Integrating music with other content areas

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Abstract
A kindergarten class gains practice in reciting the letters of the alphabet by singing "The Alphabet Song." Musical instruments made by third grade children are used in experiments during a science unit on sounds. The mathematical concept of fractions is reinforced when fourth graders calculate musical note values of familiar tunes. Fifth grade students study the Civil War through the examination of lyrics of many songs representative of that era. In all four situations, music was utilized in the teaching of various content areas.

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INTEGRATING MUSIC WITH OTHER CONTENT AREAS

A Graduate Project
Submitted to the
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of the Requirements for the Degree
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by
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Entitled: Integrating Music with Other Content Areas

has been approved as meeting the research paper requirement for the Degree of Master of Arts in Education.

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CHAPTER ONE
INTRODUCTION

A kindergarten class gains practice in reciting the letters of the alphabet by singing "The Alphabet Song." Musical instruments made by third grade children are used in experiments during a science unit on sounds. The mathematical concept of fractions is reinforced when fourth graders calculate musical note values of familiar tunes. Fifth grade students study the Civil War through the examination of lyrics of many songs representative of that era. In all four situations, music was utilized in the teaching of various content areas.

Using music to aid instructional methods is not a new concept. It has been practiced for many years, especially at the early childhood level. Songs, like, "One Elephant Went Out to Play" and "The Farmer in the Dell", intended for a transitional activity and a game, actually were reinforcing skills in mathematics and language arts. Exploring the use of music as a viable
instructional tool can provide a stimulating and motivational means of teaching across the curriculum.

Statement of the Problem

Too often, teachers limit themselves to teaching by traditional methods, for example, using textbooks and worksheets, and giving lectures. However, not all children develop effective learning skills in this manner. Such teaching styles require students to use a predominately left-brain approach to learning (analytical, sequential, linear, rational).

On the other hand, the right-brain mode is responsible for holistic, symbolic, artistic, emotional thinking, involving creative and spontaneous processes (Clark, 1986; Stein, 1987). Students operating with this prevalent style need to be provided with appropriate opportunities to learn, also.
A child's life requires music almost as much as any nurturance. Music provides an outlet for expressing self-love and competence, identifying with groups, building cultural awareness and respect, and building self-discipline as well as other skills like listening, coordination, memory, vocabulary, and rhythm. (BANANAS' Guide for Parents and Children, 1982, p. 48)

To avoid stifling creativity and limiting the development of higher order thinking skills, it becomes necessary to seek out other avenues to help motivate students to learn. It seems that music would be a natural form that could join left and right brain functions, enabling learners to employ their intellectual and creative abilities to obtain knowledge. This paper will present research findings on the effects of integrating music with other subject areas, suggest ways of integration, and offer activities and references.
Research Studies

Research investigating the effects of music-integrated curriculum on student achievement is somewhat limited. Most studies have focused on the infusion of music with reading/language arts. Zinar (1984) gathered information from six different studies which demonstrated the positive effect music has had when blended with reading/language arts. Four of the experiments involved young children, ranging in ages from four- to ten-year olds. In one study, Wagley (cited in Zinar, 1984) examined the cognitive and affective development of sound-symbol recognition in 72 four- and five-year olds from two day-care centers. She reported a noticeable increase in the enjoyment of reading.

The music experimental group of first graders participating in Kelley's (cited in Zinar, 1984) experiment began at a lower reading level than the other children. This group received instruction from a program called "Orff Schulwerk" which
involves rhythm, movement, song and instrumental activities. By the end of six months, the music group had improved its reading performance to a level equal with the other pupils.

A marked improvement in average post-test reading scores was shown by Nicholson’s (cited in Zinar, 1984) experimental music group which started at the same level as the control group. Both groups were below average reading ability. She investigated fifty children, aged six to eight who were slow learners with I.Q.’s of 80-95 to demonstrate the influence of music on controlling mood and increasing the listening attention time span. The study has been rather controversial, however, because the researcher taught both the control and experimental groups, leading to possible bias.

Fifty-four fourth graders from two inner-city school districts were selected for Gordon’s (1977) experiment. The experimental group was one year behind in reading ability. These students received music lessons as an incentive to improve their reading performance. The control group,
reading on grade level, was not given music lessons. The reading scores of the experimental group improved to a point where the post-test scores of both groups were the same.

Baxley (1979) reported that first and second grade students, classified as learning disabled, developed auditory discrimination skills more efficiently when the teaching of music skills were interspersed. She believed that spelling and reading skills should improve as a result.

Although a majority of studies suggest that music has a positive effect on achievement in reading/language arts, Groff (1976, 1977), Sullivan (1979), and Wolff (1978), reviewed them and claimed that they were flawed with methodological problems. These problems included observer bias, the Hawthorne Effect, and an imbalance of creative instruction and preparation time for the teachers of the control and experimental groups. The findings of these studies are, therefore, questionable.

Many other articles, considered to be valid sources of information, deal with opinions based
on personal experiences and observations. These, too, are subject to criticism because they are not research based. Even though Sullivan (1979) and Wolff (1978) have questioned the effect of integrating music into the curriculum, they feel songs can be successfully utilized in reading.

**Reasons for Integrating Music with Content Areas**

Although research is limited regarding the effects of integrating music with other content areas, the nature of music as well as the nature of the content areas favor a fusion of these. According to some authors, it is logical to assume that music would enhance the various subject areas. Still, their research is opinion-based with no real conclusive evidence documenting achievement gains.

Most educators discuss the integration of music and reading/language arts and these will be discussed first. Parallels between the two subject areas were noted by different writers. Harp (1988) stated, "music and reading go together because singing is a celebration of language."
Children's language naturally has rhythm and melody" (p. 454). Reading words and music both require a left-to-right and top-to-bottom direction (Lloyd, 1978; O'Bruba, 1987; Zinar, 1984). Recognition of symbol structure and similarities and differences in sounds are essential when learning to read and learning music (Lloyd, 1978; O'Bruba, 1987; Reading in the Arts, 1976). Parallel process, product and affective responses existing between music and reading were also mentioned by Merrion (1981).

Cardarelli (1979) believes "we capitalize on the interest of youngsters and make learning a pleasant undertaking" (p. 3) by using music to assist in the teaching of reading and language arts. O'Bruba (1987) is convinced "the basic advantages of introducing beginning reading activities through music" are as follows:

1. It broadens reading into a multisensory experience.

2. It heightens interest and involvement.

3. It brings variety and pleasure to the experience.
4. It reduces the tedium of repetition and drill. (p. 171)

Children are eager to read their own original works as songs or familiar lyrics in print (Cardarelli, 1979; Fortson, 1983; Harp, 1988; Klink, 1976; Lloyd, 1978; Smith, 1984). These songs become effective instructional materials that provide repetitive practice of words and place an emphasis on the rhythmic pattern of spoken vocabulary. Individual songbooks can be made for personal use or chart paper utilized for group instruction. Sight word recognition, vocabulary building, and auditory and visual discrimination are a few reading skills enriched by this approach. According to Lloyd (1978), "the experience can give a vital boost to self-concept and self-confidence while children are learning to read..." (p. 326).

For students of different ages, using favorite songs as stimuli for language experience activities can enhance comprehension skills (i.e., discussing the mood and theme created by the composer) and listening skills (i.e., finding
rhyming words or phrases in a song). Communication skills (i.e., singing complete sentences) and writing skills (i.e., creating a story about characters portrayed in Prokofiev's "Peter and the Wolf") can also be strengthened (Cardarelli, 1979; Connections: Linking, 1980; Johnson, 1987; Smith, 1984; Weissman, 1988).

In addition, story songs like "The Old Lady Who Swallowed a Fly" and "Old MacDonald" help develop sequencing skills and intensify speech patterns and pronunciation through repetitive phrases and sentences. These lyrics, blended with a repetitive rhythm and melody, add to the excitement of learning (Cardarelli, 1979; Weissman, 1988; Wright, 1979).

The research is more limited in the areas of social studies and music. Yet, folksongs, country music, rock music, rap music, and other types of music are rich sources of information that need only be examined by teachers and students for their intrinsic value (Brown, 1985; Cooper, 1985; Lewis & Lichtmann, 1985; Miller & Brand, 1983; Seidman, 1973; Sutro, 1983). Personal statements
are communicated to listeners through song lyrics that address various topics such as, wars, economic situations, patriotism, social issues, and diverse cultural awareness. Children can more readily identify with attitudes and emotions felt during a historical event by singing the lyrics (Lewis & Lichtmann, 1985; Seidman, 1985). Performing folk dances, expressing rhythm patterns, playing rhythm instruments to produce sound effects, and playing native instruments give authenticity to activities and allow children to become acquainted with unfamiliar music. This fosters an appreciation for our present culturally diverse society (Campbell, 1989; Miller & Brand, 1983).

Every generation, not just our own, sees its goals, motives, outlooks, and traditions mirrored in music that entertains while it puts in simple language the emotional sides of the political, economic, social, regional, ethnic and religious issues of the period. ("Studying U.S. History," 1985, p. 579)
Little research is available regarding the advantages of linking science and mathematics with music. Yet, one way science can be joined with music is by supplying real-life situations to demonstrate science concepts. Mechling & Oliver (1983) state, "such integrated experiences provide opportunities for the children to apply what they have learned and have fun, too." (p. 29) This linking can help promote an awareness of, reaction to, and personal involvement with the world around them by utilizing all five senses. Children can make their own musical instruments, thus furnishing hands-on experiences to explore and investigate different ways of creating sound, vibrations and pitch (Johnson, 1987; Lind, 1985; Markle, 1989; Mechling & Oliver, 1983; Schlenker, 1988).

Music is a science, exact and specific, demanding good acoustics. An instrumental conductor's score is a chart or a graph which indicates frequencies, intensities, volume changes, melody, and harmony combined with the regulation of time. Music and science
are certainly compatible. (Kennedy, 1985, p. 360)

Johnson (1987) stated, "music is based on sound in time. Time is expressed in mathematical terms. With that in mind, it is easy to see how musical analysis might underscore certain mathematical or number concepts." (p. 24) Some concepts to be explored include the number system (scales-steps and intervals), multiples (counting beats and measures), and fractions (note values and durations) (Johnson, 1987). Comparisons can be made among the costs of various musical instruments and lessons, and the salary ranges of music-related jobs. Concepts of estimation, problem solving, and real-life applications are reinforced in this manner (Becker & Kendall, 1982; Haggerty, 1986). Music is viewed as "a natural vehicle for many of the counting, grouping, adding and subtracting activities that constitute the beginning stages of mathematical instruction". (Tucker, 1981, p. 16)

In conclusion, more studies are needed to determine the effects music combined with the
primary content areas have on student academic growth, especially in the areas of science and mathematics. The results of such studies will further enable educators to prove or disprove the value of integrating music across the curriculum since conflicting opinions can be found at the present time.

Integration for the Non-musician Educator

It appears that many teachers lack experience in the area of music. Therefore, using music of any type and in any form, in the classroom, can be a bit frightening, especially for a non-musician. However, that fear can and should be quickly dispelled because music has a primary value to the field of education (Johnson, 1987).

It is suggested in Connections: Linking the Arts and Basic Curriculum that, "the teacher should begin to use music where he or she is most comfortable in the regular routine of the classroom to reinforce other subjects or as an activity within itself" (1980, p. 54). In order to implement this effectively, the teacher's
attitude and approach towards music should be positive and enthusiastic (Connections: Linking, 1980; Johnson, 1987; Seidman, 1985).

Johnson (1987) has listed ways to make combining music with other areas of the curriculum easier for the instructor. He/She should:

1. Learn about the basic elements of music.
2. Develop self-confidence and show the children his/her own enjoyment.
3. Acquaint himself/herself with the series of music books utilized in the school.
4. Review appropriate recordings that are available for classroom use.
5. Use parent and student musicians as resource personnel.

The main intent is to encourage those teachers who have been reluctant to use music in the classroom. It is essential that the teacher feel confident and enthusiastic in order to infuse music in a natural manner.
Activities and References

Most instructors are more willing to try a new teaching idea or method when provided with substantial information which has been tested. Being cognizant of this fact, some effective activities and materials are noted in this section. These activities are appropriate for elementary grades, although ideas can be found for upper grades, too. More specific sources, by academic area, will be discussed below (see Appendix A for complete documentation).

Materials containing a variety of ideas for linking music with major curricular subjects include:

- "Music in the Classroom"
- Using the Weekly Newspaper in Education
- Let's Celebrate Winter: Activities for Grades 4-8
- "Sing a Skill, Hum Some Fun"
- Make It Relevant: A Guide to Using "The Morning Call" in the Classroom
- Integrating Music with Other Studies
- "A Musical Game Plan"
- Get Ready, Set, Grow!
- Children's Songs Around the World

One further source is a guide written by the author of this paper. Correlated Activities in Music and Other Content Areas (Dawson, 1990) contains suggested activities based on comprehensive learner outcomes for grades K-3. Each activity is followed by a recommended method of evaluation.

Since most research has been conducted on the infusion of music and reading/language arts there is more media available on these subjects than the other content areas. Listening Skills Handbook has a section entitled "Intensity, Frequency and Pace of Music". Auditory discrimination is developed by identifying the diverse sounds of nature, people and environment. Students can write raps using new vocabulary words (Kaiden & Walker, 1985). A cassette tape called Wordbuster Reading Rap, led by schoolteacher, Pat Pike, makes learning rules for reading fun. The August 1988 issue of Instructor contains a rap for learning the parts of speech on page 85.
Activities, like composing a poem and adding an original tune, are suggested by Fortson (1983). She notes that they "stimulate reflective thinking and imaginative responses" (Fortson, 1983, p. 133). In the guide Twenty-One Ways to Use Music in Teaching the Language Arts, Cardarelli (1979) presents innovative means of reinforcing skills (i.e., crossword puzzles and configuration clue mystery). He also says that music can be integrated with handwriting by having students maintain a notebook of favorite lyrics. Weekly spelling words common in various songs can be used in drill practice and with words having the same pattern of consonants or vowels.

Wright's (1979) paper "Music, Songs and Literature" shows a close correlation between storytelling and songs by focusing on musical concepts and terms, rhythm, rhyme, and repetition. The author includes three integrated units suitable for grades 1-6. In a paper written in 1977, the same author lists publications that can be used by educators when integrating music with language arts activities.
Reeves (1978) provides ideas on how to instruct early childhood pupils in listening and language skills with music. Articles written by Harp (1988), Klink (1976), Myers (1984), Rietz (1983), and Smith (1984) all exhibit ways of arousing and maintaining students' interest when learning to read and write. Additional ideas are given in such sources as:

- **BANANAS' Guide for Parents & Children**
- **Teaching Both Sides of the Brain: Book II: Reading**
- **Connections: Linking the Arts and Basic Curriculum**
- **Reading in the Arts**

**Music Experiences in Early Childhood** presents a list of rhyming words in 11 categories to be used when creating songs.

It is the opinion of Michaelis (1985) that singing is the music activity most often used in social studies. The application of this and other forms of musical expression are also highly recommended by Seidman (1973, 1985). Teachers and their students have the ability to deepen their

Issues of a newsletter, Folksong in the Classroom, developed by Seidman and Scott also contain units and are available from ERIC. Listening to recordings of different types of music or hearing live performances can contribute to children's learning.

Sutro (1983) proposes contrasting the music of the 1920s and 1930s. In the 20s "the music tended to be all 'bounce and go'" but in the 30s "the music, like the pace of the nation, literally slowed down." (p. 388) Students discover that the music is a direct reflection of the times. Research activities can increase student understanding by having the learners seek information themselves. Myers (1984) and Cooper (1980) suggest focusing on the lives of musicians and writing their biographies. Students can
investigate how popular music has changed due to technological advancements, for example, LP to video (Mueller, 1985).

The infusion of science and music enables children to learn concepts and skills in both. Numerous activities have been developed which concentrate on identifying and creating diverse sounds of nature, people and environment. Examples of accessible materials are:

- **Listening Skills Handbook**
- **Making Sounds with Rubber Bands**
- **Science Teaches Basic Skills, Handbook I**
- **BANANAS’ Guide for Parents & Children**
- **Complete Handbook of Music Games and Activities for Early Childhood**

Knowledge on how to make musical instruments can be easily found in written media. Sources include:

- "Early Childhood: The Beat of the Band"
- "Making Music"
- **The Music Box**
- **Fun for One: Facilitating Solitary Play**
Examining materials used to produce musical instruments offers a unique approach to studying natural resources (Mechling, 1983). Environmental awareness can be promoted with ideas from Arts and Music: The Essential Aesthetic Components of Holistic Environmental Education.

Locating reference materials that integrate music with mathematics has been somewhat difficult. In addition to aforementioned materials, available literature includes:

- Metrics for Elementary and Middle Schools: The Curriculum Series
- The Singing Calendar
- Measurement, Mathematics, and Music
- The Music Educators Journal
- Early Childhood Teacher
- Instructor
- Teaching K-8
These sources, plus music and mathematics textbooks, provide activities for various concepts, for example: writing story problems, using the prices of cassette tapes, sheet music or musical instruments; identifying coin and bill combinations by pretending to purchase the recording of a favorite music artist; measuring musical instruments with metric units; graphing lists of favorite songs; reinforcing fractions by having a music teacher discuss how notes determine the number of beats in a measure; learning counting songs like, "This Old Man" and "Five Little Monkeys"; recognizing large geometric shapes taped to the floor and moving to music over the shapes; and listening to soft music while computing equations.

Information to be utilized in lessons in the four subject areas can be gathered from general sources, including subject textbooks, children's magazines, biographies of musicians, fiction and storybooks related to music, books about sounds and different types of music, picture books based
on folksongs and ballads, library resources, recordings, newsletters and newspapers, and resource people such as, musicians, songwriters and music teachers.
CHAPTER THREE

Summary

There are conflicting opinions on the value and effects of integrating music with other content areas. Some research findings have been deemed inconclusive or biased. It is felt that these studies lack sufficient proof that a music-infused curriculum can cause an increase in student achievement.

Evidence gathered from other research studies and non-research articles leads one to believe there may indeed be measurable effects from an integrated curriculum on student achievement, especially in reading/language arts. The effects of combining music with social studies, science and mathematics has not been reviewed to the same extent, but positive outcomes appear to exist with these subjects, too.

Since opposing views do exist it is recommended that research studies be continued. Future findings will help either support or refute
the belief that incorporating music with different academic subjects is beneficial to students.

Conclusion

Music is an art form through which human beings express their thoughts and feelings, whether the music is simple, melodious sounds or tones accompanied by lyrics. Responses to political, social and economic issues of an era have been, are being, and will be reflected in the music of the period, thus making music an oral record of history. It is a normal and vital part of everyday living. People rise in the morning to the music of a clock radio, play the radio in the car on the way to work, listen to music from P.A. systems in public places (i.e., the doctor's office, grocery store, elevator, restaurant), view television shows and commercials that use background music, and finally retire to radio music that lulls them to sleep. Music is rhythm in movement (i.e., walking and lifting), pitch levels of speech (i.e., high and low), environmental sounds (i.e., elevator hums and
siren wails), and sounds of nature (i.e., buzzing bees and chirping birds).

Rich music resources should be extendable; that is, they should be used to integrate learnings in music with learnings in language development, math, science, etc. This does not mean that music should become the means for teaching reading, addition, or the alphabet, but rather that learnings in all areas should occur simultaneously and reinforce each other. (Willman, cited in Mulligan, 1975, p. 9)

Coherence and meaning is given to other academic subjects through music. Music activities, involving cognitive, psychomotor, and affective experiences, contribute to and strengthen the teaching-learning process. Concepts can be introduced and reinforced by incorporating music into lessons. "...Music also can provide 'an opportunity for success for some students who have difficulty with other aspects of the curriculum'." (Music Educators National Conference [MENC], cited in May, 1989, p. 18)
Resource materials are available to classroom teachers, especially non-musician educators, that infuse music with other curricular subjects. Using the art form of music can enhance academic concepts being taught in an enjoyable and natural manner, provide motivation when studying the content areas, and nurture creativity in the learner.
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