

AN EXPERIMENTAL ANALYSIS OF THE DEVELOPMENT
OF RHYTHMIC AND TONAL CAPABILITIES OF
KINDERGARTEN AND FIRST GRADE CHILDREN

1. Whether children who were taught to sing songs only in usual meters (duple and triple) perform songs in usual meters better than children who were taught to sing songs in usual, mixed, and unusual meters.
2. Whether children who were taught to sing only tonal songs (major and minor) perform tonal songs better than children who were taught to sing both tonal and nontonal songs.
3. Whether kindergarten children who were given one full year of instruction in singing songs in mixed and unusual meters would perform songs in mixed and unusual meters better than first grade children who were initially exposed to one year of typical kindergarten musical training before being given instruction in mixed and unusual meters.
4. Whether kindergarten children who were given one full year

by

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An Abstract

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Thesis supervisor: Professor Edwin Gordon
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aiming the extent to which a child can learn to perform songs in various meters and tonalities.

Design of the Study

Two-hundred seventy-one kindergarten and first grade children, enrolled in one of the public schools in the Iowa City Community School District, participated in this study. During the 1948-49 school year,

ABSTRACT

Problems of the Study Were to Investigate:

1. Whether children who were taught to sing songs only in usual meters (duple and triple) perform songs in usual meters better than children who were taught to sing songs in usual, mixed, and unusual meters.
2. Whether children who were taught to sing only tonal songs (major and minor) perform tonal songs better than children who were taught to sing both tonal and nontonal songs.
3. Whether kindergarten children who were given one full year of instruction in singing songs in mixed and unusual meters would perform songs in mixed and unusual meters better than first grade children who were initially exposed to one year of typical kindergarten musical training before being given instruction in mixed and unusual meters.
4. Whether kindergarten children who were given one full year of instruction in singing nontonal songs would perform nontonal songs better than first grade children who were initially exposed to one year of typical kindergarten musical training before being given instruction in performing nontonal music.
5. Whether level of musical aptitude is a factor in determining the extent to which a child can learn to perform songs in various meters and tonalities.

Design of the Study

Two-hundred seventy-one kindergarten and first grade children, enrolled in one of the public schools in the Iowa City Community School District, participated in this study. During the 1968-69 school year, children in each kindergarten and first grade group received music instruction three twenty-minute periods each week.

Four kindergarten and four first grade groups selected for the study were randomly designated as rhythmic experimental groups. During the school year, children in one kindergarten and one first grade group learned to perform songs written only in usual meters. Children in the other six groups, three kindergarten and three first grade groups, received varying amounts of instruction in learning to perform songs written in mixed and unusual meters, in addition to usual meter.

Two kindergarten and two first grade groups were randomly designated as tonal experimental groups. During the school year, children in one kindergarten and one first grade group received instruction in learning to perform only tonal songs. Children in the other two groups, one kindergarten and one first grade, received instruction in learning to perform tonal and nontonal songs.

Evaluation of children's individually tape-recorded performances of each of seven criterion songs (duple, triple, mixed, and unusual meters and major and minor tonalities and nontonal) was accomplished by the writer and another elementary general music specialist. It was then determined if different methods of instruction produced significantly different mean achievement results within

and between kindergarten and first grade experimental groups and for children who possess different levels of musical aptitude.

Results of the Study

The following results are reported as they relate to the corresponding problems of the study.

1. The kindergarten and first grade children who received varying amounts of instruction in mixed and unusual meters performed, overall, the criterion songs in usual meters significantly better than their peers who received instruction in only usual meters.
2. The kindergarten and first grade children who received instruction in both tonal and nontonal music performed, overall, the criterion songs in major and minor tonalities significantly better than their peers who received instruction in only tonal music.
3. First grade children who received varying amounts of instruction in mixed meter performed, overall, the criterion song in mixed meter significantly better than the children in the corresponding kindergarten rhythmic experimental groups. However, first grade children who received varying amounts of instruction in unusual meter did not perform, overall, the unusual meter song any better than the children in the corresponding kindergarten rhythmic experimental groups.

4. First grade children who received instruction in tonal and nontonal music performed the criterion song (which was nontonal) significantly better than the children in the corresponding kindergarten tonal experimental group.
5. Generally, high aptitude children performed significantly better than low aptitude children.

Conclusions of the Study

On the basis of the evidence contained in the study, it may be concluded that young children, especially those in kindergarten, should receive instruction in music written in mixed and unusual meters and in nontonal music. Although, overall, high aptitude children perform better than low aptitude children, the data indicate that low aptitude children, nevertheless, can profit from instruction in mixed and unusual meters in addition to that of usual meter.

Abstract approved: _____, Thesis supervisor
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Chapter I

PURPOSE OF THE STUDY

Introduction

Rhythmic and tonal aspects of music can be quite complex. For example, in current "pop" and serious music, it is not uncommon to find several different meter signatures in the same composition. Also, a given piece of music may or may not have a traditional tonal center, or it might embody several tonal centers. It would seem, therefore, that the music educator's role, in part, is to teach children to understand broad aspects of rhythmic and tonal characteristics of music.

That various types of rhythmic and tonal aspects of music should be included in elementary general music curriculums is borne out in The Study of Music in the Elementary School: A Conceptual Approach, a 1967 publication of the Music Educators National Conference. This book suggests rhythmic and tonal concepts which should be a part of elementary general music curriculums. In "Concepts about Rhythm,"¹ it is suggested that children should be exposed to music written in usual,² unusual,³ and mixed⁴ meters.

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1. Music Educators National Conference, The Study of Music in The Elementary School: A Conceptual Approach (Washington D. C.: Music Educators National Conference, 1967), 11-50.
 2. For purposes of this study, terms which are used are defined in the Glossary
 3. Ibid.
 4. Ibid.

And, in "Concepts about Melody,"⁵ it is suggested that children should be exposed to tonal⁶ and nontonal⁷ music.

Equally important to the nature of the content of elementary music curriculums is the determination of sequence of presentation of rhythmic and tonal concepts. That is, it is not known at what grade level, age, or stage of musical development children might most appropriately receive instruction in usual, unusual, and mixed meters, and in tonal and nontonal music. Although Meyer is not specific about types of experiences, he does stress the importance of early musical experiences.

The habits and dispositions which facilitate [musical] perception and make communication possible are acquired not with one, two, or perhaps even a hundred encounters with a particular [musical] style or style-class but become part of our very being through countless experiences that begin in infancy [italics are not in the original]

Because our most firmly rooted habits of thought and discrimination are learned in infancy and early childhood, the musical style system we first experience is the one that tends to dominate our perception and cognition of music throughout our lives.

In that basic music series reflect current philosophy in music education, it is interesting to observe the musical content which they comprise. The rhythmic and tonal content of songs found in

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5. Music Educators National Conference, op. cit., 51-66.
 6. See Glossary
 7. Ibid.
 8. Leonard B. Meyer, Music, The Arts, and Ideas: Patterns and Predictions in Twentieth-Century Culture (Chicago: The University of Chicago Press, 1967), 274.

kindergarten and first grade music books is limited mostly to duple meter and major mode. For example, Exploring Music 1, published by Holt, Rinehart and Winston, Inc. in 1966, is representative of recent trends in music textbooks. Edited by two prominent elementary music specialists, with the assistance of many consultants, this book contains approximately 170 songs. Except for seventeen percent of the songs in triple meter and nine percent in minor mode, the remaining songs are in duple meter and major mode, eighty-three percent and ninety-one percent, respectively. There are no songs written in mixed or unusual meters, nor are there modal or nontonal songs.

Analysis of the song content of other leading music textbooks reveals musical content of similar proportions. Discovering Music Together, Book 1, published by Follett in 1966, includes only four minor songs, a scant three percent. This book does not include any songs in mixed or unusual meter, neither does it include any modal or nontonal songs. Early Childhood, published by Follett Educational Corporation in 1968, does include one song each in mixed and unusual meter, less than one percent of the total number of songs in the entire book. Making Music Your Own, Book 1, published in 1968 by General Learning Corporation, includes only one song in mixed meter and no songs in unusual meter. Two 1966 publications, Making Music Your Own, Kindergarten, published by Silver Burdett, and Growing With Music, Kindergarten, published by Prentice-Hall, Inc., are similar in content to the music books already reviewed. There is one modal song in each of these two books, but no nontonal songs.

The Silver Burdett book contains no songs in mixed or unusual meter. In the Prentice-Hall book, there are only two songs in mixed meter, but there are no songs found in unusual meter. Analyses of music series designed for grades two through six indicate that proportions of songs in major and minor modality, modal and nontonal songs, duple and triple meters, and mixed and unusual meters are similar to those found for lower grade books.

It is interesting to speculate just why there is such a paucity of songs in mixed and unusual meters or so few nontonal songs. It is possible that music educators believe children should first learn to perform usual meter and tonal songs before they learn to perform unusual meter, mixed meter, and nontonal songs. Or, it may be that music educators assume that songs in mixed and unusual meters, and nontonal songs, are too difficult for young children to learn. However, Meyer states, "The human mind is capable of maintaining many different and even contradictory behavior systems simultaneously and of bringing these into play at appropriate times."⁹ Meyer also quotes John Pfeiffer, ". . . Between two and six the cortex completes the major part of its growth, a fact that jibes nicely with theories concerning the importance of early-childhood experiences."¹⁰

9. Ibid., 276.

10. Ibid., 275.

Meyer goes on to say: *These understandings. For example,*

Insofar as serial music is perceptually highly complex and irregular, it is difficult for children, and perhaps even adults, to bring relevant sensory-motor behavior into play. On the other hand, since it is also clear that the human mind is capable of astonishing feats of learning, the point at which complexity and irregularity inhibit or thwart learning must be left open.¹¹

It is important to remember that early learning is critical, not merely because it is first [italics are in the original], but because in childhood the connections and pathways of the nervous system are still largely unspecified.¹²

Perhaps music educators, themselves, are unable to perform songs which comprise complex musical aspects. Because those who currently teach elementary general music initially learned to perform tonal music in usual meters in their early childhood, they find it difficult to perform music in mixed and unusual meters or modal and nontonal music. This point of view is somewhat substantiated by Meyer when he writes:

The formation later in life of new channels and pathways in the brain deep and clear enough to insure new modes of perception and cognition is not an impossible task, but certainly it is a formidable one.¹³

Philosophically, music educators agree that children should learn to understand broad aspects of meter, mode, and tonality in music. However, they provide little specific insight into how or

11. Ibid., 276.

12. Ibid., 275.

13. Ibid., 275.

14. James L. Russell, "Growth Processes in Music Education," Music Concepts in Music Education, ed. Nelson S. Henry (Chicago: University of Chicago Press, 1958), 157-9.

when children best develop these understandings. For example,

Mursell explains:

Musical growth turns upon a progressive and continuously developing realization of what music actually is. Therefore at least a dawning realization should come from the earliest years.

.....

In introducing significant musical concepts, there is not any need to wait for a supposititious moment when children will be "ready" to deal with them. . . . an authentic feeling for the difference between major and minor can be established almost from the beginning. . . . Instead of teaching the minor tonality at some one predetermined point, it is, so to speak, spread out through a number of years. So also with all other musical concepts [*italics are not in the original*].¹⁴

Nevertheless, editors of school music series do not make provision for children to learn systematically to understand broad aspects of rhythm and tonality in music.

Purpose of the Study

For the purpose of future curriculum development, it would seem important that educators obtain insight into the development of young children's musical capabilities. For example, educators should know when children most opportunely learn to perform music in mixed and unusual meters and to sing nontonal songs. Considering instruction in various meters, it is necessary for educators to know if young children can learn to perform in mixed and unusual meters before they have demonstrated an understanding of usual meter, and if regular instruction in mixed meter and/or unusual meter will help,

14. James L. Mursell, "Growth Processes in Music Education," Basic Concepts in Music Education, ed. Nelson B. Henry (Chicago: University of Chicago Press, 1958), 157-9.

or hinder, young children's performance and understanding of usual meter. Likewise for tonal and nontonal music, educators should know if young children can learn to perform nontonal music before they have demonstrated an understanding of tonal music, and if regular instruction in nontonal music will help, or hinder, young children's performance and understanding of tonal music. Further, in order for music educators to most effectively adapt instruction to children's idiographic differences, it is important to know to what extent children, who represent all levels of musical aptitude, can learn to perform in various meters and tonal and nontonal songs. The purpose of this study is to provide objective information pertaining to appropriate instructional procedures through experimental research.

Problems of the Study

The specific problems of this study were to investigate:

1. Whether children who were taught to sing songs only in usual meter perform songs in usual meter better than children who were taught to sing songs in usual, mixed, and unusual meters.
2. Whether children who were taught to sing only tonal songs perform tonal songs better than children who were taught to sing both tonal and nontonal songs.
3. Whether kindergarten children who were initially given one full year of instruction in singing songs in mixed and unusual meters would perform songs in mixed and unusual

meters better than first grade children who were exposed to one year of typical kindergarten musical training.

4. Whether kindergarten children who were initially given one full year of instruction in singing nontonal songs would perform nontonal songs better than first grade children who were exposed to one year of typical kindergarten musical training.
5. Whether level of musical aptitude is a factor in determining the extent to which a child can learn to perform songs in various meters and tonalities.

The Dittmore Study

During the 1967-1968 school year, Dittmore⁵ investigated melodic, rhythmic, and harmonic capabilities of children enrolled in grades one through six in the elementary division of University

1. Gladys Evelyn Moorhead and Donald Food, Music of Young Children, 3 vols. (Geneva, Barbours: Pillsbury Foundation for Advancement of Music Education, 1941-1944).
2. Frances H. Andrews and Ned G. Deihl, Development of a Technique for Identifying Elementary School Children's Musical Concepts (University Park, Pennsylvania: Pennsylvania State University, 1967).
3. Nellie Pflederer and Lee Seckrest, How Children Conceptually Express Musical Events (Evanston, Illinois: Northwestern University, 1967).
4. Edgar Dittmore, An Investigation of Some Musical Capabilities of Elementary School Students (Doctor of Philosophy thesis, Iowa City: University of Iowa, 1968).
5. Ed-

Chapter II

REVIEW OF RELATED STUDIES

Introduction

Studies conducted by Moorhead and Pond,¹ Andrews and Deihl,² and Pflederer and Sechrest,³ have some relationship to the present study because they are primarily concerned with the investigation of the development of rhythmic and tonal capabilities of elementary school children. Because, however, Dittmore's⁴ study, like this study, is a specific investigation of the musical capabilities of elementary school children, it will be singularly reviewed in detail.

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 3. Marilyn Pflederer and Lee Sechrest, How Children Conceptually Organize Musical Sounds (Evanston, Illinois: Northwestern University, 1967).
 4. Edgar Dittmore, An Investigation of Some Musical Capabilities of Elementary School Students (Doctor of Philosophy thesis, Iowa City: University of Iowa, 1968).
 5. Ibid.

Schools at the University of Iowa, Iowa City, Iowa. The primary problems of his study were to determine (1) whether children's musical capabilities develop systematically, (2) whether there is sequence in the development of these capabilities, and (3) whether there is a relationship between children's musical capabilities and their musical aptitude. A secondary problem of Dittmore's study was to investigate whether significant growth occurred from grade to grade in children's ability to correctly perform specific melodic or rhythmic patterns.

The children's performances of twelve criterion songs were used to investigate their capabilities in regard to the following twelve musical aspects which are subsumed under three main categories: (1) Melody--the ability to sing in major mode, minor mode, Dorian mode, and atonality, (2) Rhythm--the ability to chant rhythm in duple meter, triple meter, unusual meter, and mixed meter, and (3) Harmony--the ability to sing a round, a counter-melody, two-part music, and three-part music. During the regular music period on four consecutive days, Dittmore taught one song each week to the children in all six grades which was representative of one of the twelve musical capabilities under investigation. Then, on the fifth day of each week, children's individual performances were tape recorded.

In order to investigate the relationship between children's musical capabilities and their musical aptitude, Dittmore administered a musical aptitude test, the Musical Aptitude Profile.⁶ On

6. Edwin Gordon, Musical Aptitude Profile (Boston: Houghton Mifflin Company, 1965).