenious faculty for devising and sustaining spontaneous polyrhythms of sometimes baffling complexity and for enjoying their seemingly effortless repetition. Polyphonic improvisation thus should be viewed as a fundamental element of early childhood music.
4. It is through improvisation that music grows naturally from its roots in the young child. (1980 pp.40-41)

An investigation by Prevel in 1973 examined the musical self-expression of children's sound scribbling. An analysis of 2,000 children's tape-recorded compositions revealed a narrow correlation between their musical development and the main stages of their motor, emotional and mental development. Once children passed through the stage of uncontrolled gestures, their improvisations began to become highly structured. They alternated different colours of sound, varied the intensity of volume, and made accents, conclusions and even introductions.

Prevel further observed that children's compositions depended more on their kinesthetic development than to their auditory perception. However, because he "consider[ed] auditory reaction as the first essential element in the development of a musical consciousness" (p.15), he developed strategies to control aural perception. This included having the child synchronize his first composition with additions on a second track on the tape recorder. In this

way the child was forced to listen to be able to create.

A longitudinal study which examined the improvisations of two, three, four and five year old children was undertaken by Flohr (1984). Using an Orff xylophone the children were guided through three phases of improvisation tasks. Results indicated that the characteristics of children's improvisations change in relation to their chronological age. The improvisations were grouped into three stages:

1. Stage One, motor energy, was characterized by plodding and accented durations
2. In Stage Two, children experimented with many phrases and combinations
3. Stage Three, formal properties, was characterized by repetition, larger formal structures and decentered perception.

As in Prevel's study Flohr found that the younger children's improvisations were dominated by motor energy. The older children's improvisations began to be directed towards formal properties, contained more durations and were more accurate. All age groups improvised music which was rhythmically complex. Like Prevel, Flohr used techniques that forced the children to attend aurally to the improvisation tasks. In one phase a conversation on the xylophone ensued where the investigator played a pattern on the instrument to which the child responded on his

instrument. In the next phase the child was asked to improvise a melody while the investigator played a twenty-four measure bordun accompaniment. In both cases the child's improvisations were a direct response to an auditory musical stimulus.

Recent research conducted in the jurisdiction of the investigator examined the rhythm improvisations of grade 5 students. It was found that thirty-five percent of the sampled group improvised with 100% accuracy on the four criteria tested (Province of Manitoba, 1985). Like Flohr's study, the stimulus for this test was strictly aural.

Summary

A review of the literature on learning theory revealed a learning model developed by the conceptual-empiricists Mursell, Bruner, Ausubel, Gagné and Gordon. They each developed a model for teaching based on the premise that learning passes through hierarchical sequences.

Gordon devised a specific content learning sequence for rhythm. This order of musical development in children is borne out in studies by Dittmore and Yarman. Dittmore concluded that elementary children's performance of songs develops in a rhythm hierarchy of:

1. duple and triple meter
2. mixed meter
3. unusual meter

Yarman found that despite this hierarchy children should not be taught songs only at their developmental level. Rather, exposure to songs at the more advanced end of the hierarchy (mixed meter and unusual meter) resulted in improved performances of usual meter songs by kindergarten children.

The literature on improvisation was primarily devoted to jazz improvisation. The methods for teaching music improvisation identify distinct phases. Konowitz proposed a three phase learning method:

1. exploratory
2. experiential
3. developmental involvement

Konowitz's phases closely resembled Thompson's three-tiered process for teaching vocal improvisation to elementary students:

1. exploratory
2. invention: certain elements molded into patterns
3. organizational: invented patterns are combined into music structures

Dalcroze also advocated a three part method of learning improvisation:

1. eurhythmics: training in motion
2. solfège rythmique: training in pitch and theory
3. music improvisation: which occurs after much experience with pitch and rhythm. It is at this stage that musical thinking and musical judgment is developed.

Brisusco's study with junior and senior high school students found that instrumental jazz improvisation could be successfully taught.

The primary method of teaching improvisation to children in elementary schools is the Orff method. However, a lack of research in this area prevails. Carley provides a teaching model based on four improvisation types:

1. free exploration
2. immediate participation in a given task
3. improvisation where small groups have different assignments to work out alone and bring back to class
4. involves the whole class in longer forms and uses all techniques

Research involving young children's improvisations is sparse. In the 1930's Pond concluded that auditory awareness was primary for improvisation. He noted children naturally created complex rhythm patterns and therefore, polyphonic improvisation should be a fundamental element of early childhood music.

Prevel found children's compositions passed through stages of musical development. He created strategies focusing children's attention on auditory perception which he considered essential to developing their musical consciousness.

Flohr observed that children's improvisations progress from motor energy, to experimenting with phrases, to an

awareness of formal properties. The use of aural cues was used to direct children's improvisations.

A 1983 Manitoba music study subtest revealed quantifiable data on rhythm improvisation. Only 35% of grade five students could successfully improvise an 8 beat phrase to an aural stimulus. It can be concluded that this is an area of weakness which should be addressed by Manitoba music educators.

Implications

The implications from this research are that children's improvisations are dependent on aural awareness. The implementation of Gordon's aural/oral audiation skill learning sequences as outlined in his Jump Right In: The Music Curriculum could result in more musical rhythm improvisations by the subjects in this study.

The research also implies that improvisation can be taught by moving through stages and that the most child-centered method is that of Carl Orff. The use of Carley's first two types of improvisation may significantly improve children's ability to improvise rhythmically.

There is evidence that learning is developmental and hierarchical. It would follow that Gordon's rhythm content skills sequence will positively influence the learning of rhythm patterns.

CHAPTER III
PROCEDURES AND METHODOLOGY

Subjects

This study was conducted with 2 elementary classrooms with a total of 63 students at Oakbank Elementary. This group was comprised of one grade 6 classroom with 31 students and another grade 6 classroom with 32 students. Each classroom had a heterogeneous grouping of students. These classes were chosen to participate because they represented a sample of intermediate age students. They were also easily accessible to the investigator.

A limitation of this study was that these two groups were intact classrooms and not randomly formed groups by the investigator. The groups were formed at the beginning of grade 5 when the school administration and classroom teachers attempted to form heterogeneous groupings according to academic ability. When these groups entered grade 6 they remained intact because subgroups for cooperative learning had been formed within each class and the teachers wanted to maintain them for another year.

Instruments

Two instruments were used for gathering data: a music aptitude test and subtest 8 of the Manitoba Music Assessment Program (1983) - the individual performance component (pp. 63, 64).

Gordon's "Intermediate Measures of Music Audiation"

(IMMA) is an integral component of his teaching kit Jump Right In: The Music Curriculum. Audiation scores are used to teach to students' individual musical differences. The standardized IMMA is useful for students in Grades 1 to 6, is based on theoretical foundations of developmental music aptitudes, is readily available and is easy to administer and score.

Subtest 8 of the Individual Performance Component of the Manitoba Music Assessment was chosen because of a scarcity of published rhythm improvisation instruments. It was developed by Manitoba music teachers and consultants for use with Manitoba Grade 5 students. It is readily available, is short and easy to administer.

Gordon's Music Aptitude Test

The "Intermediate Measures of Music Audiation" is a tape recorded group music aptitude test of short music phrases. The test is in two parts: Tonal and Rhythm. Each part is recorded on a separate cassette tape and each tape includes practice examples with forty test questions. The child answers the questions presented on the tape by making circles around the pictures of faces on the answer sheet. No formal music achievement is required to answer the questions. The child simply draws a circle around the pair of faces which are the same on the answer sheet if the two phrases heard on the tape sound the same; if the two phrases

heard on the tape sound different, the child draws a circle around the pair of faces which are different on the answer sheet. Each test requires 20 minutes of administration time. The verbal directions are standardized.

As reported in the test manual, test-retest reliability coefficients range from .72 to .91. Most of the split-halves reliability coefficients for the first administration of the test are approximately .74 for the "Tonal" and "Rhythm" subtests and .81 for the Composite test score for grades 1 to 4. Content validity was determined on the basis of the results from three cross-sectional studies in 1974, 1976 and 1978. Tests for concurrent validity indicated that practice effects in taking the tests are negligible (Gordon, 1979).

Rhythm Improvisation Subtest

Item 8 of the Performance Component of the 1983 Manitoba Music Assessment calls on students to complete a rhythmic idea. Subjects are told they will hear the beginning of a rhythm pattern and to make up their own pattern to answer the rhythm they hear. An eight beat taped stimulus is played to which the student provides an answer using an unpitched percussion instrument. The stimulus is repeated, giving students two chances to respond. One trial run, which is not marked, is given in advance. The rhythmic response item is marked for completeness, pulse stability,

sense of closure, and originality.

The validity of this instrument stems from the fact that most items were developed around competencies described in the Provincial Curriculum for K-6. As well, the role of the technical Advisory Committee in the development of items, the revision after the administration of a pilot test and the concurrence of the Interpretation Panel that the test adequately reflects the goals of music education in Manitoba, all corroborates the validity of the types of items included (Province of Manitoba, 1985).

Reliability was ensured by a half-day training session for Panel members where sample student responses were examined and discussed to optimize inter-rater consistency. On the actual test, the Panel took into account both the relative item difficulty and the perceived importance of the item. Panel members independently rated each item, then compared ratings.

Design and Procedure

The purpose of this study was to ascertain the effect of audiation skills on children's rhythm improvisations. Data was obtained from two grade 6 classes. One class, the experimental group, received instruction in Gordon's rhythm learning sequence activities plus instruction in rhythm improvisation skills based on Carley's techniques. The other class, the control group, received instruction in

Carley's rhythm improvisation skills techniques only. Data were obtained from the analysis of a rhythm improvisation test prior to and following the implementation of the teaching methodology. Data were also obtained from observations of students' reactions to the teaching methodologies.

In March 1991, final arrangements were made with the participating school division superintendent and the participating school's administrators prior to the collection of data. In June 1991, letters of Introduction and Rhythm Improvisation Research Project Agreement Forms were sent home with participating students to obtain parents' written consent (see Appendix A).

Eleven sessions were spent with each group of subjects. Each classroom session lasted for approximately one 40 minute period.

Session 1: Administration of pretest. Subtest 8 of the Individual Performance Component of the 1983 Manitoba Music Assessment (see Appendix C) was administered to subjects individually. The test was approximately 5 minutes in length. Subjects' responses were tape recorded for later analysis.

Session 2: Administration of Gordon's "Intermediate Measures of Music Audiation" music aptitude test by the researcher. Although the IMMA was

designed to be given on two separate occasions, timeline constraints required it to be administered in one sitting. Standardized procedures were followed in administering the test.

Sessions 3-10: Implementation of teaching methodology (see Appendix B).

For the experimental group, Gordon's rhythm learning sequence activities as outlined in his kit Jump Right In: The Music Curriculum (1990) were administered. Due to time constraints only the aural/oral level of the skills learning sequence was taught in duple meter only. As well, only the first three classifications of Gordon's rhythm content learning sequences were taught:

1. Usual Duple - steady beat
2. Usual Duple - macro and micro beats
3. Usual Duple - divisions and elongations

In order for the subjects to improvise at this skill level, Gordon's technique of "spiral movement" was employed.

Eight activities for teaching rhythm audiation skills were taken from Gordon's Reference Handbook for Using Learning Sequence Activities (1990), specifically

Rhythm Units 1, 3 and 7. As recommended by Gordon each activity comprised the first 10 minutes of each class. The remaining 25 minutes of each class was devoted to rhythm improvisation skills based on Carley's (1985) techniques. Her first two types of improvisation: 1. free exploration and 2. immediate participation in a given task was employed in this study.

For the control group, the total class period of 40 minutes was devoted to instruction in rhythm improvisation skills based on Carley's techniques.

Session 11: Administration of posttest. Subtest 8 of the Individual Performance Component of the 1983 Manitoba Music Assessment (see Appendix C) was administered to subjects individually. The test was approximately 5 minutes in length. Subjects' responses were tape recorded for later analysis.

Treatment of Data

Scoring the music aptitude test answer sheets included two processes: counting the number of items answered correctly to obtain the raw scores for the Tonal and Rhythm subtests, and converting the raw scores to percentile ranks.

Composite scores for the two sub-tests were treated in the same manner. Subjects' rhythm improvisations were analyzed using a variation of the four part rating analysis developed by the Technical Advisory Committee of the 1983 Manitoba Music Assessment (see Appendix D). Scoring was done by the researcher and verified by another music specialist. Interjudge reliability was calculated by computer and expressed as a correlation coefficient.

Analysis of the teaching methodology was descriptive (see Appendix E).

CHAPTER IV
RESULTS AND DISCUSSION

Analysis of the Data

The purpose of this study was to determine the effect of audiation on the ability of grade 6 students to improvise rhythmically. To achieve this purpose, descriptive data were kept on the eight lessons for both the experimental and control groups. As well, pretest and posttest data were analyzed statistically to determine any effects from the treatment.

Results

The main findings of this study are that children's rhythmic improvisations can be taught. This investigation examined whether children who received training in Gordon's aural audiation skill learning sequences were able to improvise rhythmically better than children who did not receive this training.

The eight lessons taught to each of the two groups were examined separately.

Lesson 1 - Experimental Group. For the first ten minutes of the class, the subjects were exposed to Gordon's audiation patterns. The subjects were able to maintain a steady macro beat in their heels and most were able to simultaneously keep a micro beat in their hands. The subjects were enthusiastic, concentrated on the task and

were able to repeat the patterns easily. However, the pattern designated by Gordon as difficult seemed very easy. As there were a total of thirty-one subjects, ten minutes was not enough time to have each child echo a pattern individually. In reality, only one quarter of the class was reached.

The remainder of the class (approximately thirty minutes) was spent on improvisation preparation activities. It was noted that when students were chanting the names of vegetables while patting the steady beat on their laps, many had difficulty saying the rhythm of the word e.g. cucumber in rhythmic syllables to match the underlying beat.

Lesson 1 - Control Group. This group received no training in Gordon's audiation learning sequences. All of their lessons were composed strictly of Orff-based rhythmic improvisation techniques. This lesson focused on beat awareness. In the category game activity, the investigator explained that the names of vegetables were to match the beat even if it meant altering the natural speech pattern. As a result, nearly all subjects were able to match the words to the beat pattern correctly.

Lesson 2 - Experimental Group. During the learning sequences the subjects needed to be reminded to take a breath on the hand cue by the investigator before saying the pattern. Most subjects were able to perform the pattern easily in solo..

The improvisation portion of this lesson was designed so that subjects could freely explore unpitched percussion instruments. Groups were formed by numbering off subjects. Then all number one's went to station one, etc. The subjects responded very enthusiastically to the instruments. Because all stations were running concurrently, the noise level was high. It was difficult to hear within a group when the task was to play a pattern together.

Lesson 2 - Control Group. The subjects in this group also enjoyed exploring the instruments. It was the first time many of them had been exposed to the claves, guiro and wood blocks. The problem of high noise level was evident with this group as well. Generally, one person from each group assumed a leadership role and read the instructions on the station's card. Turning the lights off and on as a signal to change stations worked well. A few subjects were over zealous and became carried away on the instruments.

Lesson 3 - Experimental Group. The audiation exercises in this lesson focused on improvisation. Subjects were asked to improvise aurally a different pattern from what the investigator gave. Subjects were able to improvise a new answer. Only one or two subjects responded with more than four beats but most did well. Some used more complicated rhythms such as four sixteenth notes (which appears in the class pattern chanted by the class). Most subjects responded by either rearranging one of the set three

patterns chanted by the investigator or by giving an alternate pattern. For example, the investigator chanted the easy pattern and the subject chanted the difficult pattern in response.

The remainder of the lesson was devoted to echo play on the unpitched percussion. The subjects were very enthusiastic about working with the instruments and most echoed the four-beat patterns very well. Approximately five or six subjects volunteered to lead the class by creating a rhythm pattern for the class to echo. The class responded well. When the investigator asked for volunteers to echo her phrases in solo there were three or four volunteers. The investigator continued to use four-beat patterns instead of eight-beat patterns as the class could not successfully echo all eight beats. When the investigator asked for a student volunteer to lead and play a pattern for the volunteer soloists to echo, one student volunteered to lead and three volunteered to echo. This task was accomplished successfully using four-beat patterns only. There was insufficient time to begin the last activity where the investigator was to play individual patterns tailored for each student to echo.

Lesson 3 - Control Group. This group was also able to easily echo the four-beat patterns on unpitched percussion. About five or six volunteers led the class with most using quarter note and eighth note patterns. The subjects were

more reticent to answer the investigator in solo. Only three or four volunteered for this task. Six or seven subjects volunteered to lead eight-beat patterns. Two subjects had no concept of rhythm patterns and beats. The first was able to grasp the idea of a four-beat pattern and perform it. The second subject could not, but the class was able to echo his non-beat pattern. He felt positive about the experience. With this group, there was time for the investigator to play individual patterns for each subject to echo. These individual solos were well done. If one subject could not repeat the pattern given, the investigator gave him/her an easier pattern. In the case of the very weak subject, he was given a four-beat pattern only. He was successful the second time.

Lesson 4 - Experimental Group. In this lesson the subjects were exposed to a set of three completely new patterns in the learning sequence activity. They experienced a lot of difficulty with the easy pattern. They wanted to make the eighth note/dotted quarter pattern into a sixteenth note/dotted eighth pattern. Even when the investigator stopped and corrected them, the error was repeated. Confusion may have occurred as a result of hearing the sixteenth/dotted eighth pattern chanted in the difficult pattern.

During the portion of the lesson devoted to improvisation echoing activities, the subjects alternated

unpitched percussion each class to enable them to play a different instrument. The subjects were highly motivated by the instruments and participated enthusiastically. For each activity there was on average eight to ten volunteers. Some subjects were very weak rhythmically and did not have any concept of a four-beat pattern. Many of the volunteer leaders did not incorporate the patterns practiced in the learning sequence activity. This may be attributed to the fact that there was insufficient time to assimilate these patterns.

Lesson 4 - Control Group. This group was able to easily echo the investigator's four-beat patterns. Three or four volunteers led the class. Some were very weak rhythmically. They were unable to maintain a steady beat and would speed up. This group was still reticent to volunteer to echo the investigator's phrases in solo. There were only five or six volunteers. Most had difficulty remembering the entire eight-beat pattern perfectly but echoed seven out of eight beats correctly. For the activity where a student volunteer leads and plays a phrase for volunteer soloists to echo there were again only five or six volunteer leaders and even fewer volunteer soloists. Most used only simple patterns of quarter notes and eighth notes. During the activity where the investigator plays individual patterns for each subject to echo, the investigator used eight-beat patterns incorporating a combination of lesson 3

and lesson 4 rhythm patterns. Most subjects were accurate in seven out of eight beats. Only two or three out of thirty-two subjects played their pattern with one hundred percent accuracy.

Lesson 5 - Experimental Group. The learning sequence activity used the same set of patterns as in lesson 4. During this lesson an improvement was noted in the performance of the easy pattern. The investigator stopped to correct the pattern once as they still wanted to perform the eighth/dotted quarter pattern as a sixteenth/dotted eighth pattern. After being corrected, their performance improved.

In the improvisation activity of this lesson, a different set of patterns from that used in the learning sequences activity was introduced. The subjects did not use these patterns when creating patterns for the class to echo. Some of the advanced subjects with musical backgrounds incorporated parts of these rhythmic motifs in their created patterns. The subjects appeared to be improving in echoing skills. Eight-beat phrases using the new set of patterns was much too difficult. The investigator utilized only four-beat patterns for individual subjects to echo. They had difficulty even with these. It would appear that the inclusion of a new set of patterns at this point without mastery of the previous two sets of patterns is much too premature.

Lesson 5 - Control Group. This group was only capable of echoing four-beat patterns. Therefore, the investigator gave only four-beat patterns throughout the lesson. The exception to this occurred at the end of the class when the investigator played four quarter notes followed by one of the established four-beat patterns for the class to echo. The investigator had to point out the pause in the dotted quarter/two sixteenth motif and correct this pattern several times in group echoing. The same six or seven subjects volunteered to lead or echo throughout the lesson. These individual leaders created a great variety of patterns but none were exact duplicates of the patterns established by the investigator (learning sequence patterns). Most subjects had no idea what eight beats were in relation to the rhythm pattern. Some counted the number of times the stick hit the instrument as the number of beats. During the activity where the investigator played individual patterns tailored for each subject to echo, four-beat patterns were used. The majority of subjects were able to reproduce the first and fourth beats but made errors either on beat two or three. It could be assumed that a thorough understanding of steady beat coupled with longer exposure to the new set of rhythm patterns are prerequisites for success with this lesson.

Lesson 6 - Experimental Group. This was the first time this set of rhythm patterns was presented in the audiation

exercises. The subjects were asked to repeat their pattern simultaneously with the investigator. They seemed to be more confident chanting the pattern in the teaching mode. Mistakes disappeared quickly.

The improvisation activities focused on question and answer techniques. In the first activity, the investigator composed a question four beats in length only. Some subjects still wanted to echo but when the difference was explained, they caught on. The investigator created variety by asking a) different rows to answer and b) different combinations of rows to answer. When the investigator asked for volunteer soloists to answer her question there was a good response (about eight to ten volunteers). This activity continued to use four-beat patterns only. Some subjects incorporated bits of motifs from the learning sequence patterns at the beginning of the lesson. This also occurred in the next activity where several volunteers created an improvised question. During the last activity, subjects were asked to play either a question or answer around the class. In immediately following one another, subjects would recreate the previous answer in their new question instead of starting over with a completely new question.

Lesson 6 - Control Group. This was the initial lesson on question and answer improvisation activities. The investigator played four-beat patterns only throughout the

lesson. During the last activity where students played either a question or answer around the class, eight-beat patterns were employed. In the first activity the entire group was required to compose an answer to the investigator's question. There was some echoing. However, most subjects were able to self-correct and form an acceptable answer when this was pointed out. To keep the subjects alert and motivated the investigator called on different rows or different types of instruments to answer her question. During the activities requiring volunteers there was a good response of ten to twelve subjects. All performed well and used a variety of rhythms, including motifs from the patterns established by the investigator (learning sequence patterns).

Lesson 7 - Control Group. The focus of this lesson was to play questions and answers over rhythmic ostinati. To teach rhythmic ostinati the investigator began by having the subjects learn a pattern on the sand blocks. The subjects had difficulty keeping together and the sound was muffled producing an unclear beat. Therefore, the investigator taught the ostinati by using body percussion. The subjects really enjoyed this activity and kept the beat much better. It appeared to be more challenging and fun for them. One row was assigned the task of maintaining the ostinati with body percussion while the investigator performed a question pattern on the claves. The remaining subjects responded by

performing an answer on their instruments. Both questions and answers were maintained for eight beats each. The investigator then called on each of the four rows of subjects in random order to answer her prearranged question. As well, each row alternated to perform the rhythmic ostinati on body percussion. The activities involving individual students were omitted due to lack of time.

Lesson 7 - Experimental Group. During the learning sequence activities most subjects stopped bouncing on their heels after the first two or three minutes. One or two subjects bent their knees and bobbed instead of putting weight through the straight leg to the heels. The group was able to successfully repeat the patterns.

For the improvisation activities the investigator introduced ostinati using strictly body percussion. The subjects were asked to model an eight-beat pattern created by the investigator using all four levels - stamping, patsching, clapping and snapping. This pattern was really a combination of two similar four-beat patterns. The group was able to successfully perform the eight-beat pattern after the investigator modelled it several times although a few subjects had difficulty with this. However, the task of repeating the entire eight-beat pattern twice in a row was too difficult. Time did not permit each row to practice the ostinato until mastery was achieved. After having each row perform the ostinati separately, the investigator chose the

row demonstrating the most facility with the ostinato to perform it throughout the next activity. The remaining three rows were instructed to echo row by row the pattern played by the investigator. Most answers went beyond eight beats as the subjects did not know when to stop. The ostinato performance group sped up and therefore the rhythm of the answering row did not match the beat. The subjects did not make the connection between the ostinato and the rhythm pattern. One row in particular had no sense of eight beats. The investigator gave this row another chance, verbally signaling them when to start and stop. This resulted in a more musical response. In the next activity the investigator asked for and received four volunteers to play the ostinato pattern. Only four subjects volunteered to play an answer in solo. This small response could indicate that the subjects were not comfortable with the activity yet. Of the three volunteers chosen to perform answers, two had no sense of rhythm or beat, played at a faster pulse than the investigator's and performed only six or seven beats. The third subject played the first four beats in the same pulse as the investigator but then slowed down and performed more than eight beats. The second set of three volunteers performed better. They maintained a steady beat and matched the pulse of the investigator. There were approximately eight volunteers to perform a question pattern. Of the three chosen to perform two played well but

the third subject's pattern had no relationship to the pulse. In the final activity individual subjects played either a question or answer around the class. Some subjects' performances were very weak. For example, they performed only four or six beats and seemed oblivious to the ostinato pattern which was being performed simultaneously. There was no evidence of a relationship between beat and their rhythm pattern. The subjects were told to stand in pairs which seemed to force them to listen to each other and to cue in and focus on their partner's pattern. Some even gave part of the question in their answer. One student asked if that was required.

Lesson 8 - Control Group. The objective of the improvisation activities in this lesson was to improvise questions and answers over rhythmic ostinati. In the first activity the investigator had the group perform in ensemble four-beat answers to her questions. In order to facilitate a better understanding of beat the investigator held up four fingers one at a time while subjects performed their answers. The first time, most subjects simply echoed the investigator's pattern. When they were reminded to play a different pattern, they self-corrected their patterns. After a few trials, the investigator switched to eight-beat patterns and again used eight fingers to count off the beats for the students performing answers. The investigator clapped the pattern instead of performing it on an

instrument to enable her to hold up four fingers on both hands quickly. The group answered several questions in ensemble. When volunteers were called to answer in solo, all were successful except one subject who did not watch the investigator counting the beats on her fingers and exceeded eight beats. For the next activity, the investigator demonstrated a two-beat ostinato using body percussion which the group easily copied and maintained while singing a familiar song. This was then expanded to a four-beat body percussion pattern consisting of quarter notes only which was also performed successfully. The investigator then demonstrated a related but slightly more difficult four-beat pattern (consisting of quarter notes and pairs of eighth notes) which was performed correctly by the group. Finally, the two four-beat body percussion patterns were combined into an eight-beat pattern and performed. The subjects were divided into groups of four and were given the task of creating their own eight-beat body percussion pattern to be performed with the familiar song. The groups were slow to organize themselves and seemed unsure of the task. Eventually, three groups were able to perform as a unit an eight-beat pattern. One group added the song while they rehearsed. This group performed for the class successfully. They had a good sense of rhythm and were able to maintain it when the singing started. The last three activities of the lesson plan were omitted due to lack of time and skill

level.

Lesson 8 - Experimental Group. The focus of the learning sequence activity was to improvise a pattern different from the investigator's pattern by chanting "bah". The subjects tried out different patterns and experimented with different rhythms. During their individual performances they had no concept of incorporating part of the question in their answer. In general, the improvisations were not done well. Some subjects chanted at a faster pulse than the investigator; others followed their own pulse. There was no sense of matching their pattern to an external beat. Some subjects echoed instead of creating a different pattern. Only one or two performed well.

The improvisation activities began with the group answering a four-beat question. Most were just hitting the instruments. Those that watched the investigator count the beats on her fingers were able to stop after eight beats. When the group improvised eight-beat answers in ensemble, the performances were still weak. However, the individual performances were much stronger than the collective group. Most subjects incorporated part of the investigator's question in their answer. After the ostinato body percussion patterns were practiced as a group, smaller groups of four were formed. These groups had been previously picked by the classroom teacher for co-operative learning activities. Musically, each group had one strong

member with the rest being quite weak. In general, the groups created very straight forward and uncomplicated rhythms. The subjects were not comfortable with performing body percussion patterns yet. It appeared they needed to take ownership of the material before they could work with it. When the groups performed their patterns with the song they fell apart because they were not secure with the rhythm patterns. They needed to feel these rhythms were a part of them. Many of the groups just echoed the investigator's demonstration pattern. Again, with this group, the last three activities of the lesson plan were omitted due to lack of time.

Statistical Analysis

The analysis of the pretest and posttest data for each of the 63 subjects in this study was scored by the investigator and by another elementary music specialist. These data were then processed by computer. The inter-rater correlation was found to be .9894 for the pretest scoring and .9661 for the posttest scoring. A 2 X 2 analysis of variance (ANOVA) with overall total music score as the dependent measure was nonsignificant. In addition, a multivariate analysis of variance (MANOVA) with five dependent variables (four subscales plus the total) was also nonsignificant.

The rhythm improvisation test (see Appendix C) was given to both groups prior to and following the eight

lessons. The test was given an overall score, totalling 28 points (see Appendix D). In session one, the pretest of rhythm improvisation was administered. An analysis of the frequency distributions of the scores follows. Of the 32 students in the control group, six received scores ranging from 10.5 to 20. A majority (21 students) scored between 20.5 and 26 points. Five students had scores ranging from 26.5 to 28 points. In session eleven, the same test was administered to the control group. The most improvement in scores occurred with the six low-scoring students. The posttest scores revealed four students scored between 23 and 24 points, twenty students' scores ranged between 24.5 and 26.5, and eight students scored 27 to 28 points.

A similar analysis of score frequencies was undertaken for the experimental group, with a total of 31 students. In the pretest, four students scored between 2.5 and 19 points, ten students' scores ranged from 19.5 to 23.5 points, and seventeen students scored between 24 and 26 points. Posttest data gathered in session eleven revealed a very similar score distribution for this group with some improvement in the higher range of scores. Three students scored between 18.5 and 20 points, five students' scores ranged between 20.5 and 24 points, and twenty-three students scored between 24.5 and 28 points.

The mean scores for each group were calculated by computer and are documented in Table 1.

Table 1

Mean Total Scores of Rhythm Improvisation Test

	Time 1	Time 2
Overall Mean	22.37	25.40
(SD)	4.29	2.03
Control Mean	22.50	25.73
(SD)	4.13	1.36
Treatment Mean	22.23	25.05
(SD)	4.53	2.52

Note: Time 1 = Pretest, Time 2 = Posttest
SD = Standard Deviation

Results found no significant differences between the mean scores of the control group and of the treatment group. The mean differences between the pretest and posttest scores were:

Control Group = -3.23

Experimental Group = -2.82

The rhythm improvisation test was comprised of four

subtests. Each of these was scored separately (see Appendix D). The means of each subscore is found in Table 2.

Table 2

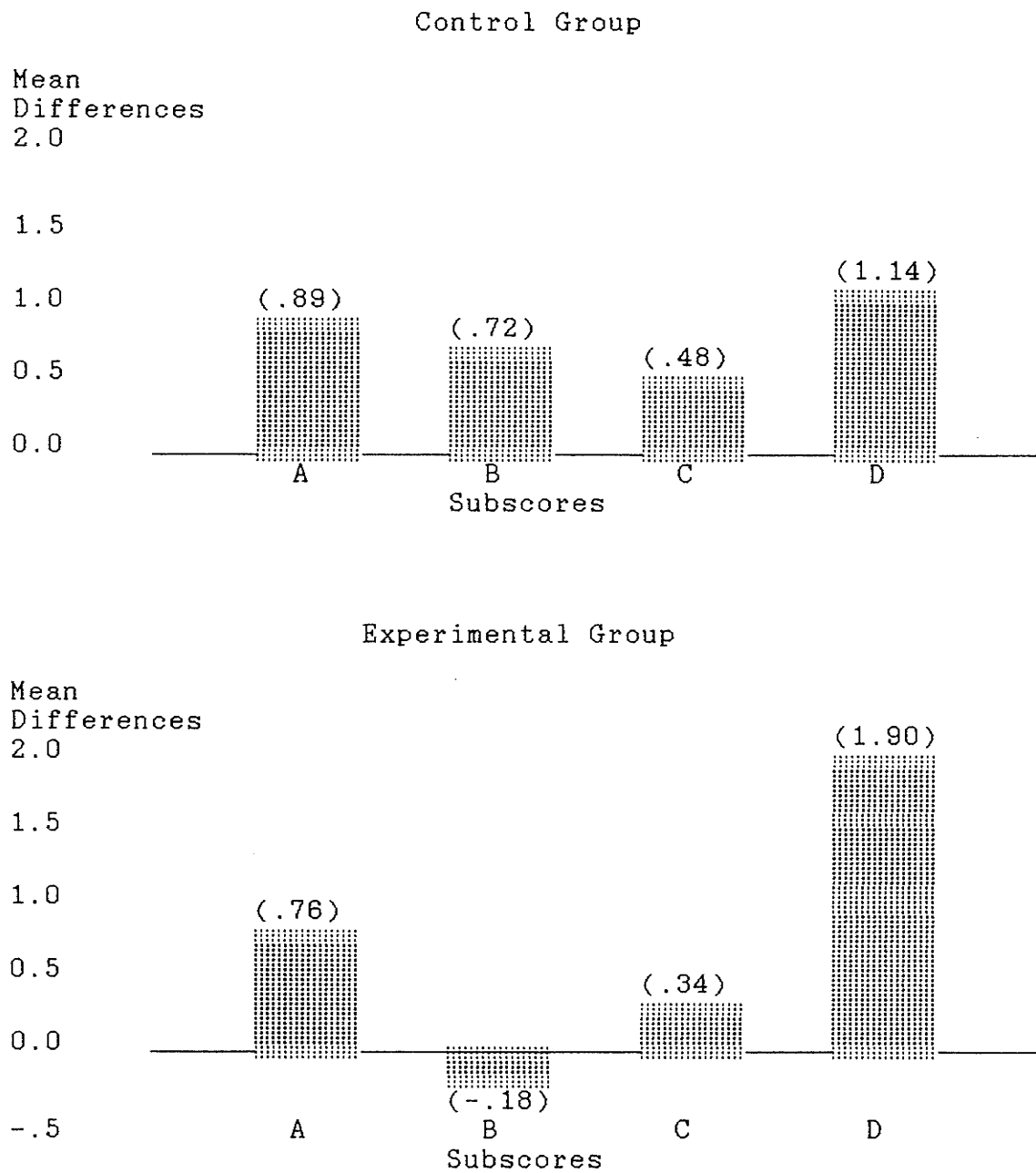
Mean Subscores of Rhythm Improvisation Test								
Mean	A1	B1	C1	D1	A2	B2	C2	D2
Control	6.64	8.84	1.41	5.61	7.53	9.56	1.89	6.75
(SD)	1.81	1.76	.57	1.52	.57	.58	.21	.97
Treatment	6.45	9.24	1.29	5.24	7.21	9.06	1.63	7.15
(SD)	2.25	1.86	.81	1.13	.75	1.32	.59	.84

Note: A1 = Completeness (Pretest), B1 = Steadiness of Pulse (Pretest), C1 = Sense of Finality (Pretest), D1 = Originality (Pretest), A2 = Completeness (Posttest), B2 = Steadiness of Pulse (Posttest), C2 = Sense of Finality (Posttest), D2 = Originality (Posttest)
SD = Standard Deviation

The mean differences for each subscore is graphed in Figure 1. The data reveal that the greatest improvement for both groups occurred in the originality subscore. It would appear that there was a positive practice effect from the improvisation activities experienced by both groups on the ability to perform an original pattern.

Figure 1

 Mean Differences in Subscores of Rhythm Improvisation Test



Note: A = Completeness, B = Steadiness of Pulse, C = Sense of Finality, D = Originality

During session 2 of the methodology, Gordon's "Intermediate Measures of Audiation" music aptitude test was administered. According to Gordon, the percentile ranks may be evaluated for aptitude scores as follows: 1-20 as low, 21-79 as average and 80-99 as high. Results were reported for the rhythm percentile ranks only as this was the thrust of this study. The control group was comprised of 32 subjects. Of these, 3 (9%) were scored as having low aptitude, 26 (81%) with average aptitude and 3 (9%) had scores in the high group. The mean aptitude score for this group is 52.17.

The aptitude scores for the experimental group did not fit Gordon's standard of one-sixth of the subjects falling in the low and high aptitude groupings and one-third classified as possessing average aptitude in rhythm. The actual figures for the experimental group revealed that out of 31 students, 9 (29%) fell into the low grouping, 18 (58%) fit the average grouping and 4 (13%) were scored as having high aptitude. The mean aptitude score for the experimental group is 45.39.

The mean rhythm aptitude score for the total population is 48.83.

Correlation coefficients were calculated to determine any relationship between rhythmic aptitude and musical performance on the rhythm improvisation test. Results are noted in Tables 3 and 4.

Table 3

Intercorrelation of Rhythm Aptitude
with Musical Performance Pretest Scores

	A1	B1	C1	D1
Overall Apt.	.1038	.2047	.1002	.1747
Control Apt.	.3112	-.0063	.1412	.2587
Treatment Apt.	-.0278	.3861*	.0639	.0772

Note: Apt. = Aptitude, A1 = Completeness, B1 = Steadiness of Pulse, C1 = Sense of Finality, D1 = Originality
Overall Group N = 63, Control Group N = 32, Treatment Group N = 31
* p < .05

Table 4

Intercorrelation of Rhythm Aptitude
with Musical Performance Posttest Scores

	A2	B2	C2	D2
Overall Apt.	.3583**	.3324**	.3676**	-.0629
Control Apt.	.3614*	-.2002	.2673	-.0919
Treatment Apt.	.3281	.4885**	.3870*	.0097

Note: Apt. = Aptitude, A2 = Completeness, B2 = Steadiness of Pulse, C2 = Sense of Finality, D2 = Originality
Overall Group N = 63, Control Group N = 32,
Treatment Group N = 31
* p < .05 ** p < .01

For the control group, the only significant correlation occurs in the completeness posttest subscore. It would appear that for this group of students there is a positive relationship between rhythmic aptitude and the ability to perform a rhythmic phrase spanning 8 beats. In the experimental group, three significant correlations are found: steadiness of pulse (pretest and posttest subscores) and sense of finality (posttest subscore). In the case of this group, the ability to maintain the same pulse as the

stimulus and the ability to end a rhythmic phrase musically could be dependent upon the students' rhythmic aptitude. The fact that the experimental group had more students with a low rhythmic aptitude than the control group could explain why the mean differences for the subscores of steadiness of pulse and sense of finality were lower in the experimental group.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Introduction

The purpose of this study was to determine the effect of audiation on the ability of grade 6 students to improvise rhythmically.

The procedure for collecting data from 63 subjects in two grade 6 classes included: (1) administering the IMMA music aptitude test, (2) administering a standardized rhythm improvisation test prior to and after the implementation of the teaching methodology and (3) observing the subjects during the eight lessons.

In the previous chapter observations of the eight lessons were organized and presented. Although the experimental group received training in Gordon's audiation learning sequences, both groups exhibited similar responses to the rhythm improvisation activities.

This present chapter identifies strengths and weaknesses of the teaching methodologies. Based on these findings, conclusions are drawn with implications for teaching audiation and rhythm improvisation and for future research.

Summary of Findings

Strengths of Teaching Methodologies

Audiation. Grade 6 students were able to chant the audiation patterns using "bah". They were successfully able

to echo the investigator's patterns in the teaching and evaluation modes. They were also able to improvise their own rhythmic patterns and to assimilate parts of the investigator's pattern in their aural responses.

Musical aptitude. The IMMA test administered prior to the teaching methodology demonstrated that all levels of music aptitude are present in grade 6 students. Results of the IMMA test verified Gordon's distribution of scores for the control group only. Overall, the experimental group was rhythmically weaker in terms of musical aptitude than the control group at the outset of the study.

Use of instruments. The grade 6 students were highly motivated by the playing of unpitched percussion instruments. They responded enthusiastically to this part of the lesson. The use of wooden, clear sounding instruments that require little technical skill such as rhythm sticks, claves, wood blocks and tone blocks are superior for playing rhythm patterns. Sand blocks, guiros, hand drums and tambourines are more difficult to manipulate and do not allow for a distinct sound when producing faster sixteenth/eighth note rhythms.

Limitations of Teaching Methodologies

Development of beat awareness. The students in this study displayed an inability to be conscious of and maintain a steady beat. This finding points to the fact that prior

to beginning any audiation exercises, more time should be spent on beat awareness activities. Gordon recommends using his Informal Activities Cards 1450-1487 in Box Two of the Jump Right In kit to develop rhythm readiness. Because this concept of beat was not firmly established, the students were unable to reproduce an 8-beat pattern correctly. Beginning with 4-beat patterns exclusively until mastery is achieved would give students more security with echoing rhythm patterns. After sufficient time the 8-beat phrase could be introduced and be firmly understood before asking students to improvise.

Difficulty levels of Gordon's rhythm patterns. This study raised questions as to the appropriateness of Gordon's rhythm patterns. In some instances, the classification of a particular rhythm pattern in a certain difficulty level did not seem logical. Some of the difficult patterns were in actuality quite easily performed. Gordon (1984) determined his taxonomy through three research studies and found that

the patterns which are easiest to audiate are those which are easiest to learn to perform and read and write, and the patterns which are difficult to audiate are those which are most difficult to learn to perform and read and write. A student cannot adequately perform, read or write a pattern unless he can audiate it. That a student can audiate a pattern, however, does not necessarily mean that he can perform, read or write it. The ability of a student to audiate, perform, read and write rhythm patterns of different difficulty levels depends upon his rhythm aptitude (p.163).

Time factor. There was no significant effect of the treatment, Gordon's audiation learning sequences, on the

grade 6 students' rhythm improvisations after eight lessons. The slight improvement in the pretest-posttest scores of the experimental group may be attributed to the treatment, but caution is advised in attaching any educational significance to this difference. The findings of this study showed there were too many activities in each lesson for the time allotted and for mastery of the skills. This was particularly true in the case of the experimental group which was required to do both learning sequence audiation skills and improvisation activities within one lesson. As well, the rhythm patterns used in the learning sequence activities changed too quickly. Gordon recommends when teaching individual patterns the easy one is taught first, then the moderately difficult and then the difficult. Therefore, high aptitude students learn the easy, moderately difficult and difficult patterns, average aptitude students learn the easy and moderately difficult patterns and low aptitude students learn the easy patterns. Gordon says to move on to the next criterion when 4 out of 5 students have met their potential. Due to time limitations, for purposes of this study, each student was given only the pattern that matched his rhythm aptitude. This meant he chanted it in solo only once per lesson. In terms of implementation of instruction, Gordon (1984) recommends for kindergarten through grade three

three periods of instruction in general music each week. Two periods a week should result in acceptable

achievement. One period a week will result in only minimal achievement...The optimal length of a general music period should be about thirty minutes...If they have had appropriate instruction in kindergarten through grade three, students in grades four through nine can achieve satisfactory levels of achievement with two general music periods each week of no more than fifty minutes in length (p.214).

The subjects in this study had a music class, on average, once a week for 40 minutes. In this study students were asked to do too much in too short a time for them to assimilate the material. It is evident that more time should be spent on the material in each lesson, possibly expanding to two to three classes per lesson. This would allow for meeting Gordon's criterion of moving on when 4 out of 5 students have met their potential. The challenge for teachers is to find ways of presenting the skills in various ways so that the repetition does not become monotonous.

Teaching strategies. The teaching of a rhythmic ostinato pattern using body percussion was not successful because students had not mastered the concept of steady beat. It is recommended that a simpler pattern than the four level body percussion one attempted in this study be used. A two level patsch-clap pattern may be more effective and still accomplish the goal of maintaining an ostinato over which to improvise. Results of this study also indicate students had difficulty keeping track of 8 beats while echoing or performing questions and answers. This may be rectified by having the teacher use a visual technique to indicate the number of beats such as indicating with fingers

or pointing to a visual aid. Any aural stimuli would interfere with the sound of the rhythm produced by the student. Another possibility may be to continue the use of the heels moving (as in the audiation techniques) while the students play their pattern although it was noted the students did not maintain this long. A further finding of this study revealed that it is very difficult to act as a teacher and observer simultaneously. This researcher recommends the use of a video camera or another teacher observer. Lesson 7 with the experimental group was videotaped and this allowed the investigator to analyze the class proceedings in depth at a later time. Many details of individual performances were noted that would have been forgotten or not noticed by the participant-researcher at the time of teaching. Finally, the teacher needs time to become facile at using the seating chart to mark student progress. By marking each student's aptitude score on the chart prior to the lessons, the teacher can individualize each student's audiation pattern according to their ability.

Conclusions

Based on the findings of this study, the following conclusions were drawn:

1. Audiation can be taught.
2. Learning can be individualized to suit the learner's rhythmic aptitude.

3. Audiation of a steady beat is a prerequisite to audiating rhythm.
4. Audiation techniques and improvisation techniques must be developed slowly over a long period of time.
5. Gordon's audiation learning sequences have a very limited impact on students' ability to improvise rhythmically when taught over a span of eight lessons only. It is difficult to conclude that Gordon's audiation techniques produced more musical rhythmic improvisations than through exposure to the Orff-based improvisation activities alone.
6. A correlation exists between rhythmic aptitude and three aspects of performance of rhythmic improvisation: completeness of beats, steadiness of pulse, and sense of finality.

Recommendations

1. Because a correlation exists between rhythmic aptitude and musical achievement in some areas of rhythmic improvisation, it is recommended that a future study match subjects in each group on aptitude scores.
2. There is a need for this study to be undertaken as a longitudinal study spanning a full school year.

This may determine more conclusively if Gordon's audiation techniques will positively affect elementary students' rhythm improvisations.

3. Further research is needed in implementing sequential music teaching methodologies. Other Manitoba elementary music specialists need to use Gordon's kit Jump Right In: The Music Curriculum with their classes to determine if it is a viable program for Manitoba students.
4. There is a need for further studies into how students learn to improvise. This is an important but sometimes neglected area in elementary music classes. Research may produce findings of practical significance for elementary music teachers.

Summation

This study addressed an area of music education in which very little research has been done. Improvisation is valued as a musical skill but is often not adequately taught in elementary schools. It is recommended that researchers focus their attention on strategies which would develop improvisation skills. This study has focused on an aural approach to teaching improvisation using a technique to develop students' audiation skills. It is hoped that this study will act as a springboard for other educators to apply

these techniques to their programs and to contribute to our understanding of how children acquire musical skills.

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APPENDIX A

LETTER OF INTRODUCTION

AGREEMENT FORM

June 10, 1991

Dear Parents,

Your child is enrolled in an elementary music classroom which will be participating in a University of Manitoba music research project during the next few months. In order for your child to be eligible, the attached Agreement Form must be filled out and returned to school as soon as possible. Your permission is needed for your child to take part in the following activities:

- 1) Complete the Gordon aptitude test of "Intermediate Measures of Music Audiation", requiring 40 minutes of time.
- 2) Participate in music class activities involving 1) learning rhythm audiation patterns and 2) learning rhythm improvisation. This will take place over approximately a six week time period.
- 3) Complete an individual performance subtest of improvisation, requiring 5 minutes of time.

This study will examine a new method of teaching music in the classroom. I personally will be providing the instruction and administering the testing.

All of the information gathered during this study will be confidential. Assigned student numbers, rather than names, will be used. Results, which will be available in the spring of 1992, will be reported on a group basis. There will be approximately 55 students from Oakbank Elementary school involved in this research project on rhythm improvisation in elementary school children.

Please indicate your consent by your signature on the attached Agreement Form, and return it with the requested information to school as soon as possible. If you wish further detail you are invited to inquire about procedures by telephoning 452-5402. Thank you for your interest and your prompt reply.

Yours truly,

Ms. P. Jessen
Graduate Student
University of Manitoba

RHYTHM IMPROVISATION RESEARCH PROJECT

Oakbank Elementary School

Agreement Form

CHILD'S
NAME _____

TEACHER'S NAME _____

My child has permission to participate in this rhythm improvisation research project. I understand that I can withdraw my child from this research project at any time by giving notice to Ms. P. Jessen. All the information obtained will be accorded confidentiality and anonymity.

Date _____ Parent's Signature _____

PLEASE RETURN THIS FORM TO OAKBANK ELEMENTARY SCHOOL AS SOON AS POSSIBLE.

THANK YOU

APPENDIX B
8 LESSON PLANS
FOR
LEARNING SEQUENCE ACTIVITIES
AND
IMPROVISATION ACTIVITIES

Definitions of Terms Used in Lesson Plans

Class Patterns are performed by the class in ensemble between individual patterns. They are used to reinforce, maintain, and re-establish the tempo and meter in which the individual patterns are to be chanted.

Division/Elongation Pattern is one function of rhythm patterns. It includes one or more divisions of macro and/or micro beats (durations shorter than a macro beat or a micro beat, excluding micro beats) and/or one or more elongations of macro beats (durations longer than a macro beat).

Evaluation Mode occurs when the student performs the individual pattern in solo.

Macro Beats are the fundamental (longest) beats in a rhythm pattern. In usual duple meter with the measure signature 2/4, quarter notes typically are the macro beats.

Micro Beats are the equal divisions of a macro beat. In usual duple meter with the measure signature in 2/4, groups of two eighth notes are the micro beats.

Rhythmic Ostinati are repeated rhythm patterns which are used to provide a basic accompaniment framework.

Rhythm Sequence is a series of durations which are chanted by the teacher in learning sequence activities to establish the meter and tempo of class and individual rhythm patterns before they are performed by the teacher and students. Students do not perform the rhythm sequence.

Spiral Movement is a temporary skip from a lower to a

higher level of learning. Spiraling is particularly valuable because it is an important way to strengthen what has been learned at the lower of the two levels of learning. An example of a forward spiral is the moving of instruction from the aural/oral level of discrimination learning directly to the creativity/improvisation - aural/oral level of inference learning and then back to the aural/oral level of discrimination learning. (Gordon, 1984, p.182)




Teaching Mode occurs when the teacher performs the individual pattern in duet with the student.

Unpitched Percussion are instruments that produce only one sound when struck. For purposes of this study the following two categories were used:

1. Wood: woodblocks, claves, toneblocks, rhythm sticks, sandblocks, guiro
2. Membranes: hand drums, tambourines

Overview of 8 Lesson Teaching Unit

Specific Rhythm Pattern Content:

Set 1	Set 2	Set 3
		

Lesson	Gordon's Learning Sequence Activities Experimental 10 mins.	Carley's Improvisation Activities Experimental Group - 25 minutes Control Group - 40 minutes
1	Aural/oral - macro/micro - set 1 - teaching mode	Preparation for learning rhythm - keeping body beat - Weikart's (1989) beat awareness & beat competency techniques
2	Aural/oral - macro/micro - set 1 - evaluation mode	Type I: Free Exploration - experimenting with unpitched percussion - all types
3	Creativity/ Improvisation - macro/micro - set 1 - evaluation mode	Type II: Immediate Participation in a Given Task Imitation - Echo play - set 1 - tambourines & sand blocks
4	Aural/oral - macro/micro -elongation/division - set 2 - teaching mode	Type II: Echo play - set 2 - guiro, hand drums, wood blocks
5	Aural/oral - macro/micro -elongation/division - set 2 - evaluation mode	Type II: Echo play - set 3 - hand drums and wood blocks
6	Aural/oral - macro/micro -elongation/division - set 3 - teaching mode	Type II: Question and Answer - sets 1, 2 and 3 - hand drums, wood blocks and tone blocks

7	Aural/oral - macro/micro -elongation/division - set 3 - evaluation mode	Type II: Question and Answer over Ostinati - sets 1, 2 and 3 - wood blocks, tone blocks and rhythm sticks
8	Creativity/ Improvisation - macro/micro -elongation/division - set 3 - evaluation mode	Type II: Question and Answer over Ostinati developing Form - sets 1, 2 and 3 - rhythm sticks and claves

Instructions for Learning Sequence Activities

Before asking students to respond to class and individual patterns, the teacher should demonstrate to students, without naming the beats, how to move in duple meter to macro beats with their feet and legs as they are moving to micro beats with their arms and hands. They next should chant the rhythm patterns in the lesson as they are moving to macro beats and to micro beats. Then they should be asked to chant the rhythm patterns in the lesson and to audiate, not move to, the underlying macro beats and micro beats. When moving, students must be encouraged and directed in how to use as much relaxed body weight as possible. When they use their feet, their heels should be moved up and down as their toes remain firmly on the floor.

Individual students are given the pattern which matches their aptitude as ascertained by the previously given IMMA test.

No pauses are made when chanting rhythm patterns. After the teacher chants an individual pattern, the student chants that individual pattern beginning on the next (fifth) macro beat which immediately follows the last macro beat (the fourth) of that individual pattern that the teacher chanted.

The student should take a breath on the fourth macro beat of the teacher's pattern. The teacher uses a gesture to tell the student when to breathe. During that breath, the student generalizes and summarizes in audiation the

pattern that the teacher is chanting.

Learning Sequence Activity - Aural/oral

- macro/micro beats/usual duple

Chant rhythm sequence in usual duple using "bah".

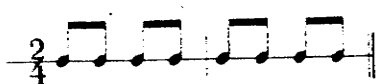


Chant class patterns in usual duple using "bah".

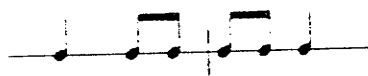


Students chant patterns using "bah".

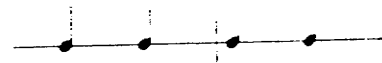
Easy



Moderately
Difficult



Difficult



Students are marked in the evaluation mode on the seating chart.

Learning Sequence Activity - Creativity/Improvisation

- macro/micro beats/usual duple

Chant rhythm sequence in usual duple using "bah".



Chant class patterns in usual duple using "bah".



Teacher chants patterns using "bah".

Students chant any other patterns in usual duple in creative response using "bah".

Easy	Moderately Difficult	Difficult

Students are marked in the evaluation mode.

If a student experiences difficulty in chanting an appropriate creative response, the teacher may initially guide him or her by suggesting that he or she use the same macro beats and micro beats in the pattern that the teacher has chanted, but re-order those macro beats and micro beats to form a creative response.

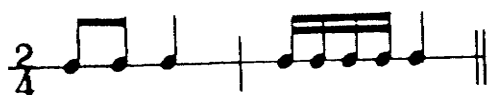
Learning Sequence Activity - Aural/oral

- macro/micro beats and divisions/elongations/duple

Chant rhythm sequence in usual duple using "bah".



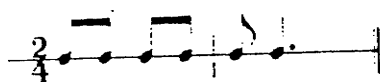
Chant class patterns in usual duple using "bah".



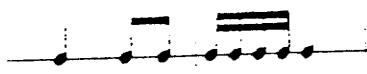
Teacher chants patterns using "bah".

Students chant patterns using "bah".

Easy



Moderately
Difficult



Difficult



Students are marked in the teaching mode.

Learning Sequence Activity - Aural/oral

- macro/micro beats and divisions/elongations/duple

Chant rhythm sequence in usual duple using "bah".



Chant class patterns in usual duple using "bah".



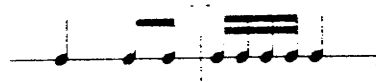
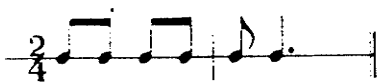
Teacher chants patterns using "bah".

Students chant pattern using "bah".

Easy

Moderately
Difficult

Difficult

Students are marked in the evaluation mode.

Learning Sequence Activity - Aural/oral

- macro/micro beats and divisions/elongations/usual duple

Chant rhythm sequence in usual duple using "bah".



Chant class patterns in usual duple using "bah".



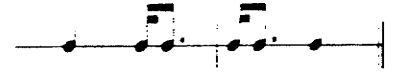
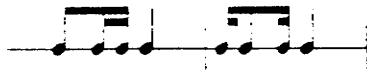
Teacher chants patterns using "bah".

Students chant patterns using "bah".

Easy

Moderately
Difficult

Difficult



Students are marked in the teaching mode.

Learning Sequence Activity - Aural/oral

- macro/micro beats and divisions/elongations/usual duple

Chant rhythm sequence in usual duple using "bah".



Chant class patterns in usual duple using "bah".



Teacher chants patterns using "bah".

Students chant patterns using "bah".

Easy

Moderately
Difficult

Difficult



Students are marked in the evaluation mode.

Learning Sequence Activity - Creativity/Improvisation
 - macro/micro beats and divisions/elongations/duple

Chant rhythm sequence in usual duple using "bah".

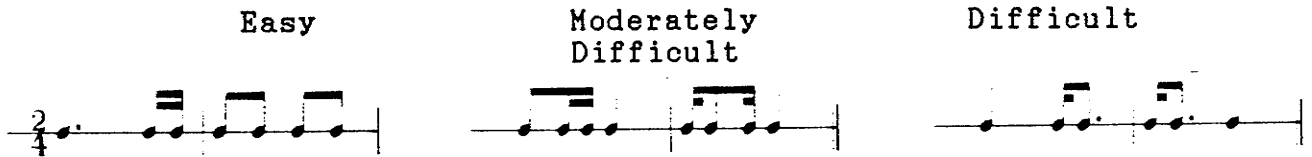


Chant class patterns in usual duple using "bah".



Teacher chants patterns using "bah".

Students chant any other macro and micro beat and/or division and elongation patterns in usual duple four macro beats long in improvisatory response using "bah".



Students are marked in the evaluation mode.

The students' responses must be in the tempo and meter of the teacher's pattern. Also, only macro/micro and division/elongation function patterns, which must be different from the ones that the teacher has just chanted, may be used.

Directions for Improvisation Activities

All rhythm patterns are presented aurally only.

Each step in the teaching process is maintained and repeated until the majority of students exhibit mastery of the task.

Lesson 1Improvisation Activities - Preparation

a) Beat Awareness is the ability to feel and indicate the beat with a simple movement like a pat.

1. Pat the steady beat softly while singing or chanting rhymes. Start the group beat before adding the song or rhyme by chanting a single word, such as "pat, pat, pat, pat".
2. Pat the steady beat softly while chanting facts, such as times tables or counting by 5's or spelling words. Start the group beat first (as above).
3. Pat the steady beat softly while playing a category game in which each student suggests another item in the category (e.g., fruits, vegetables, provinces, capitals, countries).
4. Pat the steady beat softly on a partner's shoulders while that partner is playing a rhythm pattern on a musical instrument.
5. Pat the steady beat softly on a partner's shoulders while that partner echoes the speech pattern given by the teacher or another student. Always establish the patting movement with single word chant such as "pat, pat, pat, pat", before adding the rhyme or song, or before the partner begins the task.

b) Beat Competency is the ability to walk to the steady beat while engaging in a weight-bearing movement.

1. Have marching parades alternating between walking or marching in place and moving forward.
2. Use language with simple locomotor patterns: "forward, backward, in, out". Once a simple pattern is established, put the sequence to music. Set the pattern in the tempo of the music before adding the music.
3. Perform side-to-side swaying on the slow beat while chanting or singing. Begin with the group chanting "side, side, side, side" and then add the chant or the song to the same beat.
4. Step the beat in place while chanting single words, such as "Oakbank, Oakbank" or "Winnipeg, Winnipeg". Change the single repetitious word to two-word combinations, one step for each word: "Oakbank Manitoba" or "Winnipeg Zoo".

Lesson 2Improvisation Activity - Carley Type I

Free Exploration

Divide class into groups of 3 or 4 students. Each group is assigned to one of seven stations of unpitched percussion instruments:

1. tone blocks
2. claves
3. rhythm sticks
4. sand blocks
5. guiro and wood blocks
6. hand drums
7. tambourines

At each station is a list of questions which help guide the students' exploration. For example:

- Make up a pattern on the instrument.
- Can you play that pattern twice as fast?
- Can you play it softer?
- How do you think that pattern would sound on (name of another instrument)?

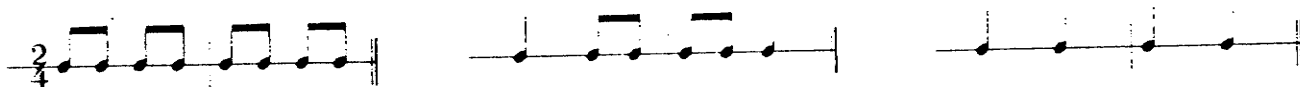
Every 5 minutes a signal (turning on and off the lights) will indicate that students are to rotate to the next station.

Lesson 3Improvisation Activity - Carley Type II

Immediate Participation in a Given Task

Imitation - Echo play on tambourines and sand blocks

Patterns: macro and micro beats

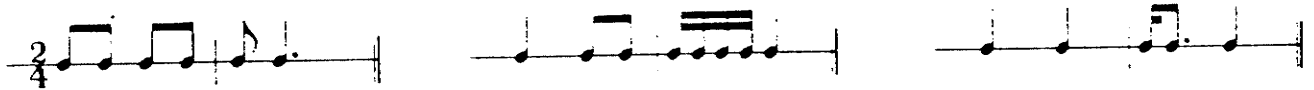


- a) Teacher plays a 4 beat pattern on an instrument. The whole class responds by echoing together on their instruments.
- b) Ask student volunteers to lead the class in making up patterns for the class to echo.
- c) Teacher asks for volunteers to echo his phrases in solo.
- d) A student volunteer is the leader and plays a phrase pattern for volunteer soloists to echo.
- e) Teacher plays individual patterns tailored for each student to echo. (Teacher is prepared to repeat his last phrase for the whole class to echo or to go on to the next student with a phrase designed just for him.)

Improvisation Activity - Type II

Imitation - Echo play on guiro, hand drums and wood blocks

Patterns: macro/micro beats/elongations/divisions



- a) Teacher plays a 4 beat pattern. The whole class responds by echoing.
- b) Ask student volunteers to lead the class in making up patterns for the class to echo.
- c) Teacher asks for volunteers to echo his phrases in solo.
- d) A student volunteer is the leader and plays a phrase pattern for volunteer soloists to echo.
- e) Teacher plays individual patterns tailored for each student to echo.

Improvisation Activity - Type II

Imitation - Echo play on hand drums and wood blocks

Patterns: macro/micro beats/elongations/divisions

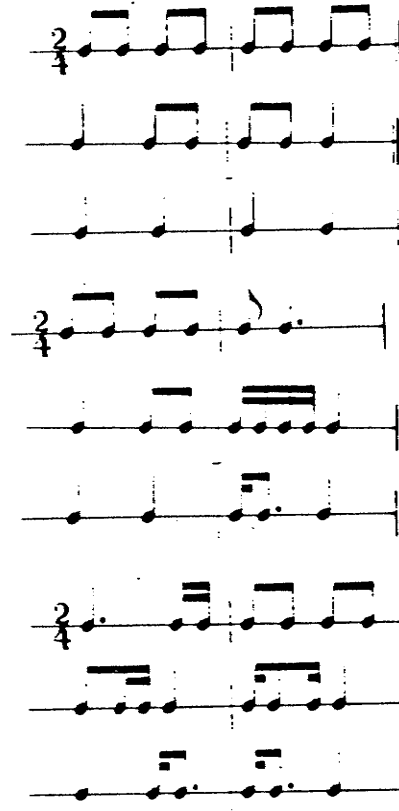


- a) Teacher plays a 4 beat pattern. The whole class responds by echoing.
- b) Ask student volunteers to lead the class in making up patterns for the class to echo.
- c) Teacher asks for volunteers to echo his phrases in solo.
- d) A student volunteer is the leader and plays a phrase pattern for volunteer soloists to echo.
- e) Teacher plays individual patterns tailored for each student to echo.

Improvisation Activity - Type II

Questions and Answers on hand drums, wood blocks and tone blocks

Patterns: macro/micro beats/elongations/divisions



- Teacher composes a question 2 patterns long. The whole class composes an answer 2 patterns long in ensemble.
- Teacher asks a pre-arranged question (2 patterns long) for a volunteer soloist to answer.
- Teacher plays a pre-arranged answer to individual students' improvised questions.
- Students play either a question or answer, immediately following one another, around the whole class.

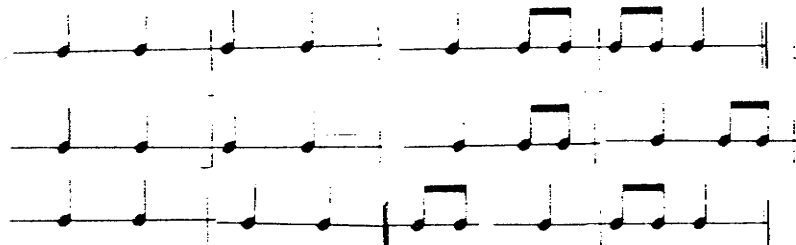
Improvisation Activity - Type II

Questions and Answers over rhythmic ostinati on wood blocks, tone blocks and rhythm sticks.

Patterns: macro/micro beats/elongations/divisions



1. Teacher develops fluency in playing rhythmic ostinati (2

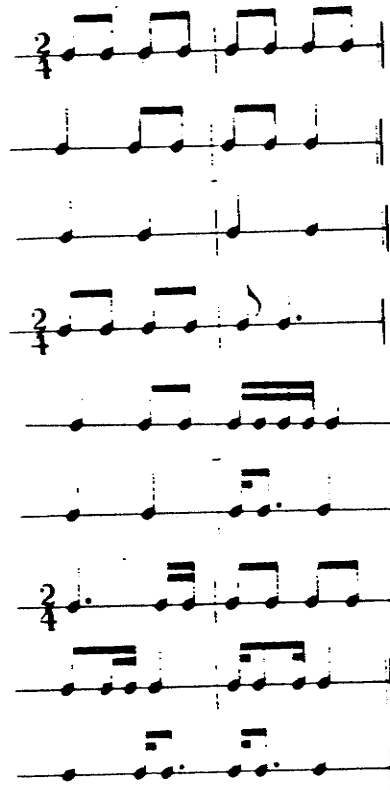


- a) Students imitate teacher's pattern.
- b) Students echo a volunteer's pattern.
- c) Individual students take turns inventing patterns for the whole class to copy.
2. Questions and Answers are improvised over a rhythmic ostinati played by several students.
- d) Teacher composes a question 2 patterns long. Whole class composes an answer 2 patterns long in ensemble.
- e) Teacher asks a pre-arranged question (2 patterns long) for a volunteer soloist to answer.
- f) Teacher plays a pre-arranged answer to individual students' improvised questions.
- g) Individual students play either a question or answer, immediately following one another, around the whole class.

Improvisation Activity - Type II

Questions and Answers (Q-A) over rhythmic ostinati
developing form

Patterns: macro/micro beats/elongations/divisions



- The class improvises 2 pattern question and answer phrases in sets of four people around the class over a rhythmic ostinati. e.g. Q-A-Q-A
- The first person in each set of four repeats his question making an ABAC form. e.g. Q-A, same Q, new A
- Student volunteers improvise a 4-phrase pattern over a group ostinati to create a rondo ABACADAE
e.g. Q-A, same Q, new A; same Q, new A, same Q, new A;
- Students improvise introductions and interludes to support the intervening episodes of the rondo.

APPENDIX C

RHYTHM IMPROVISATION TEST

ITEM 8: (no visual)

91

You will hear the beginning of a rhythm pattern.
Make up your own pattern to answer or finish the rhythm you
hear.

I will raise my hand to tell you when to play.

TAPED STIMULUS: 1, 2, 3, 4 ♩. ♪♪♪ ♩ ♩. ♪♪♪

PAUSE FOR STUDENT RESPONSE

Try it one more time.

TAPED STIMULUS: as above

PAUSE FOR STUDENT RESPONSE

APPENDIX D
DATA ANALYSIS FORM

A. Completeness (total of 8 points)

- 8 response spans 8 pulses (symmetrical)
0 - 7 for each beat over 8 pulses subtract 1 point
0 - 7 for each beat less than 8 pulses subtract 1 point

B. Steadiness of Pulse (total of 10 points)

- 10 maintains same pulse as stimulus
8 maintains own pulse (different from stimulus) steadily
0 - 9 for each beat that deviates from the pulse subtract 1 point

C. Sense of Finality (total of 2 points)

- 2 response gives sense of closure
0 response stops with no sense of closure

D. Originality (total of 8 points)

- 7 - 8 response contains part of stimulus and part of own creation
5 - 6 response is completely different from stimulus
3 - 4 response is exact imitation of stimulus (no originality) This includes only repeating part of the stimulus.
1 - 2 response contains no identifiable pattern (cannot determine a rhythm pattern)
0 no response

Total possible score = 28 points

APPENDIX E
OBSERVATIONS OF LESSONS

A. Gordon's Rhythm Audiation Techniques (Experimental Group only)

- List patterns used:
- Kinesthetic Response to a) macro beat in heels
b) micro beat in hands
- Children's reactions: a) affective response
b) ability to repeat patterns
- Individualized instruction according to ability levels:
 - Do the patterns a) reflect the skills the students possess?
b) challenge students at an appropriate level?
- Sequencing of patterns:
 - Do the patterns progress in a logical manner?
 - Do they build upon one another?
 - Does each pattern provide readiness for the next level?

B. Carley's Rhythm Improvisation Techniques (Experimental and Control Group)

- Children's Reactions:
 - a) affective response
 - b) ability to perform
 - c) willingness to volunteer - to lead class
- to echo teacher

- Difficulty level:
 - 4 beat patterns versus 8 beat patterns
 - Does one class provide adequate time to master patterns?
 - Which patterns do students a) echo easily?
 - b) find difficult?
 - In improvising answers to questions, do children incorporate a) part of the question?
 - b) rhythm patterns taught?