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The Development and Implementation of Units of Instruction Which Correlate Music with Mathematics and Language Arts

Brenda Cohn
University of North Florida

THE DEVELOPMENT AND IMPLEMENTATION OF UNITS OF INSTRUCTION WHICH CORRELATE MUSIC WITH MATHEMATICS AND LANGUAGE ARTS

A MASTERS PROJECT

SUBMITTED IN PARTIAL FULFILLMENT OF

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MASTER OF MUSIC EDUCATION

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BRENDA COHN

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Brenda Cohn

VITA

Education:	B.M.E., Florida State University, 1973.
Experience:	Elementary Music Specialist Clay County, Florida 1973-1977.
Field of Concentration:	Elementary Education With Specialization in Music.

TABLE OF CONTENTS

CHAPTER I

INTRODUCTION AND PROBLEM

Introduction

In the minds of many classroom teachers, parents and administrators, music shares with art and physical education the position of a frill or extra in the elementary school curriculum. If the money is available, the resource specialists are often viewed as useful for providing breaks for teachers and in helping community relations through special programs and sports events.

Classroom teachers tend not to teach these subjects, either because they lack experience and confidence in teaching in these areas, or are unwilling to take the time to use them in their daily instruction. Therefore, they are usually happy to relinquish all responsibility to the specialists.

As a result, music instruction in a system where music resource specialists are employed is likely to be limited. The classroom teacher is often uninvolved and unaware of the musical concepts being taught. Likewise, the resource specialists are often unaware of the skills and concepts which fall within the purview of the classroom teacher. Further, the school administration and community usually see the music programs as the main outcome of the music curriculum.

Music instruction is often thought of as a form of entertainment or release, simply a time to sing a few songs.

It is not surprising then that such a curriculum should have little backing. When something must be cut because of money shortages, music is frequently one of the first subjects to have its value questioned. Also, when the valuable contact time between students and teachers is portioned out, language arts and mathematics are typically given priority.

As a result, the student experiences music instruction as something isolated from everything else that is learned at school. It is very difficult in the short, infrequent music classes to have time for enough repetition and first hand experience with music for most students to experience much success.

The Problem

Green Cove Springs Elementary School is located in a rural community and has a population of approximately five hundred and fifty fourth and fifth grade students. The classes are mostly self-contained, except for some grouping in reading and mathematics. There is one resource specialist in physical education who sees each class every day and one music resource specialist who sees each class twice a week and has classes in recorder and guitar.

In a survey taken last year of parents and teachers, respondents were asked to rank many areas of the curriculum in order of importance. When the results came in, music was

next to last on the list. Whether or not it is correct to assume that some subject areas have greater importance than others, the results of the survey were disturbing in that they indicated that the respondents felt music and the other arts were not as important as other areas of the curriculum.

Although a few students show growth in their knowledge of the musical content taught, the majority not only fail to acquire musical concepts, but also become bored and frustrated and begin to have negative attitudes towards music.

The purpose of this project was to increase elementary students' understanding and knowledge of musical concepts and skills through a curriculum of music activities related to the language arts and mathematics. The program was implemented jointly by the classroom teacher and the music resource specialist. It was expected that the implementation of this project would provide elementary students more opportunities to experience success in learning musical, mathematics, and language arts content through more frequent music activities.

The objectives for the project were threefold. First, for the students to show cognitive growth in musical content and maintain a positive attitude toward music study. Secondly, to demonstrate the part the music specialists play in reinforcing language arts and mathematics skills. Thirdly, to provide a means for the classroom teacher to

become involved in the students' music instruction and increase the teachers' understanding and appreciation of the value of music in the curriculum.

Classroom teachers were chosen to participate with the music resource specialist in the program to allow more frequent music experiences for the students than are possible when the music resource specialist is totally responsible for all music instruction. The portion of the curriculum for the classroom teacher consisted of prepared lessons with activities that require little musical background. This was done to gain the cooperation and acceptance of the classroom teacher.

Limitations

The study was limited to music activities for fifth graders. It was concerned with:

1. Relating instruction of concepts in rhythm (note and rest values) with mathematics concepts (naming, adding, and reducing fractions).
2. Relating the instruction of concepts in tone color (vocal tone colors and instruments of the orchestra) and dynamics (discriminating loud and soft in music and recognizing dynamic markings) with concepts and skills in language arts (reading comprehension, oral reading, and dictionary skills).
3. The evaluation of the study was limited to a test of the cognitive achievement in music of the students

and attitudes of the classroom teachers. A survey was given to teachers at the end of the project to determine their attitudes about taking the responsibility for music instruction and the value of music in the curriculum. The survey also measured their awareness of the musical concepts their classes had studied.

Design of the Study

The non-equivalent control group design[1] was chosen to find the results of the implementation of the curriculum. The control group consisted of three classes which received only two half hours a week of music instruction with the music resource specialist alone. The experimental group consisted of three other classes which received instruction from the music resource specialist plus supplementary activities in the regular classroom. A pre-test and post-test on each of the units of study were given to each group and a comparison made of the achievement of the students in each group.

To find the effects on classroom teacher attitudes, the six teachers were asked to complete a survey at the end of the project. Through this process the attitudes of the control and experimental teachers were able to be compared.

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[1]Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research (Chicago: Rand McNally and Company, 1963).

Overview of the Report

Chapter I of this report presents the problem of poor student achievement in music and lack of classroom teacher involvement in music instruction at Green Cove Springs Elementary School. This chapter also proposed coordinating music instruction with language arts and mathematics instruction in order to attain specific objectives related to these problems. Literature is explored in Chapter II to show the importance of adequate music instruction in the elementary school, to present evidence of problems in elementary music instruction on a broader scale, to describe previous approaches to alleviating these problems, and to give a rationale for the approach used in this project. Chapter III presents a detailed description of the development and implementation of the curriculum in this study. The results, conclusions, and suggestions for further study are included as Chapter IV.

CHAPTER II

REVIEW OF THE LITERATURE

Many justifications for music instruction in the elementary school were found in the literature. Max Kaplan lists four social reasons for music instruction including: the development of tastes in a democracy, the development of appropriate skills and attitudes for the meaningful use of leisure time, the development of creativity, and personality development. Kaplan, however, adds that along with all of the social reasons to learn music, music should be taught for its own sake.

> The aesthetic . . . can stand alone, and man's history--even in prehistoric eras--indicates that he has always enjoyed the non-utilitarian (not useless) aspects of the arts, shorn of all external motivations and attractions. In this sense the teacher has the same purpose in teaching mathematics, civics, chemistry, geography or music: to expose each student, regardless of his background, to a sensitivity to many ways of knowing the world--through ideas, places, people, objects, forms, and sound.[1]

Further support is provided by Reimer who agrees that every person should be given the opportunity to understand the nature of the art of music in order to have another way

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[1]Max Kaplan and Frances J. Steiner, Musicianship for the Classroom Teacher (Chicago: Rand McNally and Company, 1966), p. 4.

of knowing reality.[1]

Harry S. Broudy says music instruction is even more important today in our technological society, as it allows people to live highly individual, meaningful lives. He says the "common men" must be literate in music to narrow the gap developing between the art of the elite and the art of the masses.

> If our culture is destroyed it will be because it has been unable to display captivating alternatives to boredom . . . To make art effective in life, the school will have to cultivate the best in art, to inculcate its tradition as seriously as it does the traditions of science, mathematics, and history.[2]

Burton Hoffman also supports broad art programs in the schools as a way to help the young add meaning to their lives. He says the arts are important because they deal with every aspect of human feeling. He is concerned that in spite of its importance, art is considered something extra, something to turn to when all else is done.

> What a pity that a compulsion for the mundane and practical has invaded our schools--read more readily, calculate more quickly, proceed to the practical with haste and to the arts if time permits.[3]

In a joint statement of the Music Educator's National

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[1]Bennett Reimer, A Philosophy of Music Education (Englewood Cliffs: Prentice Hall Incorporated, 1970).

[2]Harry S. Broudy, "A Philosophy of Arts in An Emerging Society," Music Educator's Journal 56 (September, 1969) p. 115.

[3]Burton R. Hoffman, "The Arts in Society and Education," Music Educator's Journal 59 (March 1973), p. 28-32.

Conference and the American Association of School Administrators the importance of giving music a place in the curriculum on equal footing with other fundamentals was stressed.[1] The statement quoted resolutions of the Association of School Administrators from 1927 and 1956 that recommended that music and art be given equal consideration and support with other basic subjects in a well-balanced school curriculum. The report cited the need for both resource specialists in music and classroom teachers trained to help teach music.

In the summary of the report of the Florida Task Force on Basic Education,[2] a list is given of areas in which students should have the opportunity to gain skills, attitudes and knowledge. These included aesthetic, scientific, and cultural appreciation and recreation and leisure skills.

Along with the intrinsic value of music instruction as a means of "knowing" studies have shown that music instruction can lead to increased achievement in other areas of the curriculum.

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[1]Burton R. Hoffman, "Music in the School Curriculum" Joint Statement of the Music Educator's National Conference and the American Association of School Administrators.

[2]Burton R. Hoffman, "Basic Education: A Task Force Report" (Tallahassee 1975 Department of Education).

Gladys C. Uhl[1] and Ruth Zinar[2] gave evidence that music instruction can help in reading and other subject areas. Gladys Uhl identified skills such as auditory acuity, diction, syllabication, and inflection that are improved when students sing, and are necessary for language development. Ruth Zinar explored the connection between reading language and reading music. The studies she cited showed low positive to high levels of significance in a correlation between the ability to read music and the ability to read language.

Diane Nicholson[3] found a significant difference in six to eight year olds on reading readiness pre-tests and post-tests in a study to see if music instruction could effect reading readiness. Edwin Movsesian[4] found that children in the first and second grades became significantly more efficient in basic reading skills when concurrently taught specific music reading skills.

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[1]Gladys C. Uhl, "Singing Helps Children Learn How to Read," Music Educator's Journal 56 (November, 1969): 45,46.

[2]Ruth Zinar, "Reading Language and Reading Music: Is There a Connection?" Music Educator's Journal 62 (March 1976): 70-73.

[3]Diane Nicholson, "Music as an Aid to Learning" (Ph.D. dissertation, New York University, 1972).

[4]Edwin Movsesian, "The Influence of Teaching Music Reading Skills on the Development of Basic Reading in the Primary Grades," (Ph.D. dissertation, University of Southern California, 1967).

Esther Seides[1] studied the effect of placing musically or artistically talented slow learners of junior high age in a special talent program. She found that those in the talented class achieved higher scores than the talented group in the regular class in reading achievement, arithmetic achievement, and creative thinking.

All of the studies found on the relationship of music instruction to language skills supported the premise that music instruction can have a positive effect on these skills.

If music instruction is accepted as a viable part of the elementary curriculum, it is necessary to identify the best means of implementing it. In the literature concerning the roles and attitudes of the classroom teacher and the music resource specialist, the opinion prevails that music instruction by the music resource specialist is desirable, but not always practical.

Robert L. Garretson, author of Music in Childhood Education,[2] lists three possibilities for the allocation of the responsibility of music teaching in the elementary school. The first is the classroom teacher alone. The advantages of music instruction by the classroom teacher include: a knowledge of the needs, abilities, and interests

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[1]Esther Seides, "The Effect of Talent Class Placement on Slow Learners in the Seventh Grade of a New York City Junior High School" (Ph.D. dissertation, New York University 1967).

[2]Robert L. Garretson, Music in Childhood Education (New York: Meredith Publishing Co., 1966), pp. 9-12.

of the class, and the ability to integrate music into the ongoing activities of the classroom. Unfortunately, the classroom teacher seldom possesses the background and skills necessary to teach music. Teachers who enjoy music and feel adequate teaching it employ it. Others shy away. Therefore, if left to the classroom teacher, music instruction ranges from practically non-existent to adequate.

The second approach is to leave all music instruction to the resource specialist. However, for financial reasons the visits of the specialists are often infrequent and there is little time for planning because the specialist is required to teach too many classes, moving from one to the other quickly.

The third approach given by Garretson is for the music specialist to act as a consultant and help the classroom teacher be prepared to teach music.

Charles Hoffer and Catherine English[1] assume an active supplementary or complementary role of the classroom teacher in music instruction. They feel the classroom teacher should be involved to allow more time for music, bring music into the day, relate it to other subjects, and prevent it from becoming detached and considered only significant in

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[1]Charles R. Hoffer and Catherine A. English, "The Music Specialist and the Classroom Teacher," Perspectives in Music Education: Source Book III (Washington, D.C.: Music Educator's National Conference, 1966), p. 551.

the music room. Although workshops in music teaching skills for classroom teachers are good, Hoffer and English emphasize that they do not equip the classroom teacher to take the entire responsibility for music instruction. They compare the music specialist to an architect and the classroom teacher to the builder who needs specific instructions. The music specialist needs to carefully spell out the processes and activities for the classroom teacher and consider the effort and time the classroom teacher will need in preparation.

The Music Educator's National Conference stated very strongly in a position paper in 1972 that music specialists should be responsible for music in the elementary school.[1] However, they also recommended that classroom teachers have certain minimal competencies in music.

> Because the arts, and particularly the various forms of music, are records of man's innermost feelings they relate to all of his other experiences. Classroom teachers need to be prepared to seize opportunities to use music to accommodate the expressive needs of children and to illuminate other disciplines of the school curriculum.[2]

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[1] Charles R. Hoffer, "The Music Specialist in the Elementary School: A Position Paper prepared by the MENC National Commission on Instruction," Music Educator's Journal 59 (November 1972) 60-62.

[2] Charles R. Hoffer and Catherine A. English, "The Music Specialist and the Classroom Teacher," Perspectives in Music Education: Source Book III (Washington, D.C.: Music Educator's National Conference, 1966), p. 551.

John Edward Hughes[1] did a study of the role of the specialists in art, music and physical education in school systems in Delaware and Pennsylvania. He found that the specialists saw classes on a regularly scheduled basis. The classroom teachers generally relinquished all teaching in the three special areas to the specialists and aside from taking over in the special subject, the specialists made no provisions to assist the classroom teacher. The problems most frequently mentioned were lack of sufficient specialist staffing, specialists meeting too many classes per week, and lack of adequate teaching space.

A large percentage of principals and building staff felt the preferred procedure would be for the classroom teachers to observe the specialists and follow up on the lessons they taught. However, the classroom teacher preferred to leave the teaching to the specialists and not remain with the class.

Hughes recommended adequate staffing in the special areas because of the general lack of knowledge or interest in these areas by classroom teachers. He also suggested that time should be allowed to permit specialists to work with classroom teachers to help coordinate the special areas

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[1]John Edward Hughes, "The Role of the Specialist in Art, Physical Education, and Vocal Music in the Elementary Public Schools of Bucks, Delaware and Montgomery counties Pennsylvania," (Ph.D. dissertation, Philadelphia, Temple University, 1971).

into the curriculum. He indicated the need for further study into the pre-service training of classroom teachers to ascertain the competencies of beginning teachers in these special areas.

Since a cooperative effort between the classroom teacher and the music specialist seems to be the most effective way to implement music instruction in the elementary school, it is important to note what efforts have been made to improve the preparation of the classroom teacher for teaching music and to integrate music instruction into the rest of the curriculum.

The reason classroom teachers prefer to leave all music instruction to the music resource specialist seems to be a lack of previous experience and self confidence in music. Lawrence Birch[1] found that the student teaching and post-graduate musical experiences of classroom teachers are significant predictors of attitudes toward music. He feels that prospective elementary school teachers should be provided with many opportunities for musical experiences and special emphasis should be given to in-service workshops dealing specifically with items in which teachers indicate a lack of confidence.

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[1]Lawrence Wilton Birch, "Factors Related to Differences in Classroom Teachers' Attitudes Toward Music," (Ph.D. dissertation, Los Angeles, University of Southern California 1969).

Marjorie Kemper[1] emphasized in an article in the Music Educator's Journal the need to provide courses for elementary education majors that can overcome the fact that as many as half of the elementary education majors have almost no previous musical experience and have the attitude, "I won't have to teach music anyway."

Judith MacMillen[2] and Dennis Holt[3] each developed and tested curricula designed to increase confidence and allow more musical experiences for prospective elementary classroom teachers through the college methods course.

Samuel Miller[4] suggests several changes at the undergraduate level to help classroom teachers and music teachers share the responsibility for music instruction. He feels that elementary education majors and music majors should take at least one course together. Another possibility is to arrange for music majors to observe and help with

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[1]Marjorie Kemper, "The Special Needs of Classroom Teachers," Music Educator's Journal 59 (March 1973), p.68-70.

[2]Judith MacMillen, "A Feasibility Study of a Self-Paced, Performance Based, Lab-centered Music Fundamentals Course for Prospective Classroom Teachers," (Ph.D.dissertation, Columbus, Ohio State University, 1971).

[3]Dennis Holt, "An Evaluative Study of Two Units of Instruction for Providing Prospective Elementary Teachers with an Orientation to Selected Aspects of General Music Teaching and Learning," (Ph.D. dissertation, Columbus, Ohio State University, 1973).

[4]Samuel D. Miller, "A Pre-service Plan for Cooperative Teaching," Music Educator's Journal 62 (April 1976) p. 28.

elementary music methods courses. He recommends that music education majors spend time with problems and methods of handling in-service training.

It was found that attempts are currently being made to increase the integration of music and other arts with the rest of the curriculum. Alternatives to the traditional separation between resource specialists in art, music, and drama and classroom teachers were presented in "Arts in the Mainstream of Education." Many examples were given of successful interdisciplinary programs initiated under Project Impact of the United States Office of Education. In these programs many arts and other subjects were taught in relation to each other.

In his description of these programs, Gene C. Wenner[1] clarified three ways to relate one subject to another. In correlation one subject is generally used to illustrate another. One of the subjects will therefore be given more importance. The second approach is to teach a problem solving process that can be transferred directly to the solving of problems in another area. The third approach is to develop artistic experiences from which relationships occur outside and beyond the activity. Wenner points out that it is important to use illustrations from other subjects to help students understand the arts as well as using

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[1]Gene C. Wenner, "Arts in the Mainstream of Education," Music Educator's Journal 62 (April 1976) p. 28.

the arts to illuminate other subjects.

Mary Ann Mulligan[1] has developed lessons which integrate music concepts and concepts in the social studies, science, mathematics, and language arts. The lessons illustrate concepts in the other subject with musical examples. For example, the students are to create "dry, sparse" music to illustrate the concept of desert.

Donald Gingrich[2] has developed a series of sequentially organized lessons which relate the elements basic to the visual arts, music, and poetry. He offers experiences to find relationships in color, rhythm, line textures, and organization in the three arts.

The literature suggests that although music instruction is worthwhile for the elementary student, in current curriculum of elementary schools, music is often treated as a frill and left on the fringe of the school curriculum. To give music a more central place, there is a need for educational programs both at the pre-service and in-service levels to provide classroom teachers with competencies and the confidence to use music in the classroom.

Although a number of activities have been developed which relate music to other arts and other subjects, a need

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[1]Mary Ann Mulligan, Integrating Music with Other Subjects (New York: The Center for Applied Research in Education, 1975).

[2]Donald Gingrich, Relating the Arts (New York: The Center for Applied Research in Education, 1974).

still exists for a curriculum that clearly defines the involvement of both the music resource specialist and the classroom teacher and shows how music instruction can benefit students in learning other subjects.

CHAPTER III

DEVELOPMENT AND IMPLEMENTATION

Developmental Phase

The need for a music curriculum that could increase the time the student spent with music, increase the involvement of the classroom teacher in music instruction, and show the relationship of music to other subject areas was determined on the basis of the literature reviewed and personal observations of the writer. Students at Green Cove Springs Elementary School achieved poorly on music tests and quizzes. Classroom teachers were leaving all music instruction to the music resource specialist. Because of the lack of classroom teacher involvement and awareness, music tended to be thought of as something isolated from the rest of the curriculum. This attitude was often shared by the students. Also, students needed more frequent music experiences to attain the skills and knowledge that would provide them with other ways of communicating and knowing their world.

Musical goals and objectives were based on the writer's personal goals for the year which included the need to have students acquire an understanding of the concepts involved in the elements of music: specifically, sound, harmony,

melody, rhythm, and form. Since these elements are basic to all music, an understanding of the concepts involved in them provides students with the keys to knowing, doing, and appreciating music throughout their lives. The language arts and mathematics objectives were drawn from the texts currently in use at Green Cove Springs Elementary.[1] By following this procedure, the writer hoped to make the objectives relevant to the classroom teacher's objectives in these areas.

Specific musical content was drawn primarily from modules on rhythm patterns and tone color in the level four book of the music text, Music.[2] The modules on rhythm patterns and tone color have content which is on an appropriate level for the students involved, are presented in a logical sequence, and are pertinent to the writer's musical objectives.

The content in the other subject areas was chosen in relation to the musical content. For example, an understanding of fractions is helpful in the understanding of note names and values. Speaking expressively and being aware of loud and soft is closely related to using dynamics

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[1]Harold G. Shane and others, English (Palo Alto, Calif.: Laidlaw Brothers, 1967): Eugene D. Nichols and others, Holt School Mathematics (New York: Holt, Rinehart and Winston, 1974).

[2]Elizabeth Crook, Bennett Reimer, and David S. Walker, Music (Morristown, New Jersey: General Learning Corporation Silver Burdett, 1974).

in music.

The text Music was used also to determine learning experiences. The songs, listening selections, and other activities in the text are highly motivational and fit the musical objectives well.

In order to achieve full understanding and appreciation of the music studied, all of the five avenues of learning mentioned in Foundations and Principles of Music Education[1] were used in the activities chosen. Students were performing when they sang and played instruments in the music class and when they participated in the choral reading in their classrooms. They were hearing musical examples of the rhythmic concepts studied and discriminating and feeling in their choice of dynamics when singing or doing a choral reading.

When determining the learning experiences to be implemented by the classroom teacher, consideration was given to the differences in skills, materials, and other resources available to the classroom teacher. The classroom activities were mostly seat work that students could do on their own without special equipment such as record players, headsets, or recordings. These activities did not require extra planning on the part of the classroom teacher, and they were easy to work into each teacher's schedule. These lessons

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[1]Charles Leonhard and Robert W. House, Foundations and Principles of Music Education (New York: McGraw Hill Book Co., 1972).

also related to the classroom teachers' objectives in language arts and mathematics in order to gain the teachers' acceptance, and to illustrate the relationship between music and the other subjects. Also, conversations with classroom teachers were helpful in determining the kinds of activities to use.

Although a direct experience with music was considered to be the best way to learn music, the writer believed that additional experiences which demonstrate to the student how music relates to other subjects must have a positive effect on learner attitude and also affect their achievement in each subject area.

The formal evaluation of students was on the knowledge level in the form of objective, multiple choice tests. These tests were constructed from items from the Duval County Music Curriculum Guide[1] in order to assure greater reliability of test questions. Test items were chosen from the sections of the Duval guide which related as closely as possible to the musical content and objectives of this project as shown in the table of specifications[2] in order to improve the content validity of the test.

Student achievement of psycho-motor skills (including singing, clapping, and playing instruments) and

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[1]Stella Gourneau, Duval County Music Curriculum Guide (Jacksonville, Florida: 1976).

[2]See Appendix D.

comprehension and application of the concepts studied was informally evaluated through observation of student success in activities in the music classroom. Student attitudes were evaluated through observations of the classroom teachers as well as the music resource specialist.

Implementation Phase

The curriculum was implemented with students and teachers in six fifth grade classrooms at Green Cove Springs Elementary School. Students in all six of the classes received instruction by the music resource specialist for two half-hour periods a week. Three classes also participated in additional activities guided by the classroom teacher. The classroom teachers who guided the additional activities received written instructions and the materials they needed for the lessons.[1] However, there was no formal discussion with the music resource specialist about how to implement the lessons.

The lessons implemented by the music resource specialist for the first three weeks were concerned with rhythm patterns, specifically note and rest values. They were also concerned with the mathematical concepts of naming, adding, and reducing fractions. The lessons involved the students actively in music through singing, listening, and playing

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[1]See Appendices B and C.

classroom instruments. Student worksheets completed in the regular classrooms provided drill with the concepts introduced by the music resource specialist. Each classroom teacher also had answer cards to each of the worksheets so that the students were able to check their own answers. The worksheets were either presented to the class as a whole or students could complete them independently, according to teacher preference.

Music Resource Specialist Guided Lessons on Rhythm

First Week

Musical Objectives:

1. Students will be able to draw and name eighth, quarter, half, and whole notes and rests.

2. Students will be able to name the note or rest equal to two eighth, quarter, or half notes or rests.

3. Students will be able to notate a rhythm pattern using eighth, quarter, and half notes and quarter rests.

4. Students will be able to clap a rhythm pattern they hear.

Mathematics Objectives:

1. Students will be able to label sections of a circle correctly as one-half, one-fourth, or one-eighth.

2. Students will be able to recall the number of halves, fourths, or eighths in a whole.

3. Students will be able to add correctly fractions

with like denominators.

Enabling Activities in the Music Room:

1. Sing "Old Texas" (Music 4, p. 125) and "Louis Moved Away" (p. 126) and create patterns of shorter sounds on woodblock to fill in long sounds.

2. Listen to combination of long and short sounds in "Capriccio Italien," Tchaikovsky.

3. Listen to Chopin "Scherzo" for long and short sounds; then listen again while following call chart four (p. 128).

4. Play calypso rhythms on appropriate instruments.

   a. Read word patterns and clap rhythms.

   b. Notate rhythms.

   c. Play on instruments.

5. Play "echo game." First person claps a short pattern, the next person repeats that pattern and adds his own. If someone misses, he sits down and the next person starts over.

Enabling Activities in the Regular Classroom:

1. Students complete worksheets one through four.

Second Week

Musical Objectives:

1. Students will be able to name and draw sixteenth notes and rests.

2. Students will be able to complete incomplete measures by adding notes or rests.

3. Students will be able to create, notate, and perform original rhythm patterns using sixteenth, eighth, quarter, and half notes.

Mathematics Objectives:

1. Students will correctly add and reduce fractions with like denominators.

Enabling Activities in the Music Room:

1. Sing "Frogs" (p. 129) and tap the rhythm of the melody.

2. Discuss the name of the sixteenth note and that it has two flags.

3 Make up, play, and notate rhythm patterns to accompany "Frogs" using woodblock and finger cymbals.

4. Review rests as silences.

   a. Sing "Old Texas"; count eighth and quarter rests.

   b. Sing "Scratch, Scratch" (p. 5); find quarter, half, and whole rests.

5. Find sixteenth rests and notes in "See Can't You Jump for Joy" (p. 131).

Enabling Activities in Regular Classroom:

1. Students complete worksheets five through eight.

Third Week

Musical Objectives:

1. Students will be able to identify rhythm patterns as dotted (uneven) or undotted (even) when they hear them.

2. Students will be able to identify the function of a dot after a note.

3. Students will be able to name the notes or rests equal to three sixteenth, eighth, quarter, or half notes or rests.

Mathematics Objectives:

1. Students will be able to name one-half of one-half, one-fourth, or one-eighth.

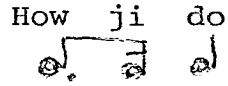
2. Students will be able to name three halves of one-half, one-fourth, or one-eighth.

Enabling Activities in the Music Room:

1. Students observe the change the dot makes in the

rhythm patterns on the top of page 129 as the teacher taps the patterns.

2. Sing "Frogs" and find the dotted rhythm pattern in it.

3. Clap the dotted pattern 

and sing "Howjido" (p. 136).

4. Identify patterns the teacher plays as even or uneven.

5. Teacher plays "American the Beautiful" (p. 139) without the dotted quarter notes. Students tell how it has been changed; then sing it both ways.

6. Sing "The Bird Song" (p. 138) and play dotted accompaniment.

Enabling Activities in Regular Classroom:

1. Students complete worksheets nine through twelve.

During the second three weeks, the music lessons were concerned with two expressive elements of music--tone, color, and dynamics. Specifically, the musical goals were for students to recognize dynamic markings and vocal and instrumental tone colors. The language arts skills reinforced were oral reading, reading comprehension, spelling, and dictionary skills. In the music class the students were involved in singing, listening, creating natural percussion sounds, and looking at pictures of orchestral instruments. They also played games involving recognition of dynamic markings and tone colors. The students again did worksheets in

their classrooms to reinforce each music lesson. There were large group activities implemented by the classroom teacher which included a choral reading activity and the creation of a dictionary of musical terms and names of instruments by each student.

Music Resource Specialist Guided Lessons on Sound

First Week

Musical Objectives:

1. Students will be able to give the meanings of f, p, m, crescendo mark, and decrescendo mark.

2. Students will be able to recognize loud and soft in music.

3. Students will be able to choose appropriate dynamics to make a song or poem more expressive.

4. Students will be able to use their voices expressively in singing or speaking.

5. Students will be able to identify voices heard as men, women, or children.

6. Students will be able to identify by sight or sound instruments of the percussion family.

Language Arts Objectives:

1. Students will be able to read out loud with expression.

2. Students will become better at comprehending what they read.

Enabling Activities in the Music Room:

1. Read poem (p. 146) with natural speaking voice.

2. Students will become better at comprehending what they read.

Enabling Activities in the Music Room:

1. Read poem (p. 146) with natural speaking voice.

2. Listen to Sound Piece 6 (p. 147) and discuss how different tone colors and dynamics made it more expressive.

3. Listen to "For the Beauty of the Earth" (p. 151); discuss the tone colors of men and women's voices.

4. Add the tone color of children's voices by singing with the recording.

5. Discuss the meaning of the dynamic markings; decide on a dynamic scheme for "For the Beauty of the Earth" and sing it according to that scheme.

6. Listen to instruments in the percussion family and look at pictures.[1]

7. Listen to "Samba" and look at picture (p. 162, 163) and identify the percussion tone colors heard (rec. 7).

8. Explore percussion instruments in the classroom and create natural percussion sounds.

Enabling Activities in the Regular Classroom:

1. Students complete worksheets one through three.

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[1]Pan Harmonic Musical Education Society, Golden Record Library Vol. II (Bell Records, Inc. 1959).

Second Week

Musical Objectives:

1. Students will be able to identify by sight or sound instruments of the brass family and the string family.

Language Arts Objectives:

1. Students will be able to put words into alphabetical order.

2. Students will be able to use guide words correctly.

Enabling Activities in the Music Room:

1. Read and discuss material (p. 155) on the brass family.

2. Sing "Tara" and "Let Us Rejoice" (p. 156) and listen for sounds of the brass family.

3. Listen to instruments in brass family and look at pictures.[1]

4. Discuss and listen to instruments of the string family. Notice relationship of size to register.

5. Sing "What Glory Good Shepherds" (p. 161). Look at a picture (p. 160) and identify instruments.

Enabling Activities in the Regular Classroom:

1. Students complete worksheets five through eight.

Third Week

Musical Objectives:

1. Students will be able to identify families of instruments heard as string, brass, or percussion.

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[1] Ibid.

Language Arts Objectives:

1. Students will be able to spell correctly the names of instruments.

Enabling Activities in the Music Room:

1. Spelling bee game. Play examples of instruments; students must correctly spell the name of the instrument they hear or they sit down (as in a spelling bee).

2. Listen to instruments families in "Fireworks Suite" by Handel.

Enabling Activities in the Regular Classroom:

1. Continue and complete dictionary.

Analysis of Data

Data was collected to see if students had shown cognitive musical growth as a result of the additional music activities implemented in the regular classroom. Objective multiple choice tests were administered to the students before and after each unit.[1] The mean score of each class was computed and the means of the three experimental classes and the three control classes were analyzed to determine if the experimental group performed significantly better at a .05 level. An analysis of the variance test and F table was used to determine significance.

A survey was given to all six teachers in the program to determine attitudes about sharing the responsibility for teaching music and the value of music in the curriculum.

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[1]See Appendices D, E, and F.

The survey also questioned classroom teachers about the content of the present music curriculum.[1] The responses of the control and experimental teachers were compared.

The results of the student tests and teacher survey are described and analyzed in Chapter IV where conclusions and recommendations are also presented.

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[1]See Appendix I.

CHAPTER IV

RESULTS, CONCLUSIONS AND RECOMMENDATIONS

Introduction

The project involved the development and implementation of a music curriculum designed to meet the following three objectives: first, to increase cognitive growth of students in musical content while maintaining student interest and positive student attitudes; secondly, to demonstrate the part the music specialist can play in reinforcing mathematics and language arts skills; and thirdly, to involve classroom teachers in music instruction and increase their understanding and appreciation of the value of music in the curriculum. The results of the study were measured in four ways: through student performance on objective tests, through classroom teacher input on a written survey, through observations of student performance in the music classroom, and through an examination of the lesson plans themselves.

Results

Objective 1

> To increase cognitive growth of students in musical content while maintaining student interest and positive student attitudes.

Students who received the additional treatment of classroom teacher guided activities performed better on the post-tests for each of the two units of study than did students in the control group.[1]

Comparison of Mean Percentage Correct on Tests

		Rhythm		Sound	
Group	Treatment	Pre-Test	Post-Test	Pre-Test	Post-Test
Control	Music Class Twice a Week				
I		41	55	57	80
II		38	62	61	84
III		37	46	54	83
Group Mean		39	54	57	82
Experimental	Music Class Twice a week plus classroom activity				
IV		40	73	60	99
V		42	75	63	91
VI		36	83	57	91
Group Mean		39	77	60	91

An analysis of the variance showed that the differences between the control and experimental groups were greater than the differences within the groups at the level of .05 significance.

ANOVA Table Rhythm

	SS	df	MS	F
Total	953	5		
Between	771	1	771	16.94
Within	182	4	45.5	

[1]See Appendices G and H.

ANOVA Table Sound

	SS	df	MS	F
Total	47	5		
Between	37	1	37	14.8
Within	10	4	2.5	

The value of F in each case well exceeds the critical F of 7.71. The results seem to indicate that students did achieve better at least at the knowledge level due to the extra music activities.

Success in attaining the objectives of improved student attitudes toward music was not evaluated formally. However, classroom teachers commented that students seemed to enjoy the music activities in their classrooms and student behavior in the music class indicated more positive student attitudes among the experimental group.

Objective 2

> To demonstrate the part the music specialist can play in reinforcing mathematics and language arts skills.

The content of the lessons implemented by the music resource specialist indicated the mathematics and language arts skills the music resource specialist reinforced. These skills included naming and adding fractions, spelling, and reading for meaning. However, the results of having the music resource specialist involved in these areas still need to be determined.

Objective 3

> To involve classroom teachers in music instruction and increase their understanding and appreciation of the value of music in the curriculum.

Teacher surveys indicated some differences between the experimental and control groups.[1] The most noticeable differences were in feelings toward leaving all music instruction to the music resource specialist, opinions about which subjects could be taught with music and knowledge of content of the present music curriculum. The experimental group indicated a greater reluctance to leave all music instruction to the music specialist; they included every subject listed as teachable with music; and they circled each area listed when asked about the content of the present music curriculum. The control group teachers indicated that all but one or two of the subjects on the survey could be taught with music. They responded with "I don't know" to the question about the present music curriculum.

Conclusions

The performance of the experimental group on the tests would seem to indicate that it is helpful to provide more opportunities for music experiences, even if these experiences are primarily drill with facts about music. Also, student awareness of classroom teacher interest in their progress throughout the study seems to show that classroom

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[1] See Appendix J.

teacher interest can improve student performance in special areas.

It seems that classroom teachers are willing to implement music instruction in the classroom when they do not have to spend great amounts of time in planning and collecting materials and when the lessons are flexible enough to fit into their schedules.

Music can be taught with other subjects in a way that is mutually beneficial. For example, in this project it appeared that it is possible to learn about music while studying mathematics and learn about mathematics while studying music.

Recommendations

To further demonstrate the relationship between music and other subjects, curricula need to be developed which correlate music with each area of the elementary curriculum. It would be best for the music resource specialist to develop curriculum in conjunction with classroom teachers in order to make use of the classroom teacher's knowledge of content and student needs in other subject areas.

Further study is needed to determine if student achievement in language arts and mathematics is improved as a result of the relationship of instruction in these areas with music instruction. Input from classroom teachers would be important in developing objectives and tests to measure this.

To increase musical skills beyond the knowledge level, especially to involve the affective domain, activities are needed for the classroom that involve the student with the music itself. This would require making materials available to classroom teachers, providing in-service training of classroom teachers to increase their musical skills and confidence in teaching music, and an on-going system of communication between the specialist and the classroom teacher. In-service programs that are developed and implemented by the specialist to meet the needs of the specialist's own school would be most helpful.

A system of communication needs to be established between the music specialist and classroom teachers to keep each of them aware of what students are learning with the other. Finally, communication is important to make students, teachers, administrators, and the community aware that music can be of value in the elementary curriculum when used to reinforce other skills, and more importantly, music is of value in the elementary curriculum in and of itself.

APPENDIX A

TABLES OF SPECIFICATIONS

Table of Specifications--Rhythm

Behavioral Areas	Knowledge					Application		Synthesis	Psycho-Motor	
Content / Ability to:	recognize and recall names of notes and rests	recall two shorter notes or rests = one longer note or rest	recall three shorter notes or rests = one longer note or rest	recall function of dot after note or rest	recognize by sight or sound even or uneven patterns	use knowledge of note values in notating rhythm patterns	use knowledge of note and rest values to complete incomplete measures	create an original rhythm pattern	clap a rhythm pattern heard	perform a pattern from notation
I. Definition of rhythm pattern								X	X	
II. Duration A. Whole, half, quarter, eighth, sixteenth notes and rests.	X	X				X	X			X
B. Dotted whole, half, quarter, and eighth notes and rests.	X		X	X						
III. Division of the Beat (simple meter) A. Even division		X				X	X			X
B. Uneven division			X	X	X					
C. Two to one relationship		X				X	X			X
D. Three to one relationship			X	X						

Table of Specifications--Sound

Behavioral Areas	Knowledge					Application	Affective
Content	Ability to recognize and recall meaning of dynamic markings	Ability to recognize loud and soft in music	Ability to recognize voices heard as men, women, or children	Ability to recognize by sight or sound and recall names of individual instruments	Ability to recognize by sight or sound and recall names of families of instruments	Ability to choose appropriate dynamics for a song.	Ability to sing with expression
I. Dynamics A. Definition		X				X	X
B. Dynamic markings: p, f, m	X					X	X
II. Tone Colors A. Voices: men, women, children			X				X
B. Instruments of the orchestra 1. percussion				X	X		
2. string				X	X		
3. brass				X	X		

APPENDIX B

INSTRUCTIONS TO CLASSROOM TEACHERS

AND STUDENT WORKSHEETS

RHYTHM

Instructions to Classroom Teachers--Rhythm

For the next three weeks we will be studying rhythm patterns, specifically the names of notes and rests and their relative values. You will be provided with two worksheets following each music class which provide review and practice on some of the concepts studied in music. These worksheets will also provide opportunities to work with fractions. Along with the worksheets you will receive answers and a note value chart which should be placed on the wall to aid the students in completing the worksheets.

The students may complete the sheets independently when their other work is finished or you may wish to use them as large group activities. If students are working on their own, they may use the answer cards to check their answers.

Rhythm Worksheets

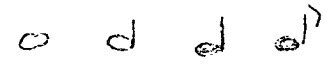
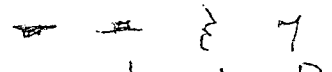
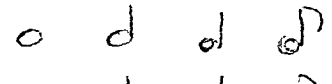
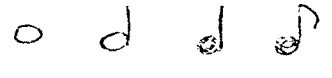
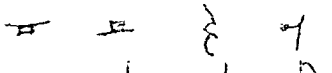
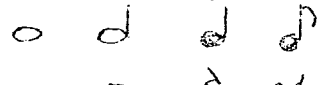
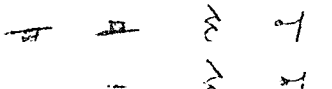
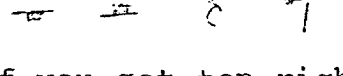
Rhythm Worksheet One

Rhythm is made of long and short sounds and silences. There are special symbols to show long and short sounds and silences. We call the symbols for sounds, notes, and the symbols for silences, rests.

Here is a worksheet to help you learn the names of the notes and rests. Look at the Note Value Chart on the wall for help if you need it.

Remember: 1. A symbol for sound is a _____ (note/rest)

2. A symbol for silence is a _____ (note/rest)

3. Circle the quarter note. 
4. Circle the quarter rest. 
5. Circle the whole note. 
6. Circle the half note. 
7. Circle the eighth rest. 
8. Circle the eighth note. 
9. Circle the whole rest. 
10. Circle the half rest. 

Check the answer card to see if you got ten right. Then try another worksheet and see if you can draw your own notes and rests.

Rhythm Worksheet Two

Notes are easy to draw. They are just made of circles (o) (called noteheads), up and down lines (|) (called stems), and lines across (—) (called flags). When two notes together have flags they are usually connected (♫) but if a note with a flag is by itself, the flag may hang down (♪).

Look at the Note Value Chart and name the notes that have circles colored in.

1. _____ note and 2. _____note.

What kind of note has a flag?

3. _____ note.

Which note has no stem?

4. _____ note.

Now you can draw the notes you see on the chart.

5. Draw a quarter note here. _____

6. Draw a whole note here. _____

7. Draw an eighth note here. _____

(Be careful to draw one ♪)

What is the difference between a half rest and a whole rest?

8. A _____ rest sits on top of the line.

9. A _____ rest sits underneath the line.

10. Draw a half rest on the line _____

11. Draw a whole rest under the line. _____

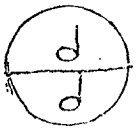
12. Make another quarter rest in the box. ☐

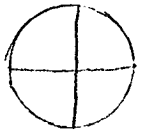
13. Make another eighth rest in the box. ☐

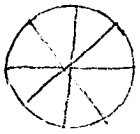
Rhythm Worksheet Three

Did you notice that notes and rests get their names from fractions? That is because we are dividing long sounds into shorter sounds. Quarter is another word for 1/4 (one fourth). There are four quarter notes in a whole note just like there are four fourths in a whole pie.

Draw a note in each section of these pies so that all the notes in the pie equal one whole note. You may look at the chart. Make sure you draw the notes correctly.

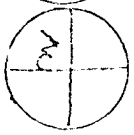
Example:  1 whole = how many (1/2) halves? 2

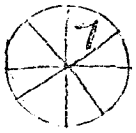
1.  1 whole = how many (1/4) quarters? _____

2.  1. whole = how many (1/8) eighths? _____

Now do the same with rests.

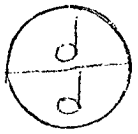
3.  1 whole = how many (1/2) halves? _____

4.  1 whole = how many (1/4) quarters? _____

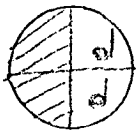
5.  1 whole = how many (1/8) eighths? _____

Rhythm Worksheet Four

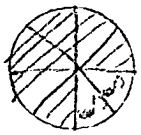
Let's see how the values of the notes and fractions add up. In each example look at the pie and at the chart on the wall. Answer the top question with a fraction, the bottom with a note or rest.

Example:  1/2 + 1/2 = 1 (whole)

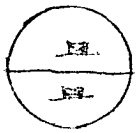
♩ + ♩ = 𝅝 (whole note)

1.  1/4 + 1/4 = 2/4 = _____ (fraction)

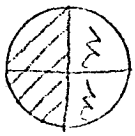
♩ + ♩ = _____ (note)

2.  1/8 + 1/8 = 2/8 = _____

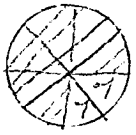
♪ + ♪ = _____

3.  1/2 + 1/2 = 2/2 = _____

𝄻 + 𝄻 = _____ (rest)

4.  1/4 + 1/4 = _____

𝅘𝅥𝅯 + 𝅘𝅥𝅯 = _____

5.  1/8 + 1/8 = 2/8 = _____

𝅘𝅥𝅯 + 𝅘𝅥𝅯 = _____

Rhythm Worksheet Five

Here is a review. Fill in the blanks.

1. This note (𝅝) is called a _____ note.

   It stands for a long sound.

2. It is as long as _____ quarter notes (♩ ♩ ♩ ♩) or

3. _____ eighth notes (♫ ♫ ♫ ♫) or

4. _____ half notes (𝅗𝅥 𝅗𝅥).

5. This rest (𝄻) is called a whole _____.

   It stands for a long silence.

6. It is as long as four _____ rests (𝄽 𝄽 𝄽 𝄽) or

7. two _____ rests (𝄼 𝄼) or

8. eight _____ rests (𝄾 𝄾 𝄾 𝄾 𝄾 𝄾 𝄾 𝄾).

Can you name a note that is shorter than an eighth note? It takes sixteen of these notes to make one whole note.

9. Write its name here _____th note.

Notice that the sixteenth note looks like an eighth note with an extra flag. 𝅘𝅥𝅯

10. Draw a sixteenth note here _____

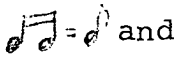
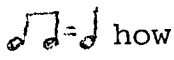
    (it should look like this 𝅘𝅥𝅯).

    The note 𝅘𝅥𝅯 is a very short sound.

11. There is also a symbol for a very short silence which is called a sixteenth _____ . A sixteenth rest
    (note/rest)
    is made almost like an eighth rest. 𝄿 is the symbol for a sixteenth rest.

12. Draw a sixteenth rest here _____.

Rhythm Worksheet Six

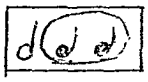
If there are two sixteenth notes in an eighth note,  and there are two eighth notes in a quarter note,  how many sixteenth notes are in a quarter note?

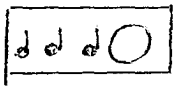
1. _____. (Hint: What is 2 X 2 ?) 

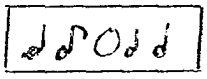
In each of the boxes below there should be four counts. One quarter note will equal one count. Add the correct note or notes to make the box complete. Be sure you have exactly four counts in each box.

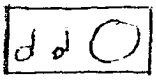
Example: 

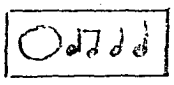
This half note is as long as 2 quarters so I must add 2 more counts.

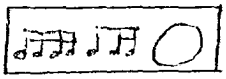


2. 

3. 

4. 

5. 

6. 

7. 

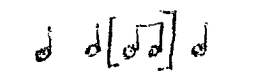
Fill in this box with four counts of your own.

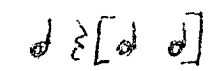
8. 

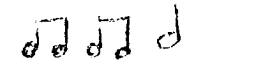
Rhythm Worksheet Seven

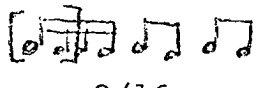
Circle the note or notes equal to the note or notes in brackets [ ] . Notice that you should circle a fraction also.

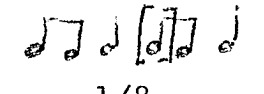
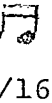
Example:

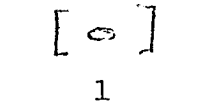
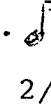
1.  2/8 — a. b.  c. d. 
   1/8 (1/4) 1/2 1

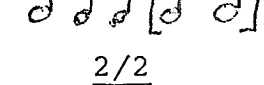
2.  2/4 — a. b.  c.  d. 
   1/8 1/4 1/2 1

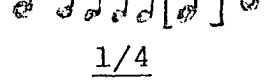
3.  1/2 — a. b.  c.  d. 
   2/16 2/8 2/4 2/2

4.  2/16 — a. b.  c.  d. 
   1/8 1/4 1/2 1

5.  1/8 — a. b.  c.  d. 
   2/16 2/8 2/4 2/2

6.  1 — 2. b.  c.  d. 
   2/16 2/8 2/4 2/2

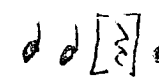
7.  2/2 — a. b.  c.  d. 
   1/8 1/4 1/2 1

8.  1/4 — a. b. c.  d. 
   2/16 2/8 2/4 2/2

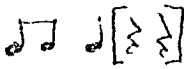
Rhythm Worksheet Eight

Circle the rest or rests equal to the rest or rests in brackets. Also circle the fraction equal to the one underlined.

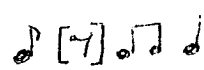
Example:

1.  a. b.  c.  d. 

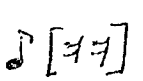
<u>1/4</u> 2/16 2/8 2/4 2/2

2.  a.  b.  c.  d. 

<u>2/4</u> 1/8 1/4 1/2 1

3.  a. b.  c.  d. 

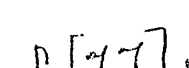
<u>1/8</u> 2/16 2/8 2/4 2/2

4.  a.  b. c.  d. 

<u>2/16</u> 1/8 1/4 1/2 1

5.  a. b.  c.  d. 

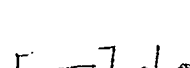
<u>1/2</u> 2/16 2/8 2/4 2/2

6.  a.  b.  c.  d. 

<u>2/8</u> 1/8 1/4 1/2 1

7.  a.  b.  c.  d. 

<u>2/2</u> 1/8 1/4 1/2 1

8.  a. b.  c.  d. 

<u>1</u> 2/16 2/8 2/4 2/2

Rhythm Worksheet Nine

Meet the dot  . He has a special job in rhythm. He makes notes or rests longer. Let's see how much longer.

To find out how long a note with a dot is you have to divide the note in half.

Divide these notes in half. Draw two shorter notes that will equal the long note. Remember, you can still look at the chart for help.

Example:  = 

1.  = _____ _____

2.  = _____ _____

3.  = _____ _____

When a dot is added to the note its value is made one-half longer. It is now equal to three shorter notes instead of two.

Here is an example with the eighth note.

 =  eighth = 2 sixteenths

 =  dotted eighth = 3 sixteenths

Draw notes in the blanks to complete these.

4.  =  half = 2 quarters

 = _____ dotted half = 3 quarters

5.  =  quarters = 2 eighths

 = _____ dotted quarter = how many eighths? _____

Rhythm Worksheet Ten

1. When you add a dot to a note it becomes _____ (longer/shorter) by one-half.

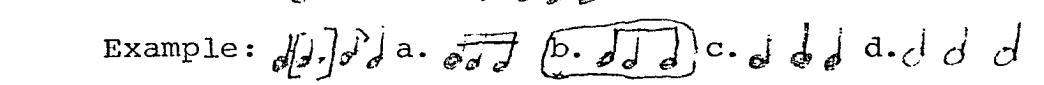
Circle the notes below that have been made longer by one-half. If neither note has been made longer by one-half, circle "none of these."

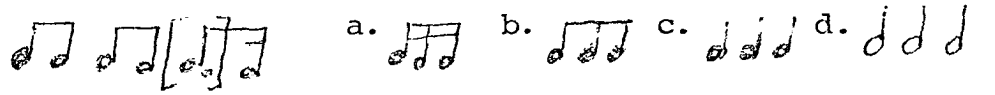
2. a.  b. c. none of these
3. a.  b.  c. none of these
4. a.  b. c. none of these
5. a.  b. c. none of these
6. a.  b. c. none of these
7. a.  b.  c. none of these
8. a.  b. c. none of these

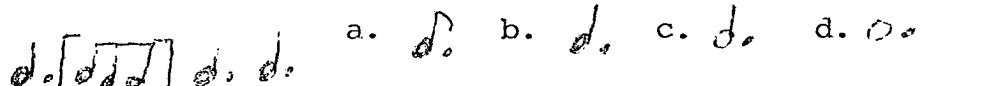
Rhythm Worksheet Eleven

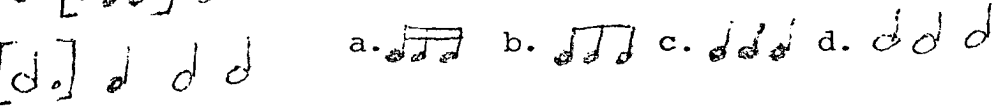
Circle the note or notes equal to the note or notes in brackets.

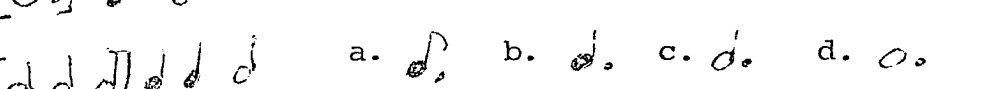
Remember -- a dot changes a note from two halves to three halves.

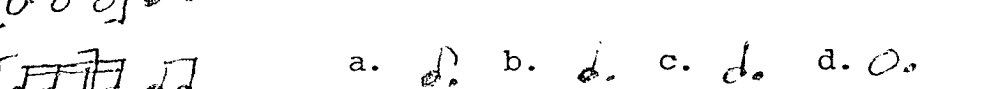
Example: 

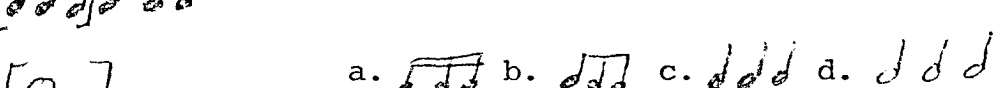
1. 

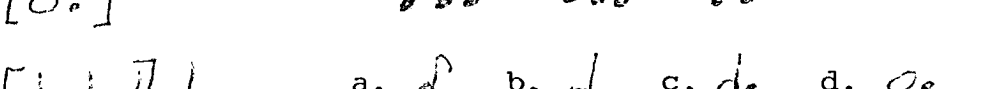
2. 

3. 

4. 

5. 

6. 

7. 

Rhythm Worksheet Twelve

1. A note stands for _____ .
(sound/silence)

2. A dot after a note makes it _____ .
(longer/shorter)

3. A rest stands for _____ .
(sound silence)

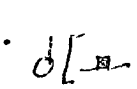
A dot after a rest makes it a longer silence.

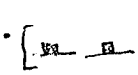
For example:  =  and  = 

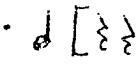
Circle the rest or rests below that are equal to the rest or rests in brackets.

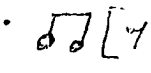
Example: []  a.  (b. ) c.  d. 

4.  a.  b.  c. d. 

5.  a.  b.  c. d. 

6.  a.  b.  c. d. 

7.  a.  b.  c. d. 

8.  a.  b.  c. d. 

APPENDIX C

INSTRUCTIONS TO CLASSROOM TEACHERS

AND STUDENT WORKSHEETS

SOUND

Instructions to Classroom Teachers--Sound

In the next three weeks we will be studying the expressive qualities of tone color (voices and instruments of the orchestra) and dynamics. I would like for you to reinforce the concepts we are studying through activities for your class.

You will be provided with worksheets for the students to complete after each music lesson. Answer cards will also be provided for each worksheet. Please have the students keep the worksheets after they are completed and corrected. You may want students to have music folders to store their worksheets.

The corrected worksheets may serve as reference for the activities described below.

Activity One. Worksheet 4

Choral Reading -- "Earth and Sky"[1]

As a class prepare a choral reading presentation of "Earth and Sky." Include the following steps in the preparation:

1. Read and discuss the poem and its meaning.
2. Discuss vocal tone colors appropriate for various parts of the poem.
3. Discuss dynamic levels appropriate for different portions of the poem.

---

[1]Eleanor Farjeon, "Earth and Sky," in Poems for Children (Philadelphia: J. B. Lippincott, 1955).

4. Use symbols -- p for soft, f for loud, m for medium, < for getting louder, and > for getting softer -- to mark the poem with the dynamics you have chosen.
5. Choose classroom percussion instruments to accompany the poem. Consider the contrasting tone colors and the expressive qualities of the instruments.
6. Perform the poem. Read with expression. Follow the dynamics decided on. Those who play instruments may improvise their own rhythm patterns to fit the rhythm of the poetry.

Activity Two. Worksheet 8

Musical Dictionary

Each student should make a dictionary of the musical terms and instrument names on sound worksheet 8. A suggested procedure would be:

1. Put the words in alphabetical order.
2. Write definitions for each of the words using the earlier worksheets as references. Include in the definition what family an instrument belongs to or if the word is a dynamic term.
3. Write guide words on the pages.
4. You may expand on these ideas and teach syllabication, pronunciation markings, and other dictionary skills you feel are appropriate.

Sound Worksheets

Sound Worksheet One

Some music is loud. Some music is soft. The name for loud and soft in music is Dynamics.

Here is a list of some symbols musicians use to tell whether they want the music to be loud or soft. We call these symbols Dynamic Markings.

p stands for piano -- it means soft

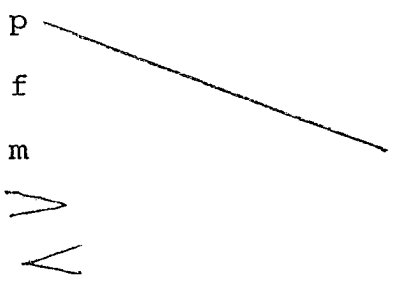
m stands for mezzo -- it means medium

f stands for forte -- it means loud

< stands for crescendo -- it means getting louder

> stands for decrescendo -- it means getting softer

Draw a line to connect the symbol with its meaning.



Save this worksheet. It will help you in later projects.

Sound Worksheet Two

Read the sentences below to yourself and think about how you would say them. Then write the dynamic markings in the blank beside them.

Use p for soft, f for loud, m for medium.

1. Yeah! We Won! _____
2. Can you keep a secret? _____
3. Go to sleep, Baby. _____
4. Today is Thursday. _____
5. Get out of my room! _____
6. Draw a sign below that means getting louder.

7. Draw a sign that means getting softer.

Sound Worksheet Three

The percussion family is a group of instruments which are struck, scraped, or shaken.

An important instrument in the percussion section of the orchestra is the tympani or kettle drum, which is a big drum which may be tuned to play definite tones. The xylophone is a percussion instrument made of wooden bars of different lengths which are played with mallets. Chimes are made of metal tubes of different lengths which are hit with a mallet. An important percussion instrument from Latin America is the guiro. It is made of a gourd and is scraped.

We use many instruments in music class that belong in the percussion family. Below are some of their names. See how many names you can unscramble.

1. mrud gonbo _____ _____
2. levacs _____
3. slebl _____
4. ymbacls _____
5. camaras _____
6. cwbeoll _____
7. wdoo clkob _____ _____
8. mrnietaobu _____
9. Write the name of the family of instruments that are shaken, scraped, or struck. _____

Sound Worksheet Four

Here is a chance for you to use what you have learned about dynamics and tone colors. You can use these to help make a poem more expressive. With your class prepare a reading of this poem.

Decide on:
1. Dynamics
2. Voice tone colors
3. Percussion tone colors

"Earth and Sky"

Earth: Oh, Sky, you look so drear!
Sky: Oh, Earth, you look so bare!
Earth: How chilly you appear!
Sky: How empty you lie there!

Sky: My winds blow icy cold.
Earth: My flowers have gone from me.
Sky: Yet I've one star of gold.
Earth: And I have one green tree.

Sky: I'll set my star on high
Alone in its own light
For any child to spy
Who wakes on Christmas night.

Earth: I'll hang my tree with toys,
Like fruit and flowers gay,
For little girls and boys,
To pick on Christmas day.

Together: Then let the soft snow fall,
And let the cold wind blow.
We have in spite of all
A pretty thing to show.

Yes Christmas Eve and Morn
We'll show our pretty thing
To every baby born
Of begger-man or king.

Earth: Oh Sky, you look so clear!
Sky: Oh Earth, you look so fair!
Earth: How bright your star shines here.
Sky: How green your tree grows there.

Eleanor Farjeon

Sound Worksheet Five

(Picture)	(Picture)	(Picture)
French horn	Trumpet	Tuba
	(Picture)	
	Trombone	

All of the instruments above belong to the Brass family.

The tone colors of brass instruments are alike because of the way the sound is made. The player causes his lips to buzz against a cup-shaped mouthpiece. Each of the brass instruments also has a bell-shaped opening which gives it its own tone color.

Match the brass instruments below with their names.

(Picture of trumpet)	Trumpet
(Picture of tuba)	Trombone
(Picture of french horn)	Tuba
(Picture of trombone)	French horn

Sound Worksheet Six

Now let's look at how each instrument in the brass family is different.

Read the definitions below and write the name of the instrument described. Be careful to spell correctly!

Trumpet

Trombone

French Horn

Tuba

1. An instrument in the brass family that uses valves (players push buttons) to change pitch. It is the smallest and highest sounding of these four instruments.

   _____

2. This instrument has valves, is very large, and plays the lowest notes.

   _____

3. This instrument came from the hunting horn. It is curved into a round shape and uses valves to change pitch.

   _____

4. This instrument is different from the other brasses because a slide is used to change the pitch.

   _____

Sound Worksheet Seven

Four instruments in the string family look very much alike. They are the violin, viola, cello, and bass. They all have four strings which are either played with a bow or plucked with the fingers.

The violin is the smallest of the string instruments. It is held under the chin.

The viola is also held under the chin. It is one-fifth longer than the violin and plays lower tones.

The cello is too large to be held under the chin. The cello player sits on a chair and holds the cello between his knees.

The string bass is much larger than the cello and sounds much lower. The person who plays it must stand up or sit on a high stool.

The harp is also a member of the string family, although it looks very different from the other four members. It has 47 strings and 7 pedals which make it a difficult instrument to learn to play. The strings of the harp are plucked by the fingers.

Write the names of these instruments in order of size. Make the smallest number one.

Viola Violin Bass Cello

1. _____ 3. _____

2. _____ 4. _____

Sound Worksheet Eight

To help you remember what the words you have learned in our study of dynamics and tone color mean and how they are spelled, make a dictionary.

Include these words:

piano	trumpet
forte	tuba
mezzo	violin
percussion	viola
tympani	cello
xylophone	bass
trombone	harp
chimes	french horn
guiro	

Here are the steps you should follow:

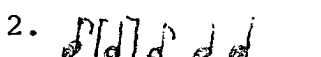
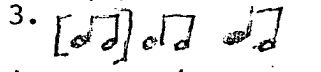
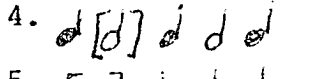
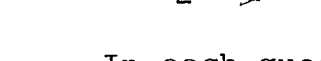
1. Put the words in alphabetical order.
2. Write definitions for each of the words. (Your old sound worksheets will help you. Tell in the definition if the word is a dynamic term or what family it belongs in.)
3. Write guide words on the pages of your dictionary to help others find the words.

APPENDIX D

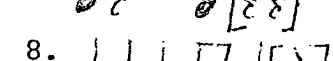
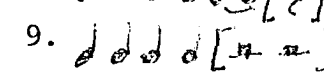
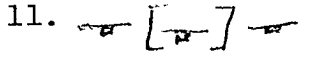
RHYTHM PRE-TEST

Pre-Test--Rhythm

In each question select the answer which is equal to the note or notes in brackets.

1.  a. b.  c. 
2.  a. b.  c. 
3.  a. b.  c.
4.  a. b. c. 
5.  a. b.  c.
6.  a. b. c.

In each question select the answer which is equal to the rest or rests in brackets.

7.  a. b.  c. 
8.  a.  b.  c. 
9.  a. b.  c. 
10.  a. b. c. 
11. a. b. c.

In each question select the example which is equal to the note or notes in brackets.

12. a. b. c.
13. a. b. c.
14. a. b. c.
15. a. b. c.

Select the note (if any) whose value has been increased by one-half.

16. a.  b.  c. none of these
17. a.  b.  c. none of these
18. a.  b.  c. none of these
19. a.  b.  c. none of these
20. a.  b.  c. none of these

Select the name of each note and rest given.

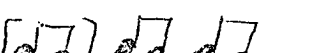
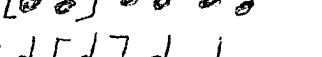
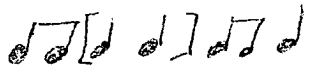
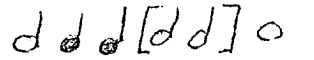
21.  a. whole b. half c. quarter d. eighth
22.  a. whole b. half c. quarter d. eighth
23.  a. whole b. half c. quarter d. eighth
24.  a. whole b. half c. quarter d. eighth
25.  a. whole b. half c. quarter d. eighth
26.  a. whole b. half c. quarter d. eighth
27.  a. whole b. half c. quarter d. eighth
28.  a. whole b. half c. quarter d. eighth

APPENDIX E

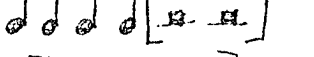
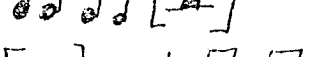
RHYTHM POST-TEST

Post-Test--Rhythm

In each question select the answer which is equal to the note or notes in brackets.

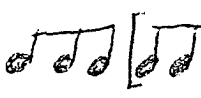
1.  a.  b.  c. 
2.  a.  b. c. 
3.  a.  b.  c. 
4.  a.  b.  c. 
5.  a.  b. c. 
6.  a. b. c. 
7.  a.  b. c. 

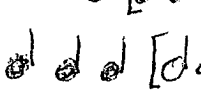
In each question select the answer equal to the rest or rests in brackets.

8.  a.  b.  c. 
9.  a. b. c. 
10.  a.  b.  c. 
11. a. b. c.
12. a. b. c.
13. a. b. c.

In each question select the example which is equal to the note or notes in brackets.

14. a. b. c.
15. a. b. c.
16. a. b. c.

17.  a.  b. c. 

18.  a.  b.  c. 

Select the note (if any) whose value has been increased (made longer) by one-half.

19. a.  b.  c. none of these

20. a.  b.  c. none of these

21. a.  b.  c. none of these

22. a.  b.  c. none of these

23. a.  b.  c. none of these

Select the name of each note and rest given.

24.  a. whole b. half c. quarter d. eighth

25.  a. whole b. half c. quarter d. eighth

26.  a. whole b. half c. quarter d. eighth

27.  a. whole b. half c. quarter d. eighth

28.  a. whole b. half c. quarter d. eighth

29.  a. whole b. half c. quarter d. eighth

30.  a. whole b. half c. quarter d. eighth

31.  a. whole b. half c. quarter d. eighth

32.  a. whole b. half c. quarter d. eighth

APPENDIX F

SOUND TEST

Test on Tone Color/Dynamics

1. Select the name of the instrumental group you hear.

   (Serenade for Strings, Music 5, Recording 4)

   a. percussion

   b. bells

   c. string

2. Select the picture of the instrumental family you heard.

   a. picture of string family

   b. picture of percussion family

   c. picture of bells

Select the name of the instrument you hear.

(Golden Record Library, Vol. II)

3. picture of viola

   a. trumpet

   b. viola

   c. woodblock

4. picture of double bass

   a. triangle

   b. double bass

   c. bass drum

5. picture of harp

   a. castanets

   b. trombone

   c. harp

6. picture of violin
   a. violin
   b. bells
   c. tympani
7. picture of cello
   a. triangle
   b. cello
   c. tuba
8. Select the name of the family to which the pictured instruments belong.
   a. strings
   b. brass
   c. percussion
9. Select the name of the instrumental group you hear. (Samba -- Music 4, Recording 7)
   a. percussion
   b. brass
   c. strings
10. Select the picture of the instrumental group you heard.
   a. picture of brasses
   b. picture of string
   c. picture of percussion

Select the name of the instrument you hear.

(G.R.L., Vol. II)

11. picture of trumpet
    a. cello
    b. trumpet
    c. tympani
12. picture of french horn
    a. french horn
    b. castanets
    c. cello
13. picture of tuba
    a. violin
    b. tambourine
    c. tuba
14. picture of trombone
    a. triangle
    b. double bass
    c. trombone
15. Select the name of the family to which the pictured instruments belong.
    a. brass
    b. percussion
    c. string

16. Select the name of the tone color you hear.

    (Tongo, Music, level 4, rec. 3)

    a. string

    b. percussion

    c. voices

17. Select the voice you hear.

    (Grandpa, Music, level 4, rec. 6)

    a. man

    b. woman

    c. child

18. Select the voice you hear

    (Can't Help Singing, level 4, rec. 1)

    a. man

    b. woman

    c. child

19. Select the voice you hear.

    (Noah, level 4, rec. 3)

    a. man

    b. woman

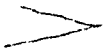
    c. child

Use these symbols to answer the following questions.

a. piano

b. forte

c. 

d. 

e. mezzo

20. Select the dynamic level you hear.

    (Ho, ho, watanay, level 4, rec. 3)

21. Select the dynamics word or symbol for soft.

22. Select the dynamics word or symbol for getting louder.

23. Select the dynamics word or symbol for medium.

24. Select the dynamics word or symbol for getting softer.

25. Select the dynamics word or symbol for loud.

This test was used for both a pre-test and post-test.

APPENDIX G

TEST RESULTS--CONTROL

Test Results

Group I--Control

Student Number	Rhythm				Tone Color/Dynamics			
	Pre-Test		Post-Test		Pre-Test		Post-Test	
	Correct	%	Correct	%	Correct	%	Correct	%
1	13	46	17	53	12	48	17	68
2	20	71	32	100	20	80	25	100
3	12	43	25	78	16	64	20	80
4	13	46	12	38	12	48	19	76
5	10	36	27	84	15	60	22	88
6	5	18	21	66	16	64	25	100
7	9	32	16	50	12	48	21	84
8	11	39	19	59	17	68	21	84
9	11	39	17	53	16	64	21	84
10	17	61	22	69	20	80	24	96
11	9	32	12	38	14	56	10	40
12	7	25	14	44	16	64	18	72
13	15	54	20	63	12	48	20	80
14	6	21	14	44	12	48	22	88
15	13	46	17	53	11	44	22	88
16	11	39	8	25	9	36	13	52
17	10	36	9	28	13	52	15	60
Totals	192	41	302	55	243	57	335	80

Group II--Control

Student Number	Rhythm				Tone Color/Dynamics			
	Pre-Test		Post-Test		Pre-Test		Post-Test	
	Correct	%	Correct	%	Correct	%	Correct	%
1	12	43	22	69	13	52	21	84
2	7	25	15	47	10	40	9	36
3	8	29	19	68	14	56	13	52
4	13	46	18	56	13	52	17	68
5	11	39	14	44	18	72	23	92
6	10	36	17	53	10	40	15	60
7	6	21	17	53	14	56	25	100
8	14	50	31	97	17	68	21	84
9	7	25	14	44	17	68	21	84
10	12	43	15	47	19	76	25	100
11	9	32	31	97	21	84	21	84
12	15	54	24	75	16	64	25	100
13	14	50	17	53	23	92	25	100
14	16	57	20	63	14	56	23	92
15	11	39	16	50	12	48	23	92
16	14	50	24	75	17	68	25	100
17	9	32	19	68	12	48	23	92
18	4	14	16	50	13	52	21	84
Totals	192	38	349	62	273	61	376	84

Group III--Control

Student Number	Rhythm Pre-Test Correct	%	Rhythm Post-Test Correct	%	Tone Color/Dynamics Pre-Test Correct	%	Tone Color/Dynamics Post-Test Correct	%
1	7	25	21	66	13	52	18	72
2	8	29	8	25	10	40	23	92
3	9	32	13	41	15	60	20	80
4	12	43	7	22	12	48	19	76
5	5	18	8	25	3	12	12	48
6	9	32	18	56	17	68	23	92
7	8	29	16	50	14	56	22	88
8	7	25	8	25	12	48	22	88
9	7	25	5	16	11	44	19	76
10	7	25	7	22	7	28	12	48
11	8	29	15	47	12	48	18	72
12	9	32	21	66	15	60	23	92
13	15	54	13	41	14	56	22	88
14	10	36	18	56	19	76	25	100
15	15	54	23	72	15	60	22	88
16	16	57	17	53	16	64	21	84
17	18	64	25	78	15	60	25	100
18	10	36	11	34	21	84	21	84
19	18	64	25	78	17	68	24	96
20	8	29	14	44	13	52	23	92
Totals	206	37	293	46	271	54	392	83
Total Control Group Classes:								
	590	39	651	54	787	57	1103	82

APPENDIX H

TEST RESULTS--EXPERIMENTAL

Group IV.--Experimental

Student Number	Rhythm Pre-Test Correct	%	Rhythm Post-Test Correct	%	Tone Color/Dynamics Pre-Test Correct	%	Tone Color/Dynamics Post-Test Correct	%
1	15	54	32	100	22	88	25	100
2	10	36	25	78	21	84	25	100
3	5	18	9	28	8	32	22	88
4	11	39	29	91	14	56	17	68
5	6	21	29	91	18	72	24	96
6	11	39	25	78	14	56	25	100
7	10	36	20	63	11	44	24	96
8	8	29	24	75	12	48	19	76
9	9	32	25	78	10	40	19	76
10	15	54	20	63	16	64	23	92
11	7	25	24	75	16	64	22	88
12	10	36	12	38	10	40	18	72
13	9	32	16	50	13	52	18	72
14	4	14	26	83	10	40	23	92
15	18	64	26	83	12	48	21	84
16	13	46	25	78	20	80	25	100
17	10	36	23	72	18	72	25	100
18	12	43	32	100	22	88	24	96
19	11	39	20	63	14	56	25	100
20	13	46	24	75	20	80	25	100
Totals	207	40	466	73	301	60	449	90

Group V--Experimental

Student Number	Rhythm				Tone Color/Dynamics			
	Pre-Test		Post-Test		Pre-Test		Post-Test	
	Correct	%	Correct	%	Correct	%	Correct	%
1	8	29	21	66	18	72	25	100
2	12	43	23	72	16	64	25	100
3	19	68	32	100	17	68	23	92
4	12	43	26	83	15	60	25	100
5	10	36	18	56	17	68	22	88
6	12	43	24	75	14	56	25	100
7	9	32	20	63	15	60	21	84
8	6	21	15	47	15	60	22	88
9	11	39	12	38	12	48	21	84
10	10	36	27	84	15	60	23	92
11	12	43	22	69	17	68	20	80
12	10	36	25	78	16	64	25	100
13	14	50	29	91	18	72	20	80
14	14	50	32	100	20	80	25	100
15	12	43	29	91	18	72	23	92
16	13	46	25	78	14	56	19	76
17	14	50	21	68	13	52	24	96
18	11	39	29	91	15	60	22	88
Totals	209	42	430	75	285	63	410	91

Group VI--Experimental

Student Number	Rhythm Pre-Test Correct	%	Rhythm Post-Test Correct	%	Tone Color/Dynamics Pre-Test Correct	%	Tone Color/Dynamics Post-Test Correct	%
1	13	46	30	94	19	76	25	100
2	9	32	26	83	14	56	23	92
3	9	32	24	75	15	60	22	88
4	19	68	32	100	17	68	24	96
5	8	29	30	94	16	64	25	100
6	9	32	23	72	10	40	23	92
7	10	36	20	63	13	52	20	80
8	7	25	27	84	10	40	23	92
9	6	21	28	88	11	44	18	72
10	7	25	23	72	17	68	19	76
11	9	32	19	59	12	48	25	100
12	12	43	30	94	10	40	24	96
13	12	43	21	66	12	48	23	92
14	12	43	29	91	17	68	23	92
15	12	43	29	91	14	56	22	88
16	5	18	28	88	11	44	21	84
17	7	25	27	84	14	56	22	88
18	19	68	31	97	22	88	25	100
19	8	29	31	97	17	68	25	100
20	6	21	19	59	14	56	22	88
Totalw	199	36	527	83	285	57	454	91
Total Experimental Group Classes:								
	615	39	1423	77	871	60	1313	91

APPENDIX I

TEACHER SURVEY

Teacher Survey

How would you feel about:

1. Taking full responsibility for music instruction in your class:

Very Comfortable	1	2	3	4	5	Very Uncomfortable

2. Sharing responsibility for music instruction with the music teacher?

1 2 3 4 5

3. Leaving all music instruction to the music teacher?

1 2 3 4 5

4. If you had full responsibility for music in your classroom, how often would your students have music experiences?

Very Often	1	2	3	4	5	Almost Never

How do you feel about the following statements?

5. Two half-hours a week is ample time to spend with music.

Strongly Agree	1	2	3	4	5	Strongly Disagree

6. Music class is primarily a time for students to take a break from schoolwork.

1 2 3 4 5

7. Music instruction provides students with skills and concepts as important as those taught in other subjects.

1 2 3 4 5

8. Music instruction in the elementary school should be primarily concerned with learning to sing a repertoire of songs.

1 2 3 4 5

9. Children should have music every day in the classroom.

Strongly Agree	1	2	3	4	5	Strongly Disagree

10. Can music be used to teach other subjects: ___ Yes ___ No

11. From the following list of subjects, select any, all, or none which can be complemented with the use of music.

social studies

mathematics

science

language arts

art

12. Circle the areas of study below which your students have covered this year in music.

note values

composers

rest values

instruments of the orchestra

major/minor scales

melody-intervals

form

dynamics

harmony--major/minor

folk instruments

APPENDIX J

SURVEY RESULTS

Results of Teacher Survey

Question	+ 1	2	3	4	- 5	Mean
1. Taking Responsibility for music						
Control	x		x		x	3.0
Experimental		x	x		x	3.3
2. Sharing responsibility for music						
Control			x		xx	4.3
Experimental			xxx			3.0
3. Giving up all responsibility for music						
Control	xxx					1.0
Experimental			xxx			3.0
4. How often would you have music?						
Control	x				xx	3.6
Experimental		x	xx			2.6
5. Two half hours is enough music a week						
Control	x	x	x			2.0
Experimental		xx	x			2.3
6. Music class is a break						
Control			xx		x	3.6
Experimental					xxx	5.0

Question	+ 1	2	3	4	- 5	Mean
7. Music is as important						
Control			xxx			3.0
Experimental		x	xx			2.6
8. Music should be mostly singing						
Control	x		x		x	3.0
Experimental				x	xx	4.6
9. Music every day						
Control			xx		x	3.3
Experimental			x		xx	4.3

10. All said music can be used to teach other subjects.

11. Control: 1 response--all but science

1 response--all but social studies and art

1 response--all but social studies, science and art

Experimental: All said all subjects

12. Areas of study.

Control: All "I don't know"

Experimental: All circled all areas listed including those that haven't been studied.

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ABSTRACT

Brenda Cohn

THE DEVELOPMENT AND IMPLEMENTATION OF UNITS OF INSTRUCTION WHICH CORRELATE MUSIC WITH MATHEMATICS AND LANGUAGE ARTS

Dennis Holt, Ph.D., Advisor

March, 1977 : University of North Florida

Music instruction in elementary schools where music resource specialists are employed often tends to be isolated from the rest of the elementary curriculum. Because all music instruction is usually left to the music resource specialist, students' experiences with music are limited, and there is little classroom teacher or student awareness of how music is related to other subject areas.

The purpose of this project was to increase elementary students' understanding and knowledge of musical concepts and skills through a curriculum of music activities related to language arts and mathematics. The program was implemented jointly by the classroom teacher and the music resource specialist. It was expected that the implementation of this project would provide elementary students more opportunities to experience success in learning musical, mathematics and language arts content through more frequent music activities.

Six classes were involved in the study. Three classes, the

control group, received two half-hour music lessons a week guided by the music resource specialist. Three other classes, the experimental group, received the same instruction by the music resource specialist plus activities guided by the classroom teacher. The achievement of the control and experimental groups on pre-tests and post-test of musical concepts studied was compared. Also, a survey was administered to classroom teachers at the end of the project to compare the attitudes of those in the control group with those in the experimental group.

Students in the experimental group performed better on the post-tests following both the unit on rhythm and the unit on sound. An analysis of the variance showed that the experimental group achieved better than the control group at the .05 level of signifance. Teacher surveys indicated a stronger reluctance on the part of the teachers in the experimental group to leave all music instruction to the music resource specialist. The teachers in the experimental group also included more subject areas when asked which subjects could be taught with music.

The author concluded that classroom teacher involvement and awareness seems to improve student achievement in music; that classroom teachers are generally willing to implement music lessons with their class if the lessons are clear and flexible enough to fit into their schedule; and that music instruction can be related to the subject areas of mathematics and language arts.

Curricula still need to be developed that relate music to other subjects areas. In-service programs guided by the music resource specialist for the classroom teacher in music would be helpful to provide classroom teachers with the skills and confidence to use a broader range of music activities in the classroom. Also, further study is needed to find if student achievement in the areas of language arts and mathematics is improved when these are taught with music.