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ABSTRACT

An action research project implemented musical strategies to affect and enhance student recall and memory. The target population was three suburban elementary schools near a major midwestern city: (1) a kindergarten classroom contained 32-38 students; (2) a second grade classroom contained 23 students and five Individualized Education Program (IEP) students; and (3) a fifth grade classroom. Students exhibited difficulty recalling facts and information in a variety of subject areas evidenced through an inability to gain mastery of grade level skill areas. Research suggests that young students have difficulty understanding concepts and lack the ability and desire to learn. A successful program needs to be developed to teach these concepts. A review of solution strategies suggests that the following musical techniques proved to be helpful for increasing student recall because the songs helped with phonemic training, mnemonics, setting desired skills to familiar tunes, and linking connection to cultural themes. Research has shown that preschool children taught with an early exposure to music through games and songs showed an IQ advantage of 10 to 20 points over those children taught without exposure to the songs. In the same study, students at age 15, had higher reading and mathematics scores in comparison to children without musical experiences. Brain studies indicate that exposure to music alters and increases brain function to make the necessary connections for higher order thinking. Post-intervention data indicated an increase in students' memory recall and emotional involvement. All these increases promoted the motivational connection, which encouraged additional success. Post-intervention data also indicated that the students learned the material so well that they were able to transfer skills across the curriculum into other subject areas, and into their personal lives. Includes extensive figures and tables. Appended are: parent questionnaire and tally sheets, student questionnaire and tally sheets, rubric and rubric tally sheets, pretest and posttest comparison sheets, and reflection journal sheets. (Contains 52 references.) (Author/BT)

MUSIC ENHANCES LEARNING

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An Action Research Project Submitted to the Graduate Faculty of the

School of Education in Partial Fulfillment of the

Requirements for the Degree of Master of Arts in Teaching and Leadership

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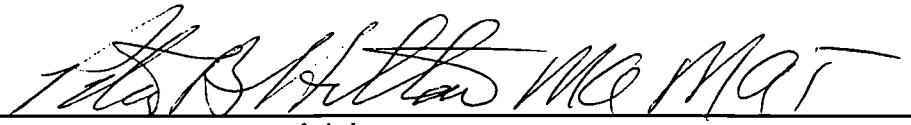

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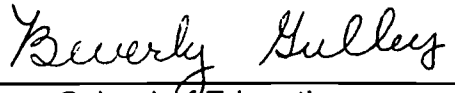

Dean, School of Education

"Enhancing musical/rhythmic intelligence has nothing to do with what is usually referred to as musical talent. It has to do with knowing how to use music and rhythm to put ourselves into optimal states for dealing creatively with different situations."

(David Lazear)

ABSTRACT

This program describes implementing musical strategies to affect and enhance student recall and memory. The targeted population is three elementary schools in suburbs of a major Midwestern city. Students have exhibited difficulty recalling facts and information in a variety of subject areas evidenced through an inability to gain mastery of grade level skill areas.

Research suggests that young students have difficulty understanding concepts. They lack the ability and desire to learn. A successful program needs to be better developed to teach these concepts in the school system.

A review of solution strategies suggests that the following musical techniques proved to be helpful for increasing student recall because the songs helped with phonemic training, mnemonics, setting desired skills to familiar tunes, and linking connection to cultural themes. Research findings also indicate an IQ average of 10 to 20 points, and in the same study, at age fifteen, had higher reading and math scores in comparison to those children who did not have musical experiences. Brain studies indicate that exposure to music altars and increases brain function to make the necessary connections for higher order thinking.

Post intervention data indicated an increase in the student's memory recall, and emotional involvement. All of these increases promoted the motivational connection, which encouraged additional success. The post intervention data also indicated that the students learned the material so well that they were able to transfer their skills across the curriculum into other subject areas, and into their personal lives, as well.

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CHAPTER 1

PROBLEM STATEMENT AND CONTEXT

General Statement of the Problem

Students in the targeted schools have exhibited difficulty recalling facts and information in a variety of subject areas. Evidence of this problem can be seen in an inability to gain mastery of grade level basic skills. This was evaluated through the use of checklists, anecdotal records, and skill pre and posttests.

For the purpose of this paper, the classrooms involved will be designated Site A, B, and C. Even though the targeted classrooms are at different sites, they are all within a ten-mile radius of one another.

Immediate Problem Context

Site A

Site A is a kindergarten through eighth grade elementary school. The school is located in a suburb of a midwestern city. According to the 2000 School Report Card, the targeted school has an enrollment of 286 students with an average class size of 28 students. The ethnic background of the student population is 47.2% Hispanic, 27.3% White, 22.7% Black, 2.4 % Asian/Pacific Islander, and 0.3% Native American. It was reported that the targeted school has an attendance percentage of 95.3%. The School Report Card also indicates that Site A has 35.7% low-income students. It has a student population of 22.7% who are Limited English Proficient (LEP). The student mobility rate is 21.6% based on the number of students who enroll in or leave a school during the

school year. The chronic truancy rate is 0.7%. The building consists of kindergarten through eighth grade classrooms. The physical structure of the building includes three levels. The first level contains the intermediate classrooms. The primary classrooms, principal's office, nurse's office, cafeteria, and the gymnasium embody the second level. The third level holds all upper grade classrooms, a library, a computer lab, and a resource room. A fenced in black top playground marked with a four square game area, and a hopscotch game area encompass the back area of the school.

The targeted school provides all school Title I services for students who qualify in the lower 20% of their class. Title I services are provided during school hours for students in first, second, and third grades, who need additional help in reading. Qualifying students in surrounding private schools are also provided the same Title I services. Resource and speech services are provided for students who have been tested and for whom an individualized education plan (IEP) has been developed. The targeted school provides social work for students whose teachers, parents, or administrators have requested services. The fifth, sixth, and seventh grades are provided with drug and crime preventive programs, which are sponsored and conducted by the County Sheriff's Department.

Site A provides a variety of sports programs to all interested students in fifth through eighth grade. There are additional programs available to students in third through eighth grade provided by the district. The programs available are art club, computer club, speech and drama, and chorus club. Instrumental music is provided for students in third through eighth grade, which requires a fee for instrument rental. The Parent-Teacher Association (PTA) sponsors classroom parties, dances, school fund-raising activities and sales, and provides needy children with school and winter clothing.

The targeted kindergarten classroom has two full-time certified teachers. The class generally has an enrollment of 32 to 38 students. A full-day kindergarten schedule provides 30-minute block periods. All core academic curricula are taught before the 30-

minute lunch break. Core curriculum consists of a balanced literacy program for the kindergarten level. It is a thematic plan balancing reading, writing, science, safety, health, social studies, math, art, and music. The afternoon schedule usually consists of listening, socialization, library, and computer skills. The classroom is provided with services for students who qualify for bilingual push-in or pull out, speech, or social work. The classroom receives sixty minutes of physical education (PE) instruction per week, and sixty minutes of music per week.

Site A employs 44 staff members. The school's composition includes 14 regular education classroom teachers, three special education classroom teachers, a part-time gifted teacher, and six classroom assistants. Non-classroom staff includes a full-time principal, a speech pathologist, a social worker, a health clerk, an occupational therapist, a secretary, an assistant secretary, and two bi-lingual teachers. In addition, there is one Title I teacher, a part-time band instructor, and specialized staff members for music, physical education, and computers.

Site A has an average class size of 28 students. There are two classrooms per grade level in first through fourth grade. There is one classroom per grade level in grades five through eight. The district provides an aide in the regular classroom for three half days, depending on how many students are enrolled in the classroom. For kindergarten, the student enrollment must be 27 or more, for first through fourth the student enrollment must be 30 or more, and for fifth through eighth, the student enrollment must be 32 or more.

District A has 5,686 students enrolled according to the 2000 School Report Card. The ethnic background of the students in the district is 63.2% Black, 30.8% Hispanic, 5.6% White, and 0.4% Asian/Pacific Islander. The district consists of ten kindergarten through eighth grade schools that are located across three midwestern cities. The district employs 295 teachers, 87% are female, and 13% are male. There are 63% White, 30% Black, 6% Hispanic, and 0.7% Asian employees. The average teacher in the district has

10.5 years of teaching experience. There are 58.8% of the teachers in the district who have a bachelor's degree and 32.2% of the teachers in the district who have a master's degree and above.. The pupil-teacher ratio is 21.5:1. The average teacher salary is $39,224.

The district's administration building includes a superintendent, an assistant superintendent, a personnel director, a curriculum director, a special education supervisor, a reading supervisor, a technology supervisor, and a math and science coordinator. The average administrator earns a salary of $62, 886, with the superintendent earning $105,000. The average operating expenditure per pupil is $4,736. The district has developed six district goals based on the school improvement plan. The administration and the teachers work together on the school improvement committee to write and carry out the district goals.

Site B

The targeted school is an elementary school located in the western suburbs of a major midwestern city. According to the school report card, the average class size is 22.9. It serves a total enrollment of 553 students ranging in grade levels from kindergarten through sixth grade, with three classes per grade level. The student body is 54.4% White, 44.5% Hispanic, 0.5% Asian/Pacific islander, and 0.5% Black. In addition to having a diverse ethnic composition, 28.4% of the students are from low-income homes, and 15.7% of the students are LEP. The school has a 94.4% attendance rate. The mobility rate is 23% with a .05% chronic truancy rate. The building is comprised of three floors and a basement sub floor. An addition has been added to the northwest corner. The original building consists of kindergarten through fifth grade classrooms, and a gymnasium with the basement containing three-second grade classrooms and an art room. Fifth and sixth grade classrooms, a learning and media center, music room, school offices, and a teacher's lounge embody the addition. The outside facility consists of a

black top fenced in playground. This area is marked off for softball, kick ball, and a four square game area. A map of the United States is also painted on the playground surface.

The school provides Title I services for students who qualify in the lower 20% of their class. Title I services are provided during school hours for students in first, second, and third grades, who need additional help in reading. Qualifying students in surrounding private schools are also provided the Title I services. Resource and speech services are provided for students who have been tested and for whom an IEP has been developed. The targeted school provides social work for students whose teachers, parents, or administrators have requested services. The fifth and sixth grades are provided with drug and crime preventive programs, which are sponsored and conducted by the local police department.

Site B provides a variety of sports programs to all interested students in fifth and sixth grade. There are additional band and chorus programs available to students in fourth through sixth grade provided by the district. The PTA sponsors classroom parties, dances, school fund-raising activities and sales, and provides needy children with school and winter clothing.

Room A is a Learning Disability (LD) resource office shared by two resource teachers. The research resource teacher serves kindergarten through third grade IEP students in the classroom and in the resource office. Three-fourths of the day is spent directly with IEP students both pushing into the classroom for assistance and pulling out for additional support. One-fourth of the day is dedicated to testing and consulting with other staff members. For purposes of this research, the IEP students will be part of classroom B, and the LD Resource teacher will team-teach with the regular classroom teacher researcher.

Room B is a large self-contained second grade basement classroom consisting of 23 students and 5 IEP students who are mainstreamed for part of the day. The children are seated in cooperative groups. The day is broken down into four blocks: reading,

writing, spelling, and math. The children leave the classroom for one special a day: art, music, P.E., or computers. The classroom is provided with services for students who qualify for bi-lingual push-in or pull out, speech, reading, social work, or LD support.

There are thirty-nine full time staff members at the targeted school. The school's composition includes 20 full-time regular classroom instructors, three special education classroom teachers, a gifted teacher, and ten full-time classroom assistants. Non-classroom staff includes a principal, speech pathologist, full and part-time social worker, half time nurse, occupational therapist, secretary, administrative assistant, and two bi-lingual teachers. In addition, there are two reading teachers, a Title I instructor, two diagnostic resource consultants (DRC), a part-time band instructor, and specialized staff members for art, music, physical education, and computers.

Site C

The targeted elementary school is located in the same community as Site B. The grade levels are pre-kindergarten through sixth grade. It has a total enrollment of 427 students with an average class size of 26.5 students. The school student body consists of 55.8% Hispanic, 42.6% White, 1.6% Asian/Pacific Islander. The average daily attendance rate is 95.2%. The mobility rate is 33.6% with a .08% chronic truancy rate. The percentage of families that are low-income is 38.4% and 24.7% are (LEP).

The physical structure of the building includes of three floors and a partial basement sub floor. The first floor consists of the principal's office, a nurse's office, conference room, a teacher workroom and lounge, a speech therapist's office, a gifted room, pre-kindergarten through second grade classrooms, and a gymnasium. The second floor consists of the third grade classrooms, the art room, the social workers office, a media center and a computer lab. The fourth through sixth grade classrooms and the DRC office are located on the third floor. The partial basement consists of the music room, bi-lingual education room, and reading specialists room.

The outside facility consists of a blacktop fenced in playground. There is an area marked off for softball and kick ball. There is also playground equipment consisting of a jungle gym with wood chips on the ground for safety.

Site C provides all school Title I services or students who qualify in the lower 20% of their class. Title I services are provided during school hours for students in first, second, and third grades, who need additional help in reading. Qualifying students in surrounding private schools are also provided the Title I services. Resource and speech services are provided for students who have been tested and for whom an IEP has been developed. The targeted school provides social work for students whose teachers, parents, or administrators have requested services. The fifth and sixth grades are provided with drug and crime preventive programs, which are sponsored and conducted by the local police department.

Site C provides a variety of sports programs to all interested students in fifth and sixth grade. There are additional programs available to students in third through sixth grade provided by the district. The programs available are the same as those mentioned for Site B. The PTA sponsors classroom parties, dances, school fund-raising activities and sales, and provides needy children with school and winter clothing.

The targeted fifth grade class is a large, bright classroom located on the third floor of the school. It has three walls with windows. The desks are arranged in cooperative groups. The day is broken down into block periods with allotted time for instruction of language arts, social studies, science, and health. The students also attend one special class of art, gym, music, or computers each day.

The faculty consists of 23 classroom teachers. There are seven teaching assistants, two bi-lingual teachers, one full and one part time: diagnostic resource consultant DRC, reading teacher, and speech therapist. In addition, there is a principal and a school secretary. There is also one special teacher for each of the following: Title I

teacher, reading, gifted, art, music, band, physical education, library, computers, social worker, and a half day nurse.

The targeted school district has a population of 2,912 students. There are six kindergarten through sixth grade elementary schools, and one recently built seventh and eighth grade middle school.

There are a total of 197 full-time classroom teachers. The pupil-teacher ratio was 18.2:1. The faculty is 96.5% White, 3.0% Hispanic, 0.5% Asian/Pacific Islander, with 87.9% female, and 12.1% male. Teachers average 9.4 years of experience. Among the faculty, 59.9% of the teachers possess a bachelors degree and 40.1% possess a masters degree or higher. The average teacher salary for the district is $39,087. The average administrator's salary is $79,277, with the superintendent earning $105,000. The average operating expenditure per pupil is $6,143. The ethnic background of the students in the district is 54.4% White, 44.0 % Hispanic, 0.5% Black, and 1.1% Asian/Pacific Islander. (School Report Card 2000).

The Surrounding Community

Site A

Site A is located in a suburb of a midwestern city. The socioeconomic status of the community is lower-middle class. It is a residential community. The new homebuyers tend to be families of Hispanic heritage. According to the 2000 Census, the population of this city is 23,171. The ethnic population of the community is 70% White, 29.7% Hispanic, and .3 % Black. The estimated average income for a household is $43,314. The average home value is $128,811 and the average tax bill is $2,017. The community employs 68 full-time firefighters, 58 full-time police officers, and some part-time police officers. The police department provides correctional and rehabilitation services to juveniles in the community up to the age of eighteen, which tax refunds support. Emergency 911 services are in place in the community. The community is one

of the largest manufacturing communities in the midwestern county. The manufacturers consist of six major companies, four of which are union supported.

A large variety of department, discount, retail, and grocery stores are available to consumers. The stores are found in all parts of the community. The religious affiliations of the community include Catholic, Lutheran, Baptist, Pentecostal, and six churches of other faiths. The community has eleven elementary schools and two high schools. Several schools in the community receive students from surrounding communities. The community offers year round recreational activities to individuals of all ages and for the disabled. The park district also has a pool facility. There is a local library and several public parks provided for the community's use. There is a variety of clubs and organizations provided for all ages throughout the community.

Sites B & C

Sites B and C are located 15 miles west of a large midwestern city. The socioeconomic status of the community is lower-middle class. It is a residential community that is multicultural. Many of the previous homeowners are retired Bohemians, Poles, Czechs, and Italians. The new homebuyers tend to be young families of Hispanic heritage. The median age of the community is 33.8 years old. The district has had an increase in student population due to growth in housing and movement of established residents. According to a 2000 Demographic Report, the population consists of 54,016 people. According to the 2000 Census, 56.4% of the population is White, 38% Hispanic, 2.6% Asian/Pacific Islander, and 1.3% Black. The median family income is $59,356. The median property value is $123,700, with most homes being bungalows built before 1939. The police department provides correctional and rehabilitation services in the community up to the age of eighteen. Emergency 911 services are in place in the community. This community is currently undergoing a period of tremendous change and growth. To relieve overcrowding in the schools, the community passed a referendum authorizing the construction of a middle school. It became operational in the fall of 1999.

A large variety of department, discount, retail, and grocery stores are available to consumers. The stores are found in all parts of the community. The religious affiliations of the community include Catholic, Methodist, Lutheran, Baptist, and Presbyterian. The community offers year round recreational activities to individuals of all ages and for the disabled. The park district also has a pool facility. There is a local library and several public parks provided for the community's use.

National Context of the Problem

The use of music as a tool to enhance learning, memory, and recall in the classroom has been long overlooked. Referring to the writings of Howard Gardner, increased awareness of the powerful impact that music can have on learning and intelligence have spawned volumes of research on the topic. According to Gardner (1997), music might be a special intelligence, which should be viewed differently from other intelligences. Musical intelligence probably carries more emotional, spiritual, and cultural weight than the other intelligences.

The problem of overlooking this powerful tool of music is often due to the classroom teachers' lack of musical training and a belief that music is a "filler" or "fluff" that can be added if there is time. Instead of using it as an alternative method or an enhancement to traditional teaching methods for skill and fact retention, it is used as a reward with little or no educational link at all. There is also a growing amount of evidence that early exposure to music is critical. Rauscher and Shaw (1997), have emphasized a relationship between early music training and the development of the neural circuitry that governs spatial intelligence. Their studies indicate that music training generates the neural connections for abstract reasoning, including those necessary for understanding mathematical concepts. There are certain synaptic connections being made through music training that are similar to those required for abstract and spatial reasoning. Studies show that early and ongoing musical training helps organize and develop children's brains. "By approximately age 11, neuron circuits

that permit all kinds of perceptual and sensory discrimination, such as identifying pitch and rhythm, become closed off"(p.38). Not using them dooms the child to be forever tone deaf and offbeat. These studies make a statement that everything is connected and music can be an entry point into a number of different realms of intellectual functioning. (Kerry Hart, 1999).

There are many factors that influence students to learn or not to learn. Two essential reasons are lack of ability to learn or lack of desire to learn (Olson, 1996). No successful program has been developed to teach these concepts in the school system (Olson, 1996). Lifestyles in the United States have reduced the music program to one of activities and performances.

Research shows that musical intelligence extends beyond performance opportunities. Many schools have a tendency to focus on the music program and its assessment rather than on the individual student's musical competencies (Colwell, 1996; Davidson & Powell, 1986). The importance of music in our schools is often overlooked, and its true power is unrealized. The link that music has to enhancing memory is going unnoticed because people will not support what they do not understand, and they will not understand what they are not taught in the school system. They will not be taught a subject that is considered unimportant. According to Olson (1996), at-risk students create an aversion to traditional styles of teaching, and when attempts are made to cut "nonessential" subjects from the curricula, it only worsens the problem and further distances the at-risk student from the goal of becoming motivated to do better.

Gardner's work suggested that all the intelligences are necessary for complete human development and communication, and that education without the arts is indefensible (as cited in Snyder, 2001). Curriculum specialists agree that learning facts for their own sake no longer serves as a goal for developing productive members of society. It is suggested that students might be motivated to learn through other means, such as music. Unfortunately, if students have not developed understanding and skills in

music, it will not be an available route to any kind of learning. We are developing a culture of children who do not sing for educational purposes, and in doing this, we are giving up one of the most motivating tools we have for learning. It has been noted that many states do not require a musical component in their early childhood programs. By avoiding this musical component, children are not being given developmentally appropriate opportunities to learn how to sing. Singing is a learned process. If singing can be learned and enjoyed at an early age, its potential to enhance learning may be unstoppable. Its ability to promote retention and recall is immense. As alluded to by Weinberger (1998), we have viewed music as the product of culture and social interactions, but it is actually a part of our biological endowment. However, as long as educators view music as relatively unimportant, schools will continue to adopt a take-it-or-leave-it philosophy. Music offers untold additional benefits that should be the birthright of every child, especially those born into less privileged and typically less stimulating environments (Wilcox, 2000).

This lack of the use of music across the curriculum may also impact the fact that American students are far behind students in other countries in the areas of science and math. A report in the *New York Times International* in May 1996 (as cited in Harvey, 1997) indicated that in Japan, Korea, Taiwan, and China music is a more significant part of education for children than in the USA, and the children in those countries are far more likely to have what some regard as one of the most striking signals of a musical mind - absolute pitch.

Research in music education also shows many correlations of the value of music education with learning other subject matter. Jeanne Akin's brain research (as cited in Royer 1991) shows that music activities aid in developing the intellect, improve student listening skills, and lead to increased interest in academics and learning. A music-enriched curriculum can also be a factor in increasing cognitive and basic skill development and in raising IQ scores.

As educators, we must encourage our legislators and fellow teachers to recognize the importance of music in the curriculum. The emphasis on the core curriculum is so intense that music is often removed due to naive attitudes towards its importance. Music has a direct relationship with the school's total curriculum. However, excuses are made and methods are devised to remove an essential portion of the human soul (Yoh, 1996).

Educators are at the beginning of the exploration and study of the effect music has on learning and memory. It has been widely accepted that music has many benefits for children and can enrich and enhance life. Only recently has the educational community begun to consider the impact that music integrated into the regular curriculum might have on children's academic success. Research has shown that early and continual use of music in students' classroom activities can have a powerful impact on brain function, memory, motor, and social skills.

CHAPTER 2

PROBLEM DOCUMENTATION

Problem Evidence

In order to document how music enhances memory when integrated into a daily school curriculum, pre and posttests, rubrics, checklists, journals, and anecdotal records will be used to assess and analyze knowledge gained. Data presented here is a collection of those records for all targeted kindergarten, second grade students with resource support, and fifth grade students for Sites A, B, and C during the 2001-2002 school year.

A parent questionnaire (Appendix A) was completed from the three-targeted classrooms to document their views and opinions on the importance of music and its effect on their daily lives. The parent questionnaire pie graphs represent the overall average percent of responses reflecting the impact of music on the family life. The number of participants was as follows: Site A with 31, Site B with 28, and Site C with 25 participants. Total scores on some tables for all three sites do not necessarily equal 100% due to averaging.

Site A parent questionnaire responses, as shown in Table 1, reflect the fact that more than half of the parents enjoy music, and enjoy engaging in spontaneous musical activities, but 58% responded having no formal music education or involvement. Eighty percent of parents responded with answers of "Always" or "Often" meaning that they

seem to agree with music instruction only as far as it is implemented within the school their children attend. Parents do not regard music as a necessary extra curricular activity as shown in statement 3, *Your child plays a musical instrument,* with 94% of parents responding "Sometimes" or "Never," that the child does not play a musical instrument. This may be due to the young age of the child or possible lack of finances. Even though most parents enjoy music for the simple emotional enjoyment it provides, responses indicate they have very mixed feelings as to whether or not the songs their children sing in school have much academic relevance. This is shown in question 6, *Your child sings songs at home that he or she learns in school,* with 42% of parents responding "Sometimes" or "Never."

A variety of musical interventions will be implemented into the curriculum to enhance and improve memory and retention. It is hoped that the repetition and positive nature of song will help make connections for meaning and understanding. It is also hoped that students will make a transfer of their song facts to the test material and format.

Table 1

Parent Questionnaire, Site A, September 2001

Questions	Always	Often	Sometimes	Never
Question 1	38%	42%	13%	6%
Question 2	48%	23%	26%	3%
Question 3	0%	6%	55%	39%
Question 4	6%	6%	29%	58%
Question 5	81%	10%	10%	0%
Question 6	32%	26%	29%	13%
Question 7	45%	35%	16%	3%
Question 8	16%	32%	42%	10%
Question 9	52%	26%	3%	19%
Question 10	45%	23%	29%	3%
Question 11	3%	6%	68%	23%
Question 12	29%	32%	23%	16%
Question 13	32%	42%	19%	6%
Question 14	35%	13%	42%	10%
Average	33%	27%	29%	15%

Table 1 shows Site A parent questionnaire response percentages. The responses to statements 1, 3, and 5 show disparity. The average responses of "Always" and "Often" were combined to note the positive responses, and "Sometimes" and "Never" were combined to note the negative responses. Statement 1, *Music is an important part of education*, received a combined positive response of 80%. Statement 3, *Your child plays a musical instrument,* received a combined negative response of 94%. Statement 5, *You ask your child about what he or she learns in school,* received a combined positive of 91%. The pie chart was altered in order for the percentages to equal 100%.

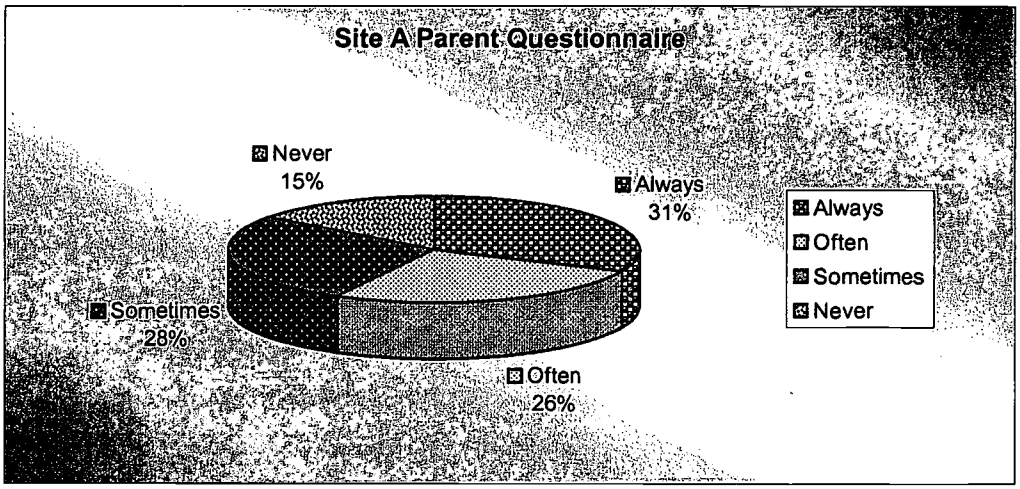

Figure 1. Parent Questionnaire, Site A, September 2001 (n=31)

Figure 1 is a pie graph representing the parent questionnaire for Site A with an average of 31% of participants responding "Always," 26% responding "Often," 28% responding "Sometimes" and 15% responding "Never" to questions asked in the parent questionnaire.

A questionnaire (Appendix A) was also completed by the children at each of the three sites. A sampling of these questions includes: *Do you like to sing? Do you think you learn from the songs at school? Does music or song help you remember things?, and Is it easy to learn words to songs?*

Table 2

Student Questionnaire, Site A, September 2001

Questions	Yes	No
Question 1	88%	12%
Question 2	78%	22%
Question 3	70%	30%
Question 4	75%	25%
Question 5	88%	12%
Question 6	91%	9%
Question 7	88%	12%
Question 8	84%	16%
Question 9	90%	10%
Question 10	88%	12%
Question 11	84%	16%
Question 12	84%	16%
Question 13	88%	12%
Question 14	97%	3%
Average	85%	15%

Table 2 Site A found many children to have positive attitudes about music in school even though many of them had experienced only a day or two of classroom music intervention. Some of the children had never been in a school setting before. Some of the children were Spanish speaking only, and therefore, were singing many words they may not have even understood. Due to the young age of the children at Site A, the teacher questioned each participant one-on-one to avoid confusion, to question each child in his or her most comfortable language, and to accept nods of yes or no as opposed to only accepting verbal language as answers. The children at Site A were extremely receptive and responsive to all of the questions being asked by the teacher. The majority of the children like music and are looking forward to the aspect of learning through music in the classroom.

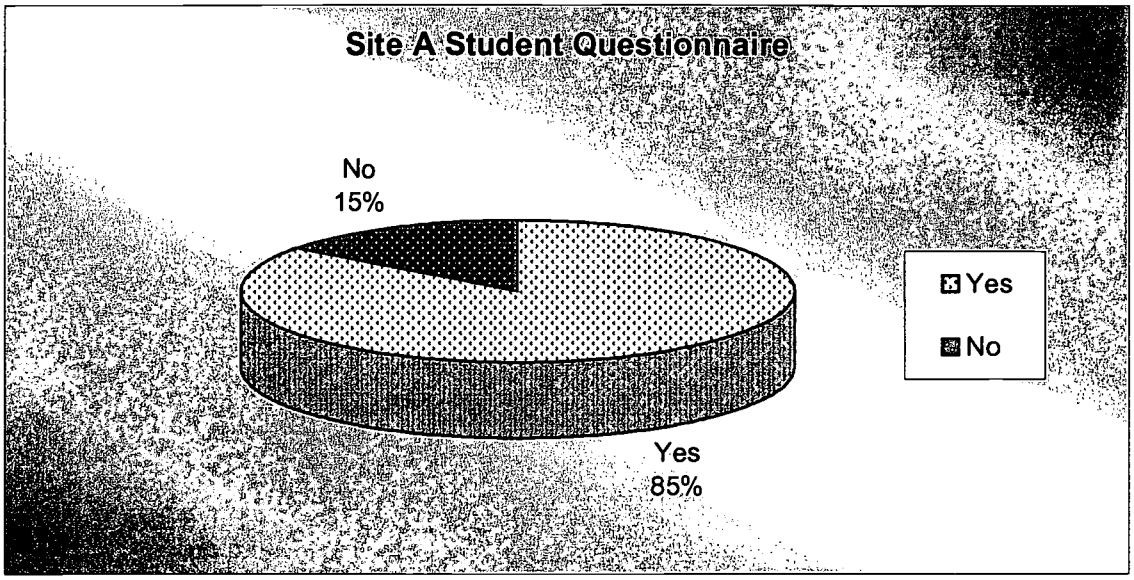

Figure 2. Student Questionnaire, Site A, September 2001 (n=31)

Figure 2 is a pie graph representing the student questionnaire with an average response of 85% of the participants responding "Yes," to music having an impact in their daily lives and 15% responding "No" with music having no impact on their lives.

Table 3

Parent Questionnaire, Site B, September 2001

Questions	Always	Often	Sometimes	Never
Question 1	39%	39%	22%	0%
Question 2	22%	39%	30%	9%
Question 3	9%	9%	65%	17%
Question 4	13%	17%	48%	17%
Question 5	74%	9%	17%	0%
Question 6	35%	26%	39%	0%
Question 7	35%	17%	43%	4%
Question 8	30%	26%	26%	17%
Question 9	52%	30%	9%	9%
Question 10	35%	30%	26%	9%
Question 11	9%	0%	78%	13%
Question 12	13%	39%	35%	13%
Question 13	35%	39%	26%	0%
Question 14	43%	30%	17%	9%
Average	32%	25%	34%	8%

Table 3 shows Site B parent questionnaire response percentages. There were 28 parent percentages. The responses to question 5, 9, and 11 stand out with more extreme disparity. The average responses of "Always" and "Often" were combined to note the positive responses, and the average of "Sometimes" and "Never" were combined to note the negative responses. Statement 5, *You ask your child questions about what he or she learns in school,* received a combined positive response of 83%. Statement 9, *The songs your child learns in school are meaningful,* received a combined response of 82%. Statement 11, *Music can be a distraction,* received a combined negative response of 91%.

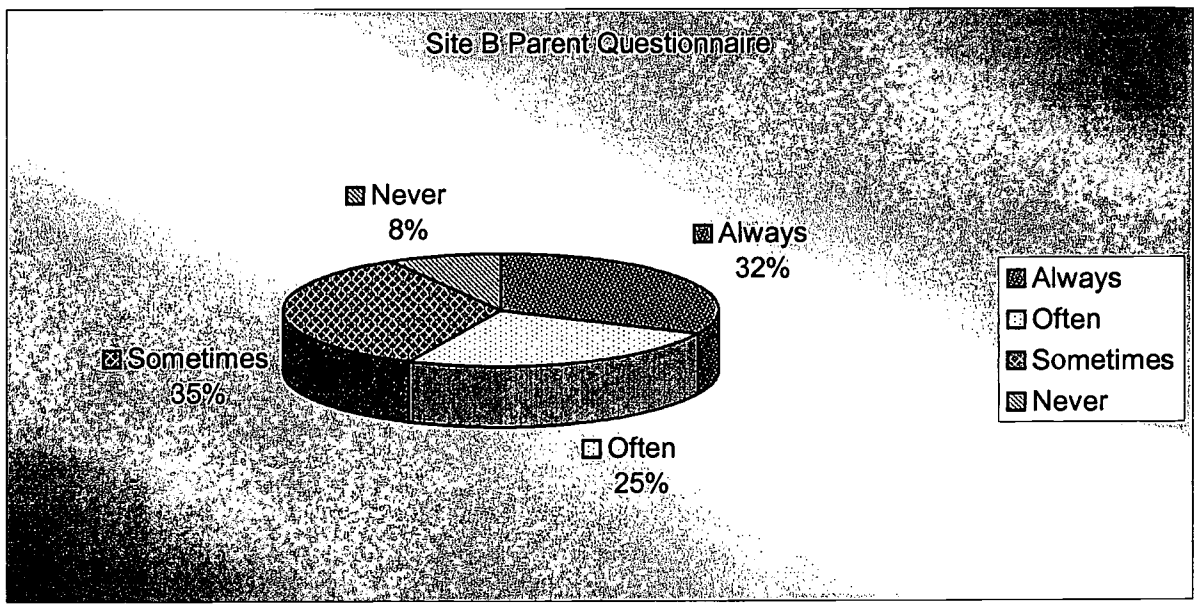

Figure 3. Parent Questionnaire, Site B, September 2001 (n=28)

Figure 3 is a pie graph representing the parent questionnaire from Site B with an average of 32% of the participants responding "Always," 25% responding "Often," 35% responding "Sometimes," and 8% responding "Never."

Site B found that students displayed enthusiasm towards music in the classroom. The students responded positively to the questions *Do you like to sing?*, and *Do you like*

to dance? Students responded negatively to the question *Do you think you learn from the songs we sing at school*? All students became engaged in the singing and dance movements associated with the songs.

Table 4

Student Questionnaire, Site B, September 2001

Questions	Yes	No
Question 1	76%	24%
Question 2	57%	43%
Question 3	48%	52%
Question 4	67%	33%
Question 5	95%	5%
Question 6	86%	14%
Question 7	76%	24%
Question 8	67%	33%
Question 9	81%	19%
Question 10	95%	5%
Question 11	81%	19%
Question 12	62%	38%
Question 13	76%	24%
Question 14	86%	14%
Average	75%	25%

Table 4 shows an average percent response of student questionnaires from Site B. Site B found that students displayed enthusiasm towards music in the classroom. The students responded positively to questions 1 and 4, *Do you like to sing?*, and *Do you like to dance?* Students responded negatively to question 5; *Do you think you learn from the songs we sing at school?* All students became engaged in the singing and dance movements associated with the songs.

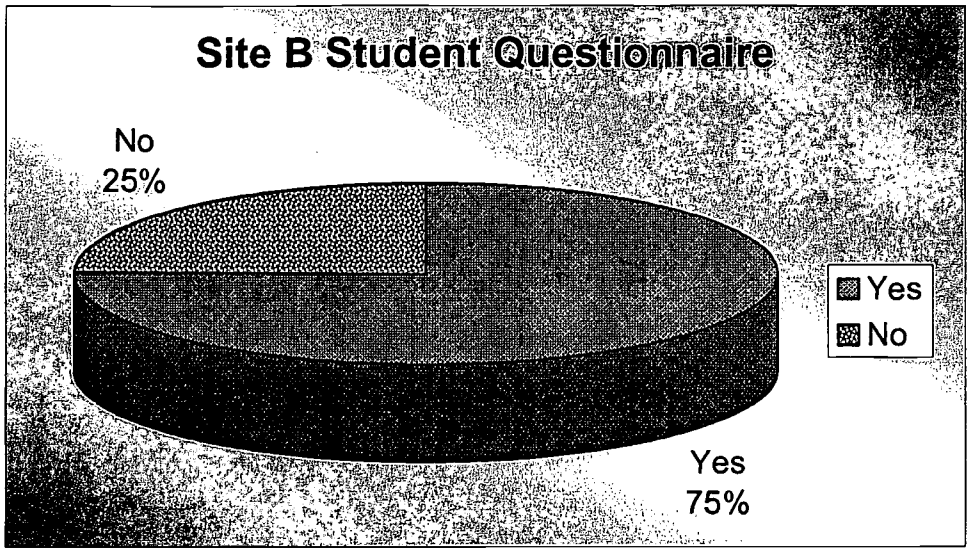

Figure 4. Student Questionnaire, Site B, September 2001 (n=30)

Figure 4 is a pie graph representing the Site B student questionnaire with an average of 75% of the students responding "Yes" and 25% responding "No."

Table 5

Parent Questionnaire, Site C, September 2001

Questions	Always	Often	Sometimes	Never
Question 1	33%	44%	22%	0%
Question 2	50%	27%	22%	0%
Question 3	5%	11%	44%	38%
Question 4	5%	22%	5%	66%
Question 5	50%	33%	16%	0%
Question 6	11%	33%	55%	0%
Question 7	44%	33%	16%	5%
Question 8	55%	11%	27%	5%
Question 9	16%	33%	44%	5%
Question 10	22%	33%	50%	0%
Question 11	5%	16%	72%	5%
Question 12	22%	55%	22%	0%
Question 13	66%	16%	16%	0%
Question 14	55%	11%	33%	0%
Average	32%	27%	32%	9%

Table 5 shows an average percent response of parent response questionnaires from Site C. The responses to statements 3, 5, and 13 stand out with more extreme disparity. The average responses of "Always" and "Often" were combined to note the positive responses, and "Sometimes" and "Never" were combined to note the negative responses. Statement 3, *Your child plays a musical instrument,* received a combined negative response of 82%. Statement 5, *You ask your child questions about what he or she learns in school,* received a combined positive response of 88%. Statement 13, *Our family listens to music everyday,* received a combined positive response of 82%.

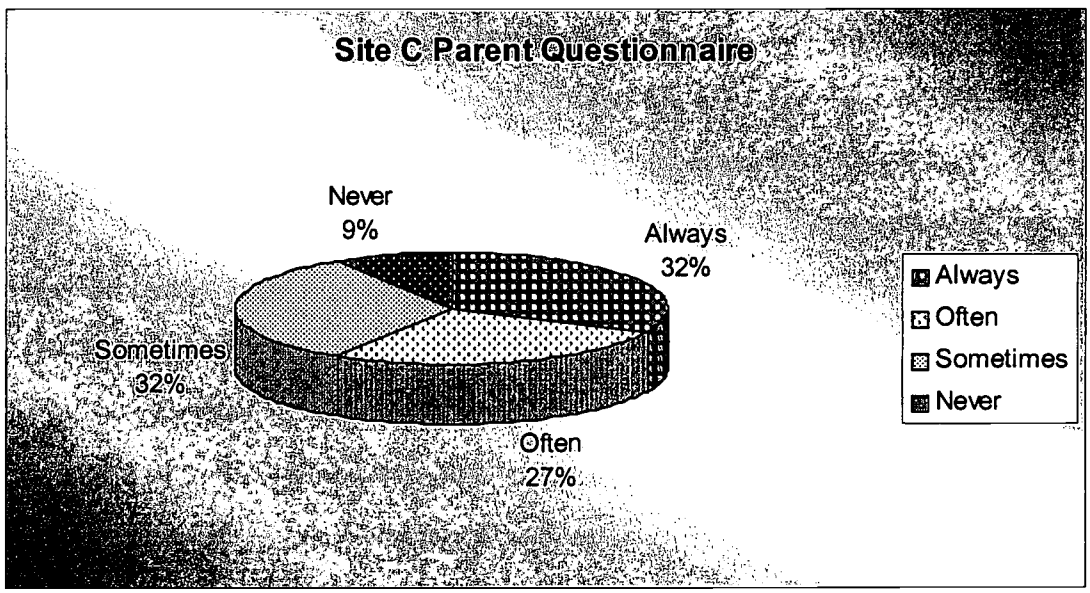

Figure 5. Parent Questionnaire, Site C, September 2001 (n=28)

Figure 5 is a pie graph representing the parent questionnaire from Site C with an average of 32% of the participants responding "Always," 27% responding "Often," 32% responding "Sometimes," and 9% responding "Never."

Table 6

Student Questionnaire, Site C, September 2001

Questions	Yes	No
Question 1	80%	20%
Question 2	92%	8%
Question 3	52%	48%
Question 4	60%	40%
Question 5	44%	56%
Question 6	92%	8%
Question 7	69%	31%
Question 8	68%	32%
Question 9	80%	20%
Question 10	88%	12%
Question 11	84%	16%
Question 12	65%	35%
Question 13	80%	20%
Question 14	80%	20%
Average	74%	26%

Table 6 shows the Site C student questionnaires. Responses seem to indicate an overall enjoyment of music and singing. Statement 2 shows a 92% "Yes" response for *Do you sing at home?* There was also a 92% "Yes" response for statement 6, *Do you like school?* Eighty percent responded, "Yes" to statement 1, *Do you like to sing?* But only 44% responded "Yes" to statement 5, *Do you think you learn from the songs we sing at school?*

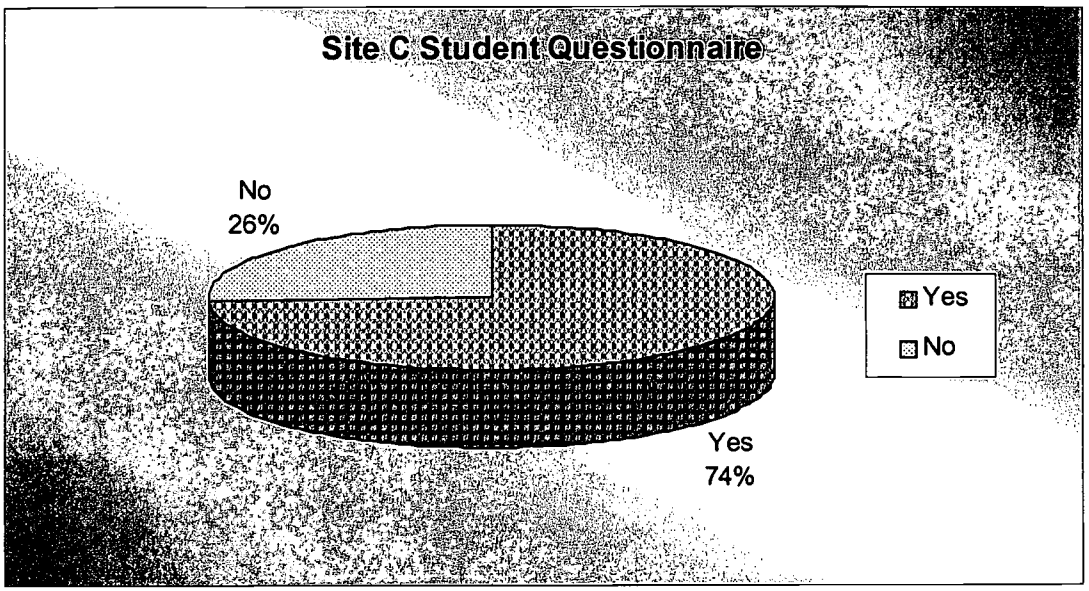

Figure 6. Student Questionnaire, Site C, September 2001 (n=28)

Figure 6 is a pie graph representing the student questionnaire from Site C with 74% of the participants responding "Yes" and 26% responding "No."

Students at all three sites were given pretests in six subject areas (Appendix C) to determine their level of prior knowledge in each of the six specific areas targeted.

Site A was tested on the following content: months of the year, days of the week, colors, shapes, numbers, and letter sounds. Site B was tested on months of the year, days of the week, colors, time, vowels, blends, and facts about the explorer Christopher Columbus. Site C was tested on vocabulary, multiplication, states, cell theory, prepositions, and weather.

In Site A, the teacher researcher used observation checklists to (Appendix B) record observations of children in action throughout the 12-week period. The teacher researcher also used rubrics throughout the course of the action research project as another method to monitor the progress.

Site B found that students made gains in knowledge of subject matter through repeated practice of the songs learned. Checklists and rubrics (Appendix B) showed continued growth and increased participation among students. Students demonstrated knowledge of lyrics, movements and continuous enthusiasm when singing the songs.

Site C made use of checklists and rubrics as an observation tool to record progress of retention of memory concepts taught through songs. Future comparisons will be made reflecting student progress made throughout the course of the 12-week study.

Probable Causes

"Can anything so enjoyable really be important in education? Absolutely. Music offers great opportunities for communication and expression, for creativity and group cooperation – plus, it's good for the brain and can enhance learning and intellectual development" (Weinberger, 1998, p.39).

There are so many factors that influence a student's success at learning through music. Frank Wilson (1989) stated that brain scan studies performed at the University of California at Los Angeles (UCLA) indicated that music more fully involves brain functions in both hemispheres than any other activity the researchers studied.

> Researchers have found that, during the pre-school and primary years, children demonstrate very positive attitudes toward many kinds of music. This is an ideal time to capitalize on their open, accepting responses and introduce them to music from a wide range of genres, styles, and cultures. Using nonverbal assessment methods, investigators have found that children are able to perceive and respond to many more sophisticated musical discrimination that their limited vocabulary allows them to express. Young children need to be provided with stimulation,

appropriate experience and opportunities to create a strong foundation on which future music learning can be built (Sims, 1995, p.11).

Music Educators National Conference, (MENC, 1999) states that the "window of opportunity" is not only true of pre-school children, but, in fact, also applies to mid-elementary children. "It is also true that the more a child participates, the more wonder and learning he or she experiences." (MENC, 1999, p.15)

There is sufficient research showing that there is a new view of music in the schools. At the most basic level, infants have great competency in the perceptual and cognitive processing of the most fundamental level of music.

> Parents and caregivers instinctively communicate with infants in a musical fashion because, although infants don't understand words, melodic stimulation always gets their attention. Young children clearly enjoy music, engaging in musical behavior spontaneously. In addition, the human brain contains identifiable musical building blocks (Weinberger, 1998, p.40).

Educators know that music affects emotion, and the emotional connection is necessary for learning. Literature suggests that the use of music to enhance memory, learning, and recall is a valuable, powerful, and influential tool in the classroom. Rauscher et al (as cited in Warner, 1999). Music offers cognitive benefits such as: vocabulary acquisition, symbolic understanding, sense of sequence, and auditory training. Also, research indicates that an active music making regimen was better at producing long term memory than was passive learning as was reported in two important studies (Weinberger, 1997, p.39).

Students with learning and behavior problems, showed an increase in focus, self-esteem, and improved behavior. These characteristics are supported by Warner (1999), when he stated music, as in all learning, is not acquired in isolated segments. It is a comprehensive acquisition including many of the following: creative expression, cooperative learning, self-esteem, self-management, improving behavior, and social acceptable behavior (Warner, 1999). Gardner's work suggested that all intelligences are necessary for complete human development and communication and that education without the arts is indefensible (Snyder 2001).

There are many varied reasons why music education and the integration of music into the curriculum have suffered in the American education system. One persistent problem is curriculum cuts. Many school administrators and teachers, when faced with making decisions about curriculum and school activity cuts, need to know about the new and significant research findings about music and education. Schools should not assume the only avenue is to dismantle or reduce programs, but consider the necessity of maintaining or even increasing music programs (Weinberger, 1998). The underlying problem is that when these important curricular decisions are made without the input from an arts educator, the art programs are frequently the first to go. Nine weeks a year is not enough for teaching the arts (Snyder, 2001). Many music programs have been severely reduced or dropped and consequently many students are denied the very opportunity to have exactly the type of music experiences and knowledge they, we and countless others advocate (Musica, Spring, 1999). Educators and administrators face budget cuts and financial stress; demands for higher test scores, proof of student achievement, scheduling conflicts, and overcrowding. High school music programs are

suffering due to college academic admission requirements, leaving many interested students with no room in their schedules for music (Kelstrom, 1998). The future role of music programs in American schools depends on the administrators who will only support continued music curriculum if they are made aware of the financial, academic, and aesthetic merits of having a music program (Robitaille and O'Neal, 1981).

Gardner's study (as cited in Colwell, 1996) states that school districts that "lop off" music in a child's education are simply arrogant and unmindful of how humans have evolved with music brains and intelligences. Cuts in music programs do not have widespread support and there is wide acceptance of uniqueness of musical intelligence. Still, teachers are more willing to teach visual arts, physical education, and inter-and intra-personal competencies than music instruction (Colwell, 1996). Today music occupies a part time place in U.S. schools. Generally it is taught once or twice a week at the elementary level, before or after school at the middle level, and as an elective at the high school. To date, music has played a relatively minor role in school curriculum in the U. S. (Kelstrom, 1998). While language lessons increase intensively and always from informal to formal, music lessons do not (Musica, Spring 1995). Over the last 30 years, the arts have become marginalized and are seen as irrelevant by many parents and educators (Oddleifson, 1995). As long as educators and parents view music as relatively unimportant, schools will continue to adopt a take-it-or-leave-it attitude (Weinberger, 1998).

Different states have different certification requirements and many don't have a musical component (Persellin in Teaching Music, 1999). In the past, because music was viewed as an important part of the curriculum, every kindergarten teacher had to know

how to play the piano and was required to take music education courses (Andress in Teaching Music, 1999). Now it is hard to find a piano in any room in a school, much less in any kindergarten room. Schools typically overemphasize linguistic and logical-mathematical intelligences. This needs to be addressed and changed so the curriculum reflects a balance of the varied intelligences (Hoer 1994; Wallach and Callahan, 1994; in Klein, 1997). Teachers tend to over focus on performance. This focus needs to shift to integration into the curriculum (Colwell, 1996).

The tendency to focus on music programs and program assessment has begun to make a shift to concern for the individual student competencies (Colwell, 1996). Music is often considered an "extracurricular" activity and is given the short stick by comparing it to other extracurricular subjects such as sports. It doesn't bring in as much money or parental support as sports programs and is dismissed as extraneous, unimportant, and unproductive. The contribution music makes to the academic achievements of students is often ignored (Kelstrom, 1998). One year of instruction is not enough to show any long-term benefits. Research continues to show that instruction beyond one year, however, provides continued positive effects (Wilcox, 2000). If students have not developed understanding and skills in music, it will not be an available route to any kind of learning (Snyder, 2001). John Dewey taught us that we learn to do what we do. Administrators should provide resources for "doing" music. The limited time allotted to music instruction has made further exploration of the benefits of music instruction a moot point (Colwell, 1996). Less than 6% of instructional time at the elementary level is devoted to music education, and only between 10-20% of high school students take art or music

courses (Csikszentmihalyi, 1997). It is no wonder that our children are not musical or have the desire or time to pursue it as either a course of study or for pleasure.

We are developing a culture of children who don't sing (Hanna in Teaching Music 1999). Just simplifying what 2nd or 3rd graders do in music class and applying it to preschool in not developmentally appropriate for them (Kenney in Teaching Music 1999). Some pre-kindergarten teachers don't understand that singing is a learned process. Children must be given developmentally appropriate opportunities to learn how to sing (Roebuck in Teaching Music 1999).

Music should be the birthright of every child in our country. Especially for those born into less privileged and usually less stimulating environments (Wilcox 2000). A music education should not be reserved for those "with talent" nor restricted to only those who can afford it (Hodges 2000). Many people fully accept the 'talent/no talent" approach to music education and only support serious music instruction for talented students. We need to expand our concept of music intelligence beyond performance (Colwell 1996). A child's brain develops to its full potential only with exposure to the necessary enriching experiences in early childhood (Rauscher and Shaw 1994). All teachers today are challenged by the increased diversity of their students and all need more effective ways to work with these differences. Music is a language that everyone speaks and understands (Dickinson, 1993).

Music programs have become performance and activity. The "listening curricula" has all but disappeared. Listening intelligently is a skill that is central to the development of musical intelligence. Its presence and importance needs to be reinstated into music programs (Colwell, 1996). The importance of music in our schools is often overlooked

and its true power is not realized. Music deserves a place with the core subjects to make a difference in the academic achievement of our students (Kelstrom, 1998). As Jane Healy states in: "Why Children Don't Think and What We Can Do About It," teachers believe that music and the arts are essential for effective learning to occur. It is also believed that the exposure should be early and often. Music has not found its place in the school curriculum of this country because music has not found its way into the heart of the people who run our schools. They will not support what they do not understand (Kelstrom 1998).

If music is to assume a place in the regular school curriculum, current research must be used to show its affect on academic achievement. The three top ranked countries in the world in student scientific achievement have music education at the heart of their educational systems. It is time for our leaders to use that knowledge to revamp our educational system to include music as a core subject that is a requirement for all students. Music is a science. It is a language, has a mathematical foundation, and is a physical activity. Any subject that combines all these is not only worthwhile but also essential to the education of our children. It is time for U.S. educators to consider the inclusion of music in the school curriculum more carefully.

"We all agree that our greatest resource is the potential brain power of our children. We should strive to develop their intellects through all available means. Research now shows that music can play an important role in achieving that goal" (Weinberger, 1998, p.39).

CHAPTER 3

THE SOLUTION STRATEGY

Literature Review

Music is a powerful influence in our lives. This influence impacts us from the time we are in our mother's womb and continues throughout our lives. There is evidence to support the fact that early music experiences increase developmental processes. The use of music to enhance memory, learning, and recall is a valuable, powerful, and an influential tool in the classroom. Begely (as cited in Diefenbacher, 1999) found that developmentally, there are many reasons to include music in early childhood curricula. The younger a child is when he receives musical experiences, the stronger the potential for developing increased intelligence in math and science skills. Chance's research (as cited in Thornburg, 1989) shows that premature infants who listen to music have shown significantly higher mental and physical development than premature infants who did not receive the musical intervention. A similar study was conducted by Schellenberg & Trehub (as cited in MuSICA Research Notes, 1997) with six to nine-month-old babies. The infants were seated on their mother's laps and when they were looking straight ahead, tone sequences were played from a speaker located off to one side. The infants turned to look at the speaker each time there was a change in melody. This suggests that the change in melody caught the attention of the infants; therefore, their brain was aroused by the sensory input. At that point Wolfe (as cited in Fogarty) stated that if what is being heard has personal relevance or personal interest, then it becomes part of the long-term memory system.

Growing evidence shows that music is an influential power in increasing academic skills. This evidence should encourage teachers to increase the use of music in all areas of their curriculum. Early childhood teachers have recognized the importance of musical experiences for children. Music not only promotes the development of musical intelligence, but also other cognitive benefits including how children acquire vocabulary, a sense of sequence, memory, and auditory training. Rauscher et al. (as cited in Warner, 1999) found through his research that by utilizing songs as part of a daily routine that music education also enhances preschoolers' spatial temporal reasoning. Rauscher found that the children considered their musical participation as "just fun," but in essence, it was a well-defined music program.

According to Music Educators National Conference (MENC, 1991), music is a natural and important part of children's growth and development. Musical experiences help all children bond emotionally and intellectually with others. Music enhances creative expression in song, rhythmic movement, and listening experiences. These strategies aid in successful development of physical and cognitive skills. The National Association for Music Education further stated that music stimulates thought and action in non-musical areas and develops individual confidence. Kelstrom (1998), found that the study of music develops an overall discipline of mind that transfers to other subjects, and further reveals that research has been done at all levels of education and has found that music in the daily curriculum actually enhances student achievement in areas outside music. Music can create an effect in mood enabling experiences to be stored into memory. What we remember depends on the emotion that is evoked by the music. This research of Altenmueller and his colleagues (as sited in Weinberger,1997), has provided not only some intriguing findings on some fundamental questions of the neurobiology of learning and memory about music, but also should serve as an impetus for other workers to undertake studies in this area. Altenmueller found that active learners, those who became physically involved, learned more than passive learners; those who saw visual

aids and received verbal explanations, because through their activity, their emotions were activated, and memory was enhanced. This research underscores the long-term benefits of using active instructional strategies. Altenmueller's research also leads to the conclusion that the brain's way of handling some basic musical concepts and knowledge is not inborn, but learned. Supporting this theory is Lozanov (as cited in Chalmers, 1999, p.43-5) as his work in memory and learning contends that "humans utilize only 10% of their brain capacity and that through intense concentration training, accelerated learning rates can be achieved." These researchers support the benefits of music to enhance memory and learning by stating that learning facts put to music accelerates the memory and retention of the facts.

Evidence by Hickey and Webster (2001), has shown consistently that, when children are confronted with creative musical tasks such as exploring sounds, and simple playing around with sounds, that it nurtures the creative musical thinking process. Activities that involve brainstorming solutions to musical problems (such as creating several endings for the beginning of a musical phrase) and do not require one single right answer should be offered more often to stimulate the creative thinking process. When a student develops a creative product, listeners recognize the creative wonder. A classroom that encourages rather than squelches creative thinking, such as in music, is one that is psychologically safe, and promotes an atmosphere of risk taking, allowing for failure. Merging creative thinking activities into regular instruction are quite profound. Since music plays such an important role in affecting moods, attitudes, and self-esteem, then not only should we teach this way, but test this way, as well. Bryan, Sullivan-Burstein, & Mathur (as cited in *The Journal of Learning Disabilities*, 1998) conducted a study researching the effect music has on emotion and how it can affect solutions for solving a social problem situation. The findings show the greatest number of solutions was produced by the self-induced positive mood, while positive background music produced the most constructive attitudes concerning social situations. Social situations included

typical problems middle school children face involving social and moral decisions. The author suggests that the music may have increased the creativity concerning the positive thinking process.

Music has been an incredible resource in early childhood education curriculum for more than a century. Early childhood teachers have recognized the important role musical experiences have on young children. In a study on the effects of music on self-esteem and behavior, Warner (1999), found that music, as in all learning, is not acquired in isolated segments. It is a comprehensive acquisition. Its rhythm, steady beat, melody, and dynamics all work together to form creative expression, and a sense of cooperative learning. Bredekamp & Copple (as cited in Warner, 1999) stated that utilizing music in the classroom enhances self-esteem because it is a developmentally appropriate practice in the fact that the words in the songs support children's self esteem by emphasizing problem-solving skills, instructions about social behavior and self-management strategies. Creative expression through the fine arts offers excellent opportunities for helping children feel good about themselves, (Warner, 1999).

Research by Ramey and Frances Campbell (1996), has shown that early exposure to music for preschool children taught with games and songs showed an IQ advantage of 10 to 20 points over those taught without the songs. At age fifteen they had higher math and reading scores. As stated by Gardner, music helps some people organize the way they think and work by helping them develop in areas such as math, language, and reasoning. Eich & Metcalfe (as cited in MuSICA Research Notes, 1997) noted that one reason music transfers to other subjects is that cognitive and higher order thinking skills are developed in music.

Colwell (1994) conducted a study with kindergarten children, which showed that setting textbooks to music enhanced reading accuracy. This supports Colwell's previous findings that music reinforces recall and retention. Dryden's study (as cited in Kelstrom, 1998) found that music instruction also develops the perceptual skills necessary in

reading. It develops auditory discrimination that positively influences the development of phonetic skills. Music study also improves the development of reading readiness skills in slow learners.

Songs can be used for teaching phonemic awareness by creating new words to familiar tunes for the purpose of teaching sound isolation skills. This would be used to teach isolated vowel sounds and consonant sounds (Towell, 2000). The predictability of sing-along picture songbooks has been shown to be effective in helping students read. Students often already know the words to the songs that will help them decode the words they do not recognize. The familiar rhythm of the songs helps develop fluency (Schaffer, 2001).

Four groups of children, aged six to nine years old, who were experiencing reading difficulties, participated in a program involving listening to music. Gains were made in learning new words. The findings suggest that music may be an effective learning medium for aspects of language development, especially for students with reading problems. (Weinberger, 2000).

An older study published by Hurwitz, Wolff, Bornick, & Kokas (as cited in MuSICA 1994) asked whether music instruction improved reading performance in first grade children. The study consisted of two groups of children who were matched in age, IQ, and socio-economic status at the beginning of the study. The control group received no musical instruction. The experimental group used folk songs that emphasized melodic and rhythmic elements. After training, the experimental group exhibited significantly higher reading scores than did the control group scoring in the 88th percentile versus 72nd percentile. This finding clearly supports the view that music education can positively impact the ability to read. This experiment shows a strong relationship between music experience and reading performance scores. Language lessons tend to increase and evolve from informal to formal as children enter school, whereas, music lessons generally don't. Parents and families increase their speaking to young children, but it seems that

they generally stop singing to them. Perhaps parents should not only continue to sing, but also encourage young children to sing as well as to speak. Greater development of musical, as well as linguistic abilities might be attained if singing with young children were continued (Trehub, 1992).

Fox, Gardiner, Jeffrey, & Knowles, (as cited in The Music Schools Inc., 1996) conducted a study which indicated that the teachers felt the students' improvements in math, language, and science were due to the sequential skills and the integration of music with the regular curriculum. This theory is further supported by Gardner (1997), when he stated that the musical intelligence probably carries more emotional, spiritual, and cultural weight than any other intelligence.

There is a close relationship between understanding musical symbolism and the mathematical symbolism used in fractional concepts (Cheek, 1999). Numerous studies have shown increased math achievement in children who have musical training both in and out of school. A project in which 13,000 children in 42 schools entered ESEA Title I program of additional art, music, PE, and counseling showed that when music periods were increased, children made an average gain of one and one half times the normal rate in math (Maltester, 1986).

It is our responsibility, as educators, to build a well-rounded foundation of strong intellectual, emotional, and social skills for our children. Lazear has suggested that music activates all the centers and provides a creative way for knowing and remembering. All children want to read, but they often lack the prerequisite visual, auditory, and language skills and concepts necessary to succeed. Educators need to provide the rich environment that will inspire the desire to learn. In 1999 Feldman suggested that songs give children opportunities to develop these readiness skills as they construct knowledge and make meaningful connections, like learning the infamous "ABC" song.

Repeatedly, the studies cited have shown that memory, recall, and life long retention is enhanced by including music in the daily curriculum. Often teachers do not

incorporate music into lessons due to personal lack of musical training. Nevertheless, it is possible to include musical experiences without a formal musical background. Utilizing music as a powerful tool engages the learner, making lessons more enjoyable while involving all learning styles.

Project Objectives and Processes

In an effort to show a correlation of how musical strategies enhance memory and retention during a research period between September 2001 and December 2001, the targeted students will show progress in fact, skill, and concept acquisition after a musical intervention.

As a result of these strategies, skill progress will be demonstrated through use of pre and post questionnaires, rubrics, checklists, teacher anecdotal records, student journals, and pre and posttests.

In order to accomplish the objectives of the progress, the following processes are necessary:

1. Teacher presentation of new concepts
2. Teacher modeling musical strategies to enhance concept learning
3. Daily practice of musical strategy
4. Allow process time for absorption for individual and group activities
5. Weekly student/teacher reflections
6. Small group cooperative learning activities
7. Student generated songs

In an effort to improve student motivation and participation, students will take part in a variety of activities that will incorporate the multiple intelligence theory, primarily enhancing the musical focus to help students retain information.

Action Plan for Interventions

This action plan will be implemented in our classrooms in an effort to show correlation of the effect of music on memory recall in a variety of subject areas. This

study will take place over the course of a 14-week period. Our study begins in September and ends the first week in December in order to avoid the inconsistent nature of our schedules immediately prior to the Christmas holidays.

I. Week One - Begin implementing daily routine and structure, and gaining personal/academic knowledge of students

A. Parent and student questionnaires on music preferences to be distributed

B. Pretests, such as reciting months of the year and days of the week, spelling color words, recognizing shapes and numbers, recalling letter sounds and blends, telling time, recalling facts, defining vocabulary words, reciting prepositions, and recalling multiplication facts

II. Weeks Two to Four - Introduce first and second musical strategy for beginning new fact skill, or concept

A. Fact, skill, or concept to be learned is introduced

B. Musical strategy to connect with the fact, skill, or concept

C. Daily group practice of musical strategy

D. First individual observation checklist & rubric (whole group or cooperative group)

E. Student reflection journal

III. Weeks 5 to 7

A. Fact, skill, or concept to be learned is introduced

B. Musical strategy to connect with fact, skill, or concept

C. Daily group practice of musical strategy

D. Individual observation checklist and rubric

E. Student reflection journal

IV. Weeks 8 to 10

A. Fact, skill, or concept to be learned is introduced

B. Musical strategy to connect with fact, skill, or concept

C. Daily group practice of musical strategy

D. Individual observation checklist and rubric

E. Student reflection journal

V. Weeks 11 to 13

A. Fact, skill, or concept to be learned is introduced

B. Musical strategy to connect with fact, skill, or concept

C. Daily group practice of musical strategy

D. Individual observation checklist and rubric

E. Student reflection journal

VI. Week 14 - Final Assessment

A. Parent and student questionnaires on music preference is distributed

B. Posttests, which will be identical to the pretests given in September, will be given

C. Daily group practice of musical strategy

D. Individual observation checklist and rubric

E. Student reflection journal

Methods of Assessment

In order to assess the effects of the musical interventions student and parent pre and post questionnaires (Appendices A & B) will be developed. The pre questionnaires will be distributed during the month of September 2001. The student and parent post questionnaires will be distributed during December 2001. These questionnaires will show if the parents and students change their attitudes about learning through music in the classroom and how the students prefer to learn. Two group, whole group/cooperative group, rubrics will be utilized to evaluate student performances and various activities

completed in class. Along with the use of rubrics to provide feedback, a student observation checklist (Appendix B) will be used to identify which students are not mastering the desired skills. A weekly journal (sample prompts and activities, Appendix C) of student reflections will be kept by each student. The student reflections will show if improvement of skills is being made, and if knowledge is being transferred to other areas of life. Along with a weekly student reflection, each teacher will keep a weekly anecdotal record (Appendix D) logging classroom observations of student performance, progress and personal gains as a result of musical intervention.

CHAPTER 4

PROJECT RESULTS

Historical Description of the Intervention

The objective of this project was to show that using musical strategies would aid in enhancing memory and retention within a specific period of time. The implementation of several different teacher interventions was used to impact the student's learning. In the past, it had become apparent that children were not retaining information in the classroom because they were not enjoying the learning process being used. The teacher researchers added musical strategies in order to reach the children's emotions and help learning become more enjoyable. Some of the key elements in evaluating the implementations were: pre and post questionnaires, rubrics, checklists, teacher anecdotal records, student journals, and pre and posttests.

The pre and post questionnaires were used to ascertain parents' and students' feelings and attitudes as to how music affects their lives. The parents and students were asked to answer separate questionnaires containing 14 key questions before implementation of the action research. A post questionnaire was given to parents and students (Appendix A) at the culmination of the action research project to see if any of their feelings or attitudes changed after using musical intervention in the classroom.

Rubrics and checklists (Appendix B) were used to provide formative assessments of students' learning and help the teacher researchers monitor whether or not students were on track to meet the goal. The rubrics and checklists were tools used to check whether or not the students could demonstrate the skill, and they were used as guidelines to measure the degree of mastery met by each child.

Teacher anecdotal records were used to provide a weekly narrative report to measure growth, development, and performance on the learning that was taking place. The actions taken were logged each week. In the reflection: pluses, minuses, and interesting facts were noted.

Student journals were used weekly to help process the students' learning. Prompt sheets were provided each time the children began a journal activity (Appendix D). The teacher researchers' intentions were to provide an opportunity for students to take time to process what they had learned, and to reflect on how that learning transferred into their lives.

Pretests (Appendix C) were given before each academic song was taught to assess their prior knowledge. These evaluations were done verbally in Sites A and B, and in written form in Site C. This allowed each teacher researcher to assess how far each student had progressed throughout the course of the 14 weeks of action research.

Posttests (Appendix C) were given to form a summative evaluation of material learned by the students at the end of the 14-week period of time. The teacher researchers assessed the growth and development of the students and allowed the students to demonstrate all they had learned. These tests were used to determine student achievement and program effectiveness.

In all sites, the teacher researchers began the action research procedure upon receiving all of the signed parental consent letters. The teacher researcher at Sites A and B asked the students to fill out a similar questionnaire in a one-on-one setting due to the young age level of the students and their limited experience in responding in a written format. Students in Site C were given the questionnaire in a written format.

A total of six academic songs was taught to these groups for action research purposes. Each song was introduced in a timely fashion, and enjoyed by all participants each day. The teacher researchers kept anecdotal logs throughout the 14-week process. These logs documented weekly actions the teacher researchers took along the way to promote the effectiveness of these academic songs. These documentations (Appendix A) included steps taken such as: *teacher researcher played musical CD's, teacher modeled songs using motions to enhance understanding, teacher moves about and visually observes class participation.* The teacher researchers documented pluses, minuses, and reflections in these anecdotal logs. The pluses noted included: *all children appear to be interested, quietest students are beginning to sing with enjoyment, and the non-English speaking students are singing the words with the group.* Minuses in the anecdotal log were also documented. Minuses included comments such as: *some students appear shy about performing in the group, a few students don't have a clue as to the actual words in the songs, some students tend to get too loud or too silly.* Interesting facts were also noted in the anecdotal logs. Some of the interesting facts included comments like: e*ven the Spanish-speaking children are engaged, many children listen intently to each new song, the group is having a lot of fun.* As we looked over our anecdotal logs, we realized that we were able to write down more pluses and interesting facts than minuses.

The students were also asked to write reflective journals (sample, Appendix D) each week. Initially, in Sites A and B, the children were hesitant to put very much down due to their lack of experience with specific fine motor activities. As the weeks progressed, the teacher researchers began to receive some very detailed and complete pages on information the children were learning. Toward the end of the 14-week period, the groups, as a whole did not seem to be as excited about the journals as they had been in the beginning, however, they began to complete the journals with more ease, and move on to the next activity. Journal responses (sample prompts, Appendix D) from Site C reflected that adding music to their learning helps them work productively, learn to pronounce words better, remember facts, and generally energizes them to be happy in their work.

As the 14-week period came to an end, the teacher researchers distributed a final parent questionnaire, seeking to find out if parents had changed their minds about the importance of music in the classroom. Additionally, the students were given the same student questionnaire that they had been given at the onset of the action research. It is noteworthy to say that overall, parents and children believe that learning through music plays a more significant role in the student's lives than they had initially believed. The parental responses from Site C were inconclusive due to a lack of returned parent questionnaires from parents. The narrative by site will be presented in first person. This helps evoke the tone of the individual classrooms.

The targeted Site A kindergarten classroom was very enthusiastic about singing every day in the classroom. They looked forward to learning new words to familiar tunes. We sang at every available opportunity. The singing was a good activity for the

kindergarten children because it allowed for the bodily kinesthetic intelligence to be nourished. I modeled each song using colorful manipulative and interesting prompts to entice those visual learners. It was also very beneficial for the second language children enabling them to become more competent in the English pronunciation and meaning of new words. There seemed to be a continual stream of visitors at my door to listen and enjoy our singing sessions. Many commented that my classroom appeared lively and fun and all children were actively engaged in learning.

The targeted Site B second grade classroom was very excited to participate in their teacher's "homework." I felt my classroom was a very warm and inviting place for children. The students had access to all areas of the classroom and are encouraged to utilize all my materials, books, manipulatives, and games. I tried to make my classroom a working community since this is their home away from home. I tried to meet the various learning styles of my students by incorporating the multiple intelligences. I used a variety of incentives to boost enthusiasm for learning. I am also a believer that music enhances memory and recall of facts and concepts. Singing is a great way to retain the interest of young students. By incorporating movements along with the songs students were able to release extra energy and have fun while learning. The students' enthusiasm was demonstrated in their desire and eagerness to use extra time at the end of the school day to sing some of the songs. They also sang during the entire bus ride on a recent field trip. The surprised expressions of parent chaperones indicated how impressed they were by the children's enthusiastic singing and knowledge. They now expect to learn a song for any unit we study and I find myself now searching for songs about dinosaurs.

The targeted Site C fifth grade class was enthusiastic as they moved through their daily routines quite independently. Most lessons were divided into ten to fifteen minute time segments during the day. For whole group instruction and seatwork, students remained at their desks. For small group instruction, reading groups or cooperative groupings, the children transitioned to the tables. Music, a small bell, clapping, or counting helped the children transition in a timely fashion.

I played music often to help children stay focused on their seatwork or silent reading. Soft classical music was usually played during silent reading, but something livelier was used for more active group work. Associating certain music with a particular activity can be a powerful tool. Using simplistic songs with its repetition helped my students learn difficult concepts within a relatively short period time, and allowed them to have great fun at the same time.

Modeling the songs helped them to realize that if I could sing it, they could too. This definitely gave them confidence at the start knowing they did not have to have the best singing voice in order to join in and have fun. Realizing that learning the song was helping them learn the information made them very excited and this helped motivate them for each new song.

I was delighted to hear them singing at lunch or on the playground and sharing our songs with siblings. It was fun to watch them challenge each other to learn the song parts. We even performed our songs for the enjoyment of some of the other classes. Our music teacher was also helpful in allowing many of the songs to be part of her curriculum as well, which added to the fun for everyone. This was no longer work but an enjoyable, fun activity shared with each other that continued outside the classroom. This transfer

was wonderful to see. Even the struggling students were enthusiastic and proud of their progress.

Presentation and Analysis of Results

A post parent questionnaire was completed from the three-targeted classrooms to document changing views and opinions on the importance of music integrated into the curriculum. Sites A & B remained consistent with 31 and 28 participants respectively. Site C had 25 participants with a discrepancy figure of 12 post questionnaires not returned due to lack of parental response. Overall the post parent questionnaire responses in all sites were similar with the pre parent questionnaire responses. There were a few exceptions in each site.

Table 1

Parent Questionnaire, Site A, September Through December 2001

Site A	Always		Often		Sometimes		Never	
Parents	pre	post	pre	post	pre	Post	pre	post
Question 1	38%	39%	42%	39%	13%	22%	6%	0%
Question 2	48%	32%	23%	29%	26%	39%	3%	0%
Question 3	0%	3%	6%	6%	55%	36%	39%	55%
Question 4	6%	6%	6%	10%	29%	23%	58%	61%
Question 5	81%	87%	10%	10%	10%	3%	0%	0%
Question 6	32%	68%	26%	26%	29%	6%	13%	0%
Question 7	45%	42%	35%	19%	16%	39%	7%	0%
Question 8	16%	29%	32%	29%	42%	35%	10%	3%
Question 9	52%	61%	26%	16%	3%	26%	19%	0%
Question 10	45%	52%	23%	19%	29%	29%	3%	0%
Question 11	3%	6%	65%	10%	68%	68%	23%	16%
Question 12	29%	35%	32%	26%	23%	39%	16%	0%
Question 13	32%	29%	42%	45%	19%	26%	6%	0%
Question 14	35%	32%	13%	23%	42%	45%	10%	0%
Average	33%	37%	27%	22%	29%	31%	15%	10%

Table 1 Site A displays comparison results of pre and post percentages for parent questionnaires. Statements which showed the greatest disparity were statement 2, *Your*

child sings along with the songs on the radio, received a 16% rise in positive response. Statement 6, *Your child sings songs at home that he or she learns in school*, received a 36% rise in positive response. Statement 3, *Your child plays a musical instrument*, received an 18% decrease. Most statements maintained a high percentage of positive responses because the parents continued to value music in the school setting after the continued emotional high their children experienced during the research project.

Table 2

Parent Questionnaire, Site B, September Through December 2001

Site B	Always		Often		Sometimes		Never	
Parents	pre	post	pre	post	pre	post	pre	post
Question 1	39%	48%	39%	22%	22%	30%	0%	0%
Question 2	22%	48%	39%	22%	30%	26%	9%	4%
Question 3	9%	0%	9%	0%	65%	26%	17%	74%
Question 4	13%	13%	17%	0%	48%	52%	17%	35%
Question 5	74%	52%	9%	39%	17%	9%	0%	0%
Question 6	35%	65%	26%	17%	39%	15%	0%	3%
Question 7	35%	56%	17%	22%	43%	22%	4%	0%
Question 8	30%	39%	26%	9%	26%	35%	17%	17%
Question 9	52%	67%	30%	26%	9%	7%	9%	0%
Question 10	35%	35%	30%	21%	26%	35%	9%	9%
Question 11	9%	0%	0%	13%	78%	78%	13%	9%
Question 12	13%	22%	39%	26%	35%	48%	13%	4%
Question 13	35%	46%	39%	17%	26%	39%	0%	4%
Question 14	43%	39%	30%	9%	17%	52%	9%	0%
Average	32%	33%	25%	19%	34%	36%	8%	12%

Table 2 Site B displays comparison results of pre and post percentages for parent questionnaires. The statements showing the greatest positive change in opinion were: statement 6, which is *Your child sings songs at home that he or she learns in school* and statement 9, *The songs your child learns in school are meaningful.* There was an increase of 21% for statement 6 showing that children enjoyed the songs they learned at school and wanted to share them with their families. The increase of 11% for statement 9

showed parents now believe that songs learned within the school setting have an educational value and help children retain important concepts.

Table 3

Parent Questionnaire, Site C, September Through December 2001

Site C Parents	Always		Often		Sometimes		Never	
	pre	post	pre	post	pre	post	pre	post
Question 1	33%	30%	44%	23%	22%	38%	0%	9%
Question 2	50%	76%	27%	10%	22%	7%	0%	7%
Question 3	5%	15%	11%	15%	44%	55%	38%	15%
Question 4	5%	23%	22%	9%	5%	15%	66%	53%
Question 5	50%	54%	33%	23%	16%	23%	0%	0%
Question 6	11%	30%	33%	30%	55%	25%	0%	15%
Question 7	44%	46%	33%	9%	16%	38%	5%	7%
Question 8	55%	30%	11%	38%	27%	23%	5%	9%
Question 9	16%	23%	33%	38%	44%	38%	5%	1%
Question 10	22%	48%	33%	26%	50%	26%	0%	0%
Question 11	5%	9%	16%	7%	72%	69%	5%	15%
Question 12	22%	30%	55%	30%	22%	30%	0%	10%
Question 13	66%	55%	16%	15%	16%	30%	0%	0%
Question 14	55%	38%	11%	38%	33%	24%	0%	0%
Average	32%	37%	27%	22%	32%	31%	9%	10%

Table 3 Site C displays comparison results for pre and post percentages for parent questionnaires. There was a disappointing return of only 13 parent post questionnaires for Site C. This certainly verifies a decline in parental involvement as was indicated by the student questionnaire responses. The statements showing the greatest disparity were: statements 4, 6, and 10. Statement 4, *Someone in your household plays a musical instrument* increased from 5% to 23%. This is an increase of 18%. It should be noted that the band instruction begins at the 5th grade level, and these students are getting their lessons and instruments at the school. "Always" responses for statement 6, *Your child sings songs at home that he or she learned at school* increased from 11% to 30%. Likewise, statement 10, *Your child likes to sing and dance* increased from 22% to 48%.

Generally, these two large increases in positive responses show parents observing more musical activity in song and dance.

A post student questionnaire was completed from the three-targeted classrooms to document changing views and opinions on the importance of music integrated into the curriculum. Overall the post student questionnaire responses in all sites were similar with the pre student questionnaire responses. There were a few exceptions in each site.

Table 4

Student Questionnaire, Site A, September Through December 2001

Site A	Yes		No	
Students	pre	post	pre	post
Question 1	88%	87%	12%	13%
Question 2	78%	84%	22%	16%
Question 3	70%	81%	30%	19%
Question 4	75%	71%	25%	29%
Question 5	88%	100%	12%	0%
Question 6	91%	97%	9%	3%
Question 7	88%	90%	12%	10%
Question 8	84%	77%	16%	23%
Question 9	90%	90%	10%	10%
Question 10	88%	97%	12%	3%
Question 11	84%	87%	16%	13%
Question 12	84%	90%	16%	10%
Question 13	88%	97%	12%	3%
Question 14	97%	84%	3%	16%
Average	85%	88%	15%	12%

Table 3 Site A displays comparison results for pre and post percentages for student questionnaires. Post responses, again, were similar to the pre student questionnaire responses, however, the most notable differences occurred in question 3, *Do you sing to your parents?* An increase of children singing to their parents grew to 11%, which indicates that the children are retaining enough meaningful song information to transfer what they sing in school into their home lives. A noteworthy 12% increase

occurred in question 5, *Do you think you learn from the songs we sing at school?* This increase emphasizes the fact that the children themselves realize that they learned academic information from the songs they sing in the classroom. Question 14 asked, *Can music change your mood?* This question showed a 13% increase in the realization that music may affect the emotional state of the child.

Table 5

Student Questionnaire, Site B, September Through December 2001

Site B Students	Yes		No	
	pre	post	pre	post
Question 1	76%	65%	24%	35%
Question 2	57%	57%	43%	43%
Question 3	48%	65%	52%	35%
Question 4	67%	52%	33%	48%
Question 5	95%	96%	5%	4%
Question 6	86%	91%	14%	9%
Question 7	76%	70%	24%	30%
Question 8	67%	65%	33%	35%
Question 9	81%	75%	19%	25%
Question 10	95%	90%	5%	10%
Question 11	81%	65%	19%	35%
Question 12	62%	65%	38%	35%
Question 13	76%	74%	24%	26%
Question 14	86%	57%	14%	43%
Average	75%	70%	25%	30%

Table 5 Site B displays comparison results of pre and post percentages for student questionnaire responses. Post responses noted many positive increases. These included question 3, *Do you sing to your parents?*, which increased from 48% to 65% in "Yes" responses; and question 6, *Do you like school*?, which increased from 86% to 91%. This supports our theory that music enhances learning in school.

Table 6

Student Questionnaire, Site C, September Through December 2001

Site C Students	Yes		No	
	pre	post	Pre	post
Question 1	80%	90%	20%	8%
Question 2	92%	88%	8%	12%
Question 3	52%	20%	48%	80%
Question 4	60%	76%	40%	24%
Question 5	44%	80%	56%	20%
Question 6	92%	84%	8%	16%
Question 7	69%	72%	31%	28%
Question 8	69%	60%	31%	40%
Question 9	80%	80%	20%	20%
Question 10	88%	92%	12%	8%
Question 11	84%	80%	16%	20%
Question 12	65%	92%	35%	8%
Question 13	80%	92%	20%	8%
Question 14	80%	80%	20%	20%
Average	75%	78%	25%	22%

Table 6 Site C displays comparison results for pre and post percentages for student questionnaires. Post questionnaires indicate that there was an enthusiastic and positive reaction to musical intervention and appreciation toward the benefits of music to enhance learning. Question 1, *Do you sing to your parents?,* had shown for the pretest 80% responding "Yes" and 20% responding "No" compared to the post test showing 20% responding "Yes" and 80% responding "No." This shows a definite decline in parent and child interaction for sharing musical experiences. On a positive note, question 5, *Do you think you learn from songs?,* had increased 44% "Yes" to 80% "Yes" and for question 12, *Does music help you remember?,* had increased from 65% "yes" to 92% "yes". This was inspiring to see this powerful connection between music and learning.

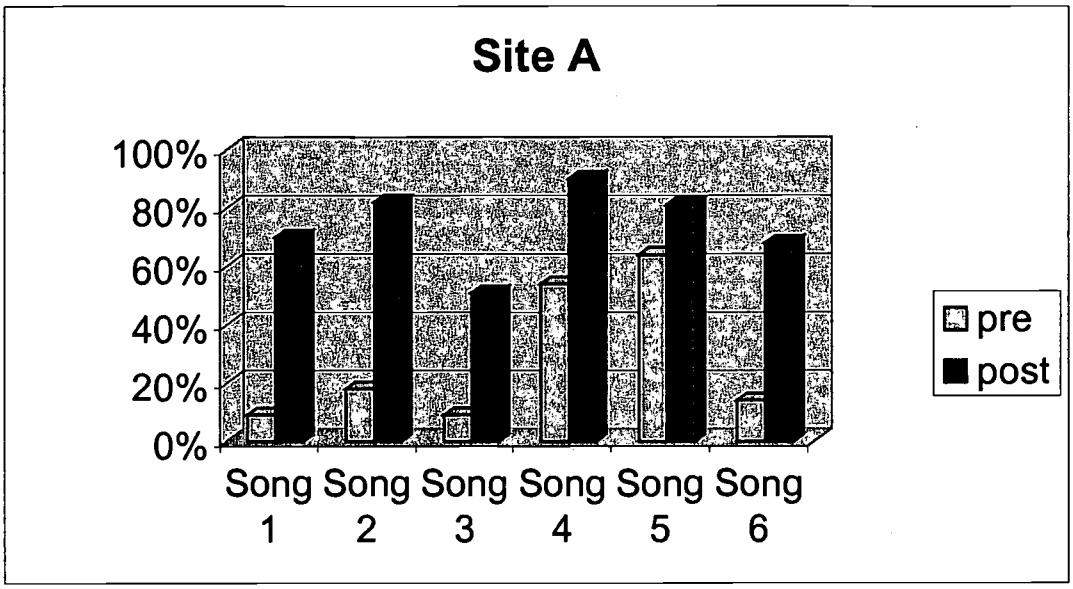

Figure 1. Pre and Posttest Results, Site A, September Through December 2001

Figure 1 demonstrates the targeted Site A comparisons for pre and posttest. These percentage scores reflect a very large increase in every song category. The largest increase being a 69% rise for the months of the year test, *song 1*. The slightest increase demonstrates a 28% rise for the shape identification test *song 4*. These substantial increases illustrate the positive effects that musical strategies had on memory.

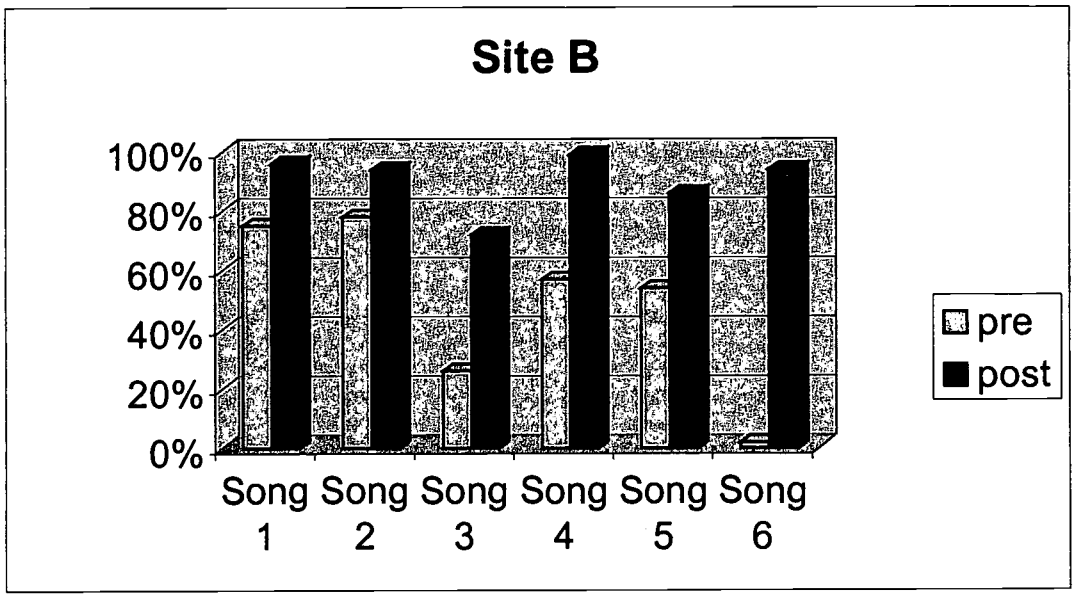

Figure 2. Pre and Posttest Results, Site B, September Through December 2001

Figure 2 demonstrates the targeted Site B comparisons for the pre and posttests. These percentages reflect a significant increase for all song concepts tested. The largest increase was *song 6*, facts about Christopher Columbus the explorer. Test scores improved by 92% increasing from 2% to 94%. The slightest increase was *song 2* the days of the week, which had an increase of only 16%. The initial *song 1* pretest score of 75% was due to our under estimation of the student's knowledge of the subject prior to entering second grade. These substantial percentage gains illustrate the power that musical intervention has on young children when recalling facts and concepts.

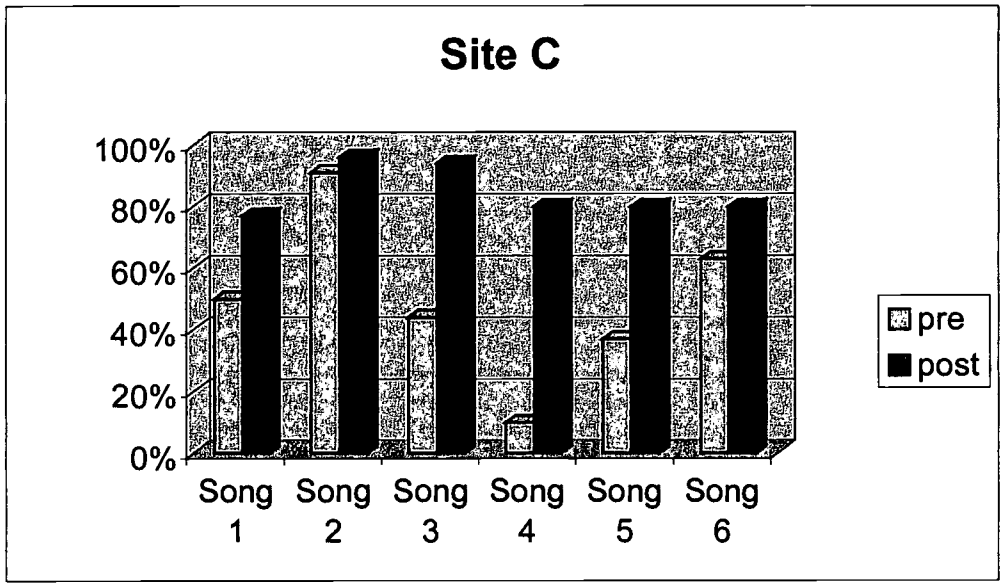

Figure 2 Pre and Posttest Results, Site C, September Through December 2001

Figure 2 represents the targeted Site C comparisons for pre and posttest percentage scores reflecting large increases in every song category. The largest growth being a 70% rise for the cell theory test *song 4*, increasing from 10% to 80%. The most minimal growth was a 5% rise for the multiplication test improving from a 91% to a 96%. This is clearly showing mastery of the concept prior to entering fifth grade

Conclusions and Recommendations

Students in the targeted classrooms have exhibited difficulties recalling facts and information in a variety of subject areas. Evidence of this problem was seen in an inability to gain mastery of grade level basic skills. This was evaluated through the use of checklists, anecdotal records, and skill pre and posttests. The facts to be mastered were set to music to test our theory that it would enhance memory recall.

The interventions showed an overall positive growth in retention of basic facts taught using musical interventions. Children with learning, memory or reading problems had initial difficulties mastering facts. They needed more repetition and practice to

achieve mastery. Other children appeared to need the kinesthetic involvement to acquire the information and used the movements to aid recall during post testing.

The use of music as an intervention generally created a more positive emotional connection for both initial learning and recall of facts introduced with music. The children were very enthusiastic during initial introduction of the songs. The teacher researchers observed children singing the songs at recess, teaching them to other children, as well as performing them for other teachers in the school. This indicates the positive extension of learning being carried over into other daily social interactions. This enthusiasm included shy and introverted children as well as those who are usually outgoing. The use of music facilitated the acquisition of challenging material for those children who may have rejected just hearing or reading it.

Our chosen intervention set facts to music that varied at each grade level included in our research. The kindergarten class songs included months of the year, days of the week, spelling of the color words, the naming of shapes, reciting of numbers, and beginning letter sounds. The second grade songs covered the same first three concepts as the kindergarten site, as well as, telling time to the hour, the five short vowel sounds; eight blends, and facts about Christopher Columbus, the explorer. The fifth grade songs included vocabulary, multiplication facts, recalling the fifty states, cell theory, identifying prepositions, and weather.

Our first recommendation for other teachers who may wish to duplicate our research would be to carefully choose topics for songs. We found that some facts were too easy, some were too lengthy, and some were not of interest to a particular group.

We also suggest spending more time on some songs. We discovered our research time frame was not always realistic. The activities chosen for reinforcement were also not always the best. The journaling became laborious for some kindergarten and second grader students and many lost sight of the purpose and were redundant in their writing. Other means of evaluation and reflection may be better. Perhaps more interactive participation and more varied methods of participation could be integrated to aid in more rapid transfer and mastery.

We also felt there should be better means of home communication to not only involve more parents, but hold them accountable for reinforcement of learning outside of school. We felt many parents did not understand the purpose of our research. This leads to another problem we noted in the parent questionnaires. First, we should have formulated a Hispanic version for parents who may not be fluent English readers. Also, we felt there were too many questions in the questionnaire and some were probably not clearly stated to provide us with the significant research information that we were seeking. Lastly, we feel there is great value to our reflections that will prove invaluable in planning for a more successful "next time", but there may be more authentic methods available that could aid in this. There may also be more authentic assessment tools we could have utilized to better evaluate mastery and transfer into daily life. It would be worth the time to explore these and integrate them into future programs.

Pitfalls included preparation of units and activities. This research was begun in the summer when the teacher researchers did not have full access to materials in their classrooms, and therefore, did not do the best job of pinpointing facts to be targeted for the project. The time required was also not adequate for mastery. Future use of this type

of program should include more freedom for the teacher to redirect or change midstream. Topics should be limited and "journaling" should not be limited to just writing. Other reflective activities could include group reflections, KWL's and teacher directed journals.

Suggestions for future researchers include using more varied resources for topics and material for songs. These could include: the Internet, music instructors, and other staff both within a school and in district. Questionnaires should be carefully written and include more concrete questions that require more input from parents. The use of timelines and calendars were very valuable to keep research on target. However, it was realized that some forms of measurable data, such as completing three checklists, became an overwhelming task to accomplish. One beneficial change therefore, would be to allow more than 14 weeks to complete the project. Using three rubrics, however, was a valuable tool to chart the progress being made. The purposes and progress should be reviewed often and redirected if necessary to keep the project goals clear and obtainable. The activities, journals and reflections need to be more varied and interactive to keep them meaningful. And finally, keep communication with parents open and explore the use of performances and sharing of what's been learned with them, as well as, other classes and staff within the school. This will make the learning more authentic and mastery more complete. This research project proved to be very productive in promoting retention of academic skills. However, to give this research the time and attention it deserved, we would suggest there be additional assistance in conducting the pretests, posttests, checklists, and rubrics, so that normal classroom activities could continue uninterrupted. It seems apparent that music is powerful force that makes difficult material easier to learn and remember within a short period of time. It would be an

interesting study to further the results of how much is remembered a year from now, then five years. It is exciting to see the impact music has on the lives of students and their learning.

This research told the teacher researchers that the use of music definitely enhances learning. The growth shown from the pretests to the posttests indicated that it worked. A non-measurable glance back at previous years of teaching demonstrates that retaining academic skills through the use of music plays a significant role in improving test scores.

"...Music is one of the most powerful means for enhancing automatic memory."

Sprenger

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APPENDICES

Appendix A

Parent Questionnaire

Child's Name _____ Date_____

Please circle the answer which best describes you or your child.

1. Music is an important part of education.

   a. always b. often c. sometimes d. never

2. Your child sings along with songs on the radio.

   a. always b. often c. sometimes d. never

3. Your child plays a musical instrument.

   a. always b. often c. sometimes d. never

4. Someone in your household plays a musical instrument.

   a. always b. often c. sometimes d. never

5. You ask your child questions about what he or she learns in school.

   a. always b. often c. sometimes d. never

6. Your child sings songs at home that he or she learned in school?

   a always b. often c. sometimes d. never

7 Music is an important part of your daily life.

   a. always b. often c. sometimes d. never

8. I work best when music is playing in the background.

   a. always b. often c. sometimes d. never

9. The songs your child learns in school are meaningful.

   a. always b. often c. sometimes d. never

10. Does your child like to dance with music?

    a. always b. often c. sometimes d. never

11. Music can be distraction.

    a. always b. often c. sometimes d. never

12. I hum or sing when happy or working.

    a. always b. often c. sometimes d. never

13. Our family listens to music everyday.

    a. always b. often c. sometimes d. never

14. Certain music help me remember special events or experiences.

    a. always b. often c. sometimes d. never

Parent
Signature_____

Thank you for taking the time to fill out this questionnaire!!!!!

Appendix A

Parent Questionnaire Tally Sheet
Site A, B, and C

September

1.	a b	c d
2.	a b	c d
3.	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
9.	a b	c d
10.	a b	c d
11.	a b	c d
12.	a b	c d
13.	a b	c d
14.	a b	c d

Appendix A

Parent Questionnaire Tally Sheet
Site A, B, and C

December

1.	a b	c d
2.	a b	c d
3.	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
9.	a b	c d
10.	a b	c d
11.	a b	c d
12.	a b	c d
13.	a b	c d
14.	a b	c d

Appendix A

Parent Questionnaire Tally Sheet

Site (A) B, and C

September

12%	1.						
13%	a	++++ ++++ ||	12	c	||||	4	13%
	b	++++ ++++ |||	13	d	||	2	6%
15%	2.						
7%	a	++++ ++++ ++++	15	c	++++ |||	8	26%
	b	++++ ||	7	d	|	1	3%
0%	3.						
2%	a		0	c	++++ ++++ ++++ ||	17	55%
	b	||	2	d	++++ ++++ ||	12	39%
2%	4.						
2%	a	||	2	c	++++ ||||	9	29%
	b	||	2	d	++++ ++++ ++++ |||	18	58%
25%	5.						
3%	a	++++ ++++ ++++ ++++ ++++	25	c	|||	3	10%
	b	|||	3	d		0	0%
10%	6.						
8%	a	++++ ++++	10	c	++++ ||||	9	29%
	b	++++ |||	8	d	||||	4	13%
14%	7.						
11%	a	++++ ++++ ||||	14	c	++++	5	16%
	b	++++ ++++ |	11	d	|	1	3%
16	8.						
32	a	++++	5	c	++++ ++++ |||	13	42%
	b	++++ ++++	10	d	|||	3	10%
52	9.						
26	a	++++ ++++ ++++ |	16	c	|	1	3%
	b	++++ |||	8	d	++++ |	6	19%
45	10.						
23	a	++++ ++++ ||||	14	c	++++ ||||	9	29%
	b	++++ ||	7	d	|	1	3%
3	11.						
6	a	|	1	c	++++ ++++ ++++ ++++ |	21	68%
	b	||	2	d	++++ ||	7	23%
29	12.						
32	a	++++ ||||	9	c	++++ ||	7	23%
	b	++++ ++++	10	d	++++	5	16%
32	13.						
42	a	++++ ++++	10	c	++++ |	6	19%
	b	++++ ++++ |||	13	d	||	2	6%
35	14.						
13	a	++++ ++++ |	11	c	++++ ++++ |||	13	42%
	b	||||	4	d	|||	3	10%

Parent Questionnaire Tally Sheet
Site (A) B, and C

December

1.							
39%	a	𝍸 𝍸 ||	12	c	||||	4	13%
42%	b	𝍸 𝍸 |||	13	d	||	2	6%
2.							
48%	a	𝍸 𝍸 𝍸	15	c	𝍸 |||	8	26%
23%	b	𝍸 ||	7	d	|	1	3%
3.							
0%	a		0	c	𝍸 𝍸 𝍸 ||	17	55%
6%	b	||	2	d	𝍸 𝍸 ||	12	39%
4.							
6%	a	||	2	c	𝍸 ||||	9	29%
6%	b	||	2	d	𝍸 𝍸 𝍸 |||	18	58%
5.							
81%	a	𝍸 𝍸 𝍸 𝍸 𝍸	25	c	|||	3	10%
10%	b	|||	3	d		0	0%
6.							
32%	a	𝍸 𝍸	10	c	𝍸 ||||	9	29%
26%	b	𝍸 |||	8	d	||||	4	13%
7.							
45%	a	𝍸 𝍸 ||||	14	c	𝍸	5	16%
35%	b	𝍸 𝍸 |	11	d	|	1	3%
8.							
16%	a	𝍸	5	c	𝍸 𝍸 |||	13	42%
32%	b	𝍸 𝍸	10	d	|||	3	10%
9.							
52%	a	𝍸 𝍸 𝍸 |	16	c	|	1	3%
26%	b	𝍸 |||	8	d	𝍸 |	6	19%
10.							
45%	a	𝍸 𝍸 ||||	14	c	𝍸 ||||	9	29%
23%	b	𝍸 ||	7	d	|	1	3%
11.							
3%	a	|	1	c	𝍸 𝍸 𝍸 𝍸 |	21	68%
6%	b	||	2	d	𝍸 ||	7	23%
12.							
29%	a	𝍸 ||||	9	c	𝍸 ||	7	23%
32%	b	𝍸 𝍸	10	d	𝍸	5	16%
13.							
32%	a	𝍸 𝍸	10	c	𝍸 |	6	19%
42%	b	𝍸 𝍸 |||	13	d	||	2	6%
14.							
35%	a	𝍸 𝍸 |	11	c	𝍸 𝍸 |||	13	42%
13%	b	||||	4	d	|||	3	10%

Appendix A

Parent Questionnaire Tally Sheet
Site A, (B) and C

September * 23 responses

1.						
a	9	39%	c	5	21%
b	9	39%	d	0	0%
2.						
a	5	21%	c	7	30%
b	9	39%	d	2	9%
3.						
a	2	9%	c	14	63%
b	2	9%	d	4	17%
4.						
a	3	13%	c	11	47%
b	4	17%	d	4	17%
5.						
a	17	74%	c	4	17%
b	2	9%	d	0	0%
6.						
a	8	35%	c	9	39%
b	6	26%	d		0%
7.						
a	8	35%	c	10	43%
b			d		
	4	17%		1	4%
8.						
a	7	30%	c	6	26%
b	6	26%	d	4	17%
9.						
a	12	52%	c	2	9%
b	12	30%	d	2	9%
10.						
a	8	35%	c	6	26%
b	7	30%	d	2	4%
11.						
a	2	9%	c	18	78%
b	0	0%	d	3	13%
12.						
a	3	13%	c	8	34%
b	8	39%	d	3	13%
13.						
a	8	35%	c	5	26%
b	8	39%	d	0	0%
14.						
a	10	43%	c	4	17%
b	7	30%	d	2	9%

Appendix A

Parent Questionnaire Tally Sheet
Site A, (B) and C

December * 22 responses

1.							
a	10	45%		c	7	32%	
b	5	23%		d	0	0%	
2.							
a	10	45%		c	6	27%	
b	5	23%		d	1	4%	
3.							
a	0	0%		c	6	27%	
b	0	0%		d	16	72%	
4.							
a	3	14%		c	11	50%	
b	0	0%		d	8	36%	
5.							
a	11	50%		c	2	9%	
b	9	40%		d	0	0%	
6.							
a	8	36%		c	7	31%	
b	4	18%		d	3	14%	
7.							
a	12	54%		c	5	23%	
b	5	23%		d	0	0%	
8.							
a	8	36%		c	7	32%	
b	2	9%		d	4	18%	
9.							
a	6	27%		c	4	18%	
b	11	50%		d	1	4%	
10.							
a	7	31%		c	8	36%	
b	5	23%		d	2	9%	
11.							
a	0	0%		c	17	77%	
b	3	14%		d	2	9%	
12.							
a	5	23%		c	10	45%	
b	6	27%		d	1	4%	
13.							
a	8	36%		c	8	36%	
b	3	14%		d	1	4%	
14.							
a	9	40%		c	11	50%	
b	2	9%		d	0	0%	

Appendix A

Parent Questionnaire Tally Sheet
Site A, B, and C

September *#25 responses

1.

a	𝍸 /	6	24%	c	////	4	16%
b	𝍸 ///	8	32%	d		0	0%

2.

a	𝍸 ////	9	36%	c	////	4	16%
b	𝍸	5	20%	d		0	0%

3.

a	/	1	4%	c	𝍸 ///	8	32%
b	//	2	8%	d	𝍸 //	7	28%

4.

a	/	1	4%	c	/	1	4%
b	////	4	16%	d	𝍸 𝍸 /	2	8%

5.

a	𝍸 ////	9	36	c	///	3	12%
b	𝍸 /	6	24%	d		0	0%

6.

a	//	2	8%	c	𝍸////	9	36%
b	𝍸 //	6	24%	d		0	0%

7.

a	𝍸 ///	8	32%	c	///	3	12%
b	𝍸 /	6	24%	d	/	1	4%

8.

a	𝍸 𝍸	10	40%	c	𝍸	5	20%
b	//	2	8%	d	/	1	4%

9.

a	///	3	12%	c	𝍸 ///	8	32%
b	𝍸 /	6	24%	d	/	1	4%

10.

a	////	4	16%	c	𝍸 ////	9	36%
b	𝍸 /	6	24%	d		0	0%

11.

a	/	1	4%	c	𝍸 𝍸 ///	13	52%
b	///	3	12%	d	/	1	4%

12.

a	////	4	16%	c	////	4	16%
b	𝍸𝍸	10	40%	d		0	0%

13.

a	𝍸 𝍸 //	12	48%	c	///	3	12%
b	///	3	12%	d		0	0%

14.

a	𝍸 𝍸	10	48%	c	𝍸 /	6	24%
b	//	2	8%	d		0	0%

Appendix A

Parent Questionnaire Tally Sheet
Site A, B, and C

December * 13 responses

1.					
a IIII	4	30%	c ++++	5	38%
b III	3	23%	d	0	0%
2.					
a ++++ +++	10	76%	c I	1	7%
b I	1	7%	d I	1	7%
3.					
a II	2	15%	c +++ II	7	53%
b II	2	15%	d II	2	15%
4.					
a III	3	23%	c II	2	15%
b I	1	7%	d +++ II	7	53%
5.					
a +++ II	7	53%	c III	3	23%
b III	3	23%	d	0	0%
6.					
a IIII	4	30%	c III	3	23%
b IIII	4	30%	d II	2	15%
7.					
a +++ I	6	46%	c +++	5	38%
b I	1	7%	d I	1	7%
8.					
a IIII	4	30%	c III	3	23%
b +++	5	30%	d I	1	7%
9.					
a III	3	23%	c +++	5	38%
b +++	5	38%	d 0	0	0%
10.					
a +++	5	38%	c III	3	23%
b III	3	23%	d II	2	15%
11.					
a I	1	7%	c +++ IIII	9	69%
b I	1	7%	d II	2	15%
12.					
a IIII	4	30%	c IIII	4	30%
b IIII	4	30%	d I	1	7%
13.					
a +++ II	7	53%	c IIII	4	30%
b II	2	15%	d	0	0%
14.					
a +++	5	38%	c III	3	23%
b +++	5	38%	d	0	

Appendix A
Sites A, B, & C

Student Questionnaire

Student name_____ Date_____

Please circle the answer that best describes your feelings.

1.	Do you like to sing?	yes	no
2.	Do you sing at home?	yes	no
3.	Do you sing to your parents?	yes	no
4.	Do you like to dance?	yes	no
5.	Do you think you learn from the songs we sing at school?	yes	no
6.	Do you like school?	yes	no
7.	Do you like to sing with the group?	yes	no
8.	Do you like to move when you sing?	yes	no
9.	Does music make you feel good?	yes	no
10.	Do yo like to listen to music?	yes	no
11.	Do you play or work well when music is playing in the background?	yes	no
12.	Does music or song help you remember things?	yes	no
13.	Is it easy to learn words to songs?	yes	no
14.	Can music change your mood?	yes	no

Appendix A

Student Questionnaire Tally Sheet
Site A, B, and C

	September	December
1.	Yes No	Yes No
2.	Yes No	Yes No
3.	Yes No	Yes No
4.	Yes No	Yes No
5.	Yes No	Yes No
6.	Yes No	Yes No
7.	Yes No	Yes No
8.	Yes No	Yes No
9.	Yes No	Yes No
10.	Yes No	Yes No
11.	Yes No	Yes No
12.	Yes No	Yes No
13.	Yes No	Yes No
14.	Yes No	Yes No

Appendix A

Student Questionnaire Tally Sheet
Site (A) B, and C

	September		December	
1.				
88%	Yes	27	Yes	27
12%	No	4	No	4
2.				
78%	Yes	24	Yes	26
22%	No	7	No	5
3.				
70%	Yes	21	Yes	25
30%	No	10	No	6
4.				
75%	Yes	24	Yes	22
25%	No	7	No	9
5.				
88%	Yes	27	Yes	31
12%	No	4	No	0
6.				
91%	Yes	28	Yes	30
9%	No	3	No	1
7.				
88%	Yes	27	Yes	28
12%	No	4	No	3
8.				
84%	Yes	26	Yes	24
16%	No	5	No	7
9.				
90%	Yes	28	Yes	28
10%	No	3	No	3
10.				
88%	Yes	27	Yes	30
12%	No	4	No	1
11.				
84%	Yes	26	Yes	27
16%	No	5	No	4
12.				
84%	Yes	26	Yes	28
16%	No	5	No	3
13.				
88%	Yes	27	Yes	30
12%	No	4	No	1
14.				
97%	Yes	30	Yes	26
3%	No	1	No	5

Appendix A

Student Questionnaire Tally Sheet
Site A, (B) and C

	September		December	
1.				
	Yes	76%	Yes	65%
	No	24%	No	35%
2.				
	Yes	57%	Yes	57%
	No	43%	No	43%
3.				
	Yes	48%	Yes	65%
	No	52%	No	35%
4.				
	Yes	67%	Yes	52%
	No	33%	No	48%
5.				
	Yes	95%	Yes	96%
	No	5%	No	4%
6.				
	Yes	86%	Yes	91%
	No	14%	No	9%
7.				
	Yes	76%	Yes	70%
	No	24%	No	30%
8.				
	Yes	67%	Yes	65%
	No	33%	No	35%
9.				
	Yes	81%	Yes	75%
	No	19%	No	25%
10.				
	Yes	95%	Yes	90%
	No	5%	No	10%
11.				
	Yes	81%	Yes	65%
	No	19%	No	35%
12.				
	Yes	62%	Yes	65%
	No	38%	No	35%
13.				
	Yes	76%	Yes	74%
	No	24%	No	26%
14.				
	Yes	86%	Yes	57%
	No	14%	No	43%

Appendix A

Student Questionnaire Tally Sheet
Site A, B, and C

	September			December		
1.	Yes ++++ ++++ ++++ ++++	20	80%	Yes ++++ ++++ ++++ ++++ |||	23	92%
	No ++++	5	20%	No ||	2	8%
2.	Yes ++++ ++++ ++++ ++++ |||	23	92%	Yes ++++ ++++ ++++ ++++ ||	22	88%
	No ||	2	8%	No |||	3	12%
3.	Yes ++++ ++++ |||	13	52%	Yes ++++	5	20%
	No ++++ ++++ ||	12	48%	No ++++ ++++ ++++ ++++	20	80%
4.	Yes ++++ ++++ ++++	15	60%	Yes ++++ ++++ ++++ ||||	19	76%
	No ++++ ++++	10	40%	No ++++		6	24%
5.	Yes ++++ ++++	11	44%	Yes ++++ ++++ ++++ ++++	20	80%
	No ++++ ++++ ||||	14	53%	No ++++	5	20%
6.	Yes ++++ ++++ ++++ ++++ |||	23	92%	Yes ++++ ++++ ++++ ++++	21	84%
	No ||	2	8%	No ||||	4	16%
7.	Yes ++++ ++++ ++++ |||	18	69%	Yes ++++ ++++ ++++ |||	18	72%
	No ||	8	8%	No ++++ ||	7	28%
8.	Yes ++++ ++++ ++++ ||	17	68%	Yes ++++ ++++ ++++	15	60%
	No ++++ |||	8	32%	No ++++ ++++	10	40%
9.	Yes ++++ ++++ ++++ ++++	20	80%	Yes ++++ ++++ ++++ ++++	20	80%
	No ++++	5	20%	No ++++	5	20%
10.	Yes ++++ ++++ ++++ ++++ ||	22	88%	Yes ++++ ++++ ++++ ++++ |||	23	92%
	No	1	4%	No ||	2	8%
11.	Yes ++++ ++++ ++++ ++++	21	84%	Yes ++++ ++++ ++++ ++++	20	80%
	No ||||	4	16%	No ++++	5	20%
12.	Yes ++++ ++++ ++++ ||	17	65%	Yes ++++ ++++ ++++ ++++ |||	23	92%
	No ++++ ||||	9	34%	No ||	2	8%
13.	Yes ++++ ++++ ++++ ||||	19	76%	Yes ++++ ++++ ++++ ++++ |||	23	92%
	No ++++		6	23%	No ||	2	8%
14.	Yes ++++ ++++ ++++ ++++	20	80%	Yes ++++ ++++ ++++ ++++	20	80%
	No ++++	5	20%	No ++++	5	20

Appendix B Sites A,B,C

OBSERVATION CHECKLIST

Teacher: _____ Date: _____

Target Skills: _____

_____

Ratings: + = Mastery
/ = Developing
- = Needs Help

	Names of Students	Knows Lyrics	Participates Appropriately	Demonstrates Understanding of Concept	Recites Lyrics Individually	Teacher Comments
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						
23.						
24.						
25.						

Appendix B – Sites A, B, C

OBSERVATION CHECKLIST TALLY SHEET

Checklist 1	Checklist 2	Checklist 3

Appendix B, Sites (A) B, C

OBSERVATION CHECKLIST TALLY SHEET

	Checklist 1 Oct. 2	Checklist 2 Oct. 4	Checklist 3 Nov. 27
+	7	10	16
/	15	13	7
-	9	8	8
+	9	23	17
/	17	5	8
-	5	3	6
+	12	17	19
/	15	13	7
-	4	1	5
+	1	11	19
/	6	9	8
-	24	11	4

Comments

+	It is very difficult to mark a checklist of	
/	each child while they are singing. One-on-	
-	one is an easier + more accurate method.	
+		
/		
-		

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+ = Mastery / = Developing - = Needs Help

Appendix B – Sites A (B) C

OBSERVATION CHECKLIST TALLY SHEET

	Days of the Week Checklist 1	Time Checklist 2	Vowels + Blends Checklist 3
lyrics +	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 III = 28	𝍸 𝍸 𝍸 𝍸 𝍸 = 25	𝍸 𝍸 𝍸 𝍸 I = 26
lyrics /	0	III = 3	II = 2
lyrics —	0	0	0
understanding participates +	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 III = 28	𝍸 𝍸 𝍸 𝍸 IIII = 24	𝍸 𝍸 𝍸 𝍸 I
understanding participates /	0	IIII = 4	II = 2
understanding participates —	0	0	0
+	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 III = 28	𝍸 𝍸 𝍸 II = 17	𝍸 𝍸 𝍸 IIII = 19
/	0	𝍸 I = 11	𝍸 IIII = 9
—	0	0	0
+	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 III = 28	𝍸 𝍸 𝍸 I = 21	𝍸 𝍸 𝍸 IIII = 19
/	0	𝍸 II = 7	𝍸 IIII = 9
—	0	0	0
comments +	They all loved	They were not	The melody of
comments /	this song!	as enthusiatic	the blend song
comments —		about this song.	was to slow.

+ = mastery / = developing — = needs help

Appendix B _ Sites A, B, (C)

OBSERVATION CHECKLIST TALLY SHEET

	Checklist 1	Checklist 2	Checklist 3
	Multiplication facts	Prepositions	States
+	Mastery 73%	46%	42%
/	Developing 28%	48%	47%
−	Needs Help 5%	3%	5%
	Knows Lyrics		
+	𝍸 𝍸 𝍸	𝍸 𝍸 𝍸	𝍸
/	𝍸 ||||	𝍸 |||	𝍸 𝍸 ||||
−	|	|	||||
	Participates Appropriately		
+	𝍸 𝍸 𝍸 𝍸 ||||	𝍸 𝍸 |||	𝍸 𝍸 𝍸 ||
/	||	𝍸 𝍸 |	𝍸 ||
−			
	Demonstrates Understanding		
+	𝍸 𝍸 ||||	𝍸 ||||	𝍸 𝍸 𝍸 |
/	𝍸 |||	𝍸 𝍸 ||||	𝍸 ||
−	||||	|	|
	Recites lyrics Individually		
+	𝍸 𝍸 𝍸	𝍸 |||	|||
/	𝍸 ||||	𝍸 | 𝍸	𝍸 𝍸 𝍸 ||||
−	|	|	||

Totals

usLyrics	15	9	1	16	8	1	6	14	4
icipates	24	2	0	13	11	0	17	7	0
erstanding	19	8	4	9	14	1	16	7	1
ites	15	9	1	8	15	1	3	19	2

Appendix B Site A

RUBRIC

Student_____ What I Learned Through Songs

Scale / Criteria	1 No Progress	2 Some Progress	3 Average Progress	4 Excellent Progress	Score
Months of the Year	recites 0-1	recites 2-6	recites 7-11	recites all 12	
Days of the Week	recites 0-1	recites 2-3	recites 4-6	recites all 7	
Shapes	recalls 0	recalls 1-2	recalls 3	recalls 4	
Colors	reads 0-1	reads 2-3	reads 4-5	reads 6 or more	
Beginning Letter Sounds	knows 0-2	knows 3-4	knows 5-6	knows 7 or more	
Numbers 1-10	knows 0-2	knows 3-5	knows 6-9	knows all 10	

Comments:

Total Score: _____

Scale: _____

Appendix B Site B

RUBRIC

Student_____ What I Learned Through Songs

Scale / Criteria	1 No Progress	2 Some Progress	3 Average Progress	4 Excellent Progress	Score
Months of the Year	recites 0-4	recites 5-8	recites 9-11	recites all 12	
Days of the Week	recites 0-1	recites 2-3	recites 4-6	recites all 7	
Time	Can not tell time	can tell time to hour	can tell time to half hour	can tell time to quarter hour and minute	
Color Words	can spell no words	can spell 2-5 words	can spell 6-9 words	can spell all 10 words	
Vowels & Blends	recites 2 vowels 2 blends	recites 3 vowels 4 blends	recites 4 vowels 6 blends	recites 5 vowels 8 blends	
Columbus Day	recites no facts	recites 1 fact	recites 2-3 facts	knows all facts	

Comments:

Total Score: ____

Scale: _____

Appendix B Site C

RUBRIC

Student_____ What I Learned Through Songs

Scale / Criteria	1 No Progress	2 Some Progress	3 Average Progress	4 Excellent Progress	Score
Vocabulary	defines none	defines 1-2 each week	defines half of vocab list	knows all vocabulary words	
Times Tables	mastered none	mastered tables 1-5	mastered tables 6-10	mastered all facts	
U.S. States	knows none	knows 25 states	knows 40 states	knows all the states	
Cell Theory Facts	knows none	knows 1-3	knows 4-8	knows all cell facts	
Preposition Study	can identify none	knows 10-15	knows 15-20	identifies all prepositions	
Weather Facts	knows none	knows 2-3	knows 4-6	knows all weather facts	

Comments:

Total Score: ____

Scale: _____

Appendix B

Sites A, B, & C

RUBRIC TALLY SHEET
(Group Score Totals)

SITE A

	Rubric 1	Rubric 2	Rubric 3
Months of the Year			
Days of the Week			
Shapes			
Colors			
Beg. Letter Sounds			
Numbers 1-10			

SITE B

Months of the Year			
Days of the Week			
Colors			
Time			
Vowels/Blends			
Chris Columbus			

SITE C

Vocabulary			
Multiplication			
States			
Cell Theory			
Prepositions			
Weather			

Appendix C
Sites A, B, & C

RUBRIC TALLY SHEET
(Group Score Totals)

SITE A

	Rubric 1	Rubric 2	Rubric 3
Months of the Year			
Days of the Week			
Shapes	92%		
Colors 76%			
Beg. Letter Sounds			
Numbers 1-10		87%	

SITE B

Months of the Year 86%			
Days of the Week			
Colors	62%		
Time			
Vowels/Blends			
Chris. Columbus		82%	

SITE C

Vocabulary 89%			
Multiplication			
States			
Cell Theory	88%		
Prepositions			
Weather		84%	

Student Names

Appendix B
Pretest Comparison Sheet
Sites A, B, and C

Song 1	Song 2	Song 3	Song 4	Song 5	Song 6
Months	Days	Colors	Shapes	Numbers	Beg Let Snds
%	%	%	%	%	%
0	0	0	75	100	8
0	0	0	75	100	12
0	0	0	100	90	31
0	0	0	50	100	4
100	100	0	100	100	100
0	29	0	75	100	4
100	100	0	75	90	12
0	0	0	0	0	0
0	0	0	50	100	4
0	0	0	100	100	0
0	0	0	25	100	0
0	0	0	75	0	0
0	0	0	25	30	0
0	0	0	100	90	4
0	0	0	100	100	35
0	100	0	100	100	62
33	43	0	100	90	8
0	0	0	25	10	0
0	0	0	50	60	4
0	0	0	25	10	0
0	0	0	50	0	0
0	0	0	50	20	0
33	100	27	100	100	85
0	100	0	0	100	8
0	0	0	75	90	0
0	0	0	50	0	0
0	0	0	50	40	0
0	0	0	100	90	46
0	0	0	0	60	0
0	0	0	25	10	0
0	0	0	100	0	0
9%	18%	0.90%	62%	64%	14%
8.580645	18.45161	0.870968	62.09677	63.87097	13.77419355

Appendix B
Posttest Comparison Sheet
Sites (A), B, and C

Student Names

Song 1 Months	Song 2 Days	Song 3 Colors	Song 4 Shapes	Song 5 Numbers	Song 6 Beg Let Snds
%	%	%	%	%	%
67	57	40	100	100	88
100	100	60	75	100	100
100	100	90	100	100	96
100	100	90	100	100	100
100	100	100	100	100	100
67	100	40	100	100	81
100	100	50	100	100	54
8	100	20	25	0	0
100	100	80	100	100	88
100	100	70	100	100	85
100	100	30	100	100	92
33	100	40	75	100	88
100	100	30	50	80	42
100	67	40	100	100	54
100	100	50	100	100	100
100	100	70	100	100	100
100	100	60	100	100	92
17	29	50	100	80	38
8	0	60	100	100	69
83	100	40	100	30	27
100	100	10	100	90	77
0	14	60	75	20	38
100	100	100	100	100	100
100	100	60	100	100	85
100	100	60	100	100	54
8	57	30	100	20	62
8	57	30	100	50	27
67	100	100	100	100	92
100	100	20	100	100	65
0	0	0	0	10	0
17	57	40	100	20	15
Average Total					
90%	82%	51%	90%	81%	68%

Appendix B

Pre and Posttest Comparison Sheet
Sites A, B, and C

Student Names		Song 1 vocab		Song 2 multi		Song 3 states		Song 4 cell		Song 5 prep		Song 6 weather		Whole Test	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
		%		%		%		%		%		%		%	
Average	Totals														

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Appendix B

Pre and Posttest Comparison Sheet
Sites A, (B) and C

Student Names		Song 1		Song 2		Song 3		Song 4		Song 5		Song 6	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
		%		%		%		%		%		%	
		100	100	100	100	20	60	100	100	85	85	0	100
		92	100	100	100	70	90	100	100	100	100	20	100
		100	100	100	100	10	70	0	100	92	100	0	100
		100	100	100	100	30	100	100	100	62	100	0	100
		100	100	100	100	50	100	100	100	100	100	20	100
		0	100	0	100	0	60	8	100	0	100	0	100
		92	100	100	100	10	80	8	100	77	85	0	100
		100	100	100	100	30	90	100	100	77	100	0	100
		100	100	100	100	60	60	0	100	100	100	0	100
		100	100	100	100	30	100	100	100	100	100	0	100
		100	100	100	100	60	100	100	100	100	100	0	100
		100	100	100	100	70	70	100	100	31	100	0	100
		100	100	100	100	40	40	100	100	100	100	0	100
		0	100	58	100	10	90	0	100	8	100	0	100
		100	100	100	100	60	90	100	100	46	100	20	100
		0	100	0	100	0	40	0	100	23	85	0	80
		83	100	86	100	30	70	100	100	100	100	0	100
		0	100	100	100	10	30	100	100	31	69	0	100
		43	100	0	100	8	30	0	100	0	31	0	80
		92	100	100	100	20	90	100	100	15	77	0	100
		100	100	100	100	20	100	100	100	15	100	0	100
		0	86	100	92	20	80	0	100	0	69	0	80
		100	100	0	100	20	70	0	92	15	54	0	100
		100	100	100	100	10	40	100	100	31	62	0	100
		100	100	0	100	0	50	0	100	38	54	0	100
	Totals	100	100	100	100	10	40	0	100	92	100	0	100
		0	100	33	100	0	30	0	60	0	46	0	80
		0	100	33	100	0	30	0	60	0	46	0	80
Average	Totals	72	99	73	99	25	61	54	96	51	84	2	93

Appendix B
Pre and Posttest Comparison Sheet
Sites A, B, and C

Student Names	Song 1 vocab		Song 2 multi		Song 3 states		Song 4 cell		Song 5 prep		Song 6 weather	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
	%		%		%		%		%		%	
	50	100	90	97	26	100	5	95	35	85	50	87
	28	85	90	91	38	92	0	45	25	100	62	81
	57	100	95	98	44	100	10	100	75	90	100	100
	100	100	97	100	50	100	15	100	55	90	87	100
	100	100	94	96	56	82	20	100	40	90	75	100
	42	78	95	99	30	100	10	100	75	100	50	93
	35	100	97	99	26	100	0	100	20	95	31	81
	85	100	95	98	54	100	20	100	55	100	68	87
	42	100	94	98	26	100	0	100	5	95	68	87
	42	100	100	100	40	76	20	80	50	80	68	100
	78	85	93	100	64	100	20	90	25	95	81	100
	0	28	55	68	2	58	0	20	30	45	37	12
	71	85	98	100	38	100	5	80	20	60	68	81
	64	100	94	99	52	100	20	85	95	100	81	100
	50	85	98	100	42	100	25	90	40	80	100	100
	64	100	98	100	14	100	10	100	90	100	100	100
	14	78	77	98	48	100	5	90	15	90	62	87
	35	100	87	94	40	94	10	94	1	90	62	81
	28	71	79	90	20	90	5	35	0	60	6	18
	57	100	92	99	80	84	0	50	60	90	50	81
	14	57	70	99	76	96	10	65	25	70	25	68
	35	100	99	97	26	100	0	100	20	95	31	81
	71	100	96	99	58	100	5	90	35	85	81	75
	7	85	96	98	66	100	0	65	0	65	56	100
	64	100	98	100	82	100	55	75	55	75	75	93
Average Totals	50	77	91	96	44	94	10	80	37	80	63	80

Appendix C
Site A and B

Pre and Posttest: Teacher Made Assessment

Name_____Date_____

Recite: Days of the Week / Months of the Year

Teacher draws a line under last correct response.

Sunday
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday

Score_____

January
February
March
April
May
June
July
August
September
October
November
December

Score_____

Recognize/Spell: Color words correctly.

Circle correctly spelled words

Red
Blue
Green
Yellow
Purple
Pink
Orange
Brown
Black
White

Score_____

All responses scored as presented in classroom songs.

Appendix C

Site A

Pre and posttest Teacher Made Assessment

Name_____ Date_____

Correctly identify shapes by name.
Teacher will circle correct responses.




Score_____

Correctly verbalize letter sound for each letter shown.

A B C D E F G H I J K L M N

O P Q R S T U V W X Y Z

Score_____

Correctly identify and name numbers in order.

1 2 3 4 5 6 7 8 9 10

Score_____

Appendix C
Site A and B

Pre and Posttest: Teacher Made Assessment

Name_____Date_____

Recite: Days of the Week / Months of the Year

Teacher draws a line under last correct response.

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

Score_____

January

February

March

April

May

June

July

August

September

October

November

December

Score_____

Recognize/Spell: Color words correctly.

Circle correctly spelled words

Red

Blue

Green

Yellow

Purple

Pink

Orange

Brown

Black

White

Score_____

All responses scored as presented in classroom songs.

Appendix C

Site B

Pre and Posttest Teacher Made Assessment

Name_____ Date_____

Correctly demonstrate correct hour when requested.
Teacher circle correct responses.

12:00	1:00	2:00	3:00	4:00	5:00
6:00	7:00	8:00	9:00	10:00	11:00

Score_____

Correctly verbalize correct short vowel sound for each vowel letter shown.
Teacher circle correct responses.

a e i o u

Score_____

Correctly verbalize correct blend sound for each blend shown.

br cr dr fr gr pr sr tr

Score_____

Correctly answer the following questions.
Teacher will record child's answers.

Who discovered America? _____

What year did he do this? _____

What were the names of his three ships?

_____ _____ _____

Score_____

Appendix C

Site C

NAME _____

DATE _____

CELL THEORY PRETEST and POSTTEST

MATCH

1. cell	_____	A. controls the cell
2. Hooke	_____	B. skin that surrounds the cell
3. nucleus	_____	C. turns sugars into energy
4. nuclear membrane	_____	D. basic units of all organisms
5. cell membrane	_____	E. filled with H20 and carries food so cell will grow
6. cytoplasm	_____	F. scientist to first see cells in a microscope
7. ribosomes	_____	G. thick fluid around the cell
8. endoplasmic reticulum	_____	H. protects the cell
9. vacuole	_____	I. makes cell protein
10. mitochondria	_____	J. tube-like parts that serve as a track to carry things from the membrane through the cell

SCORE_____

Appendix C

CELL STRUCTURES

PRE and POSTTEST

Site C

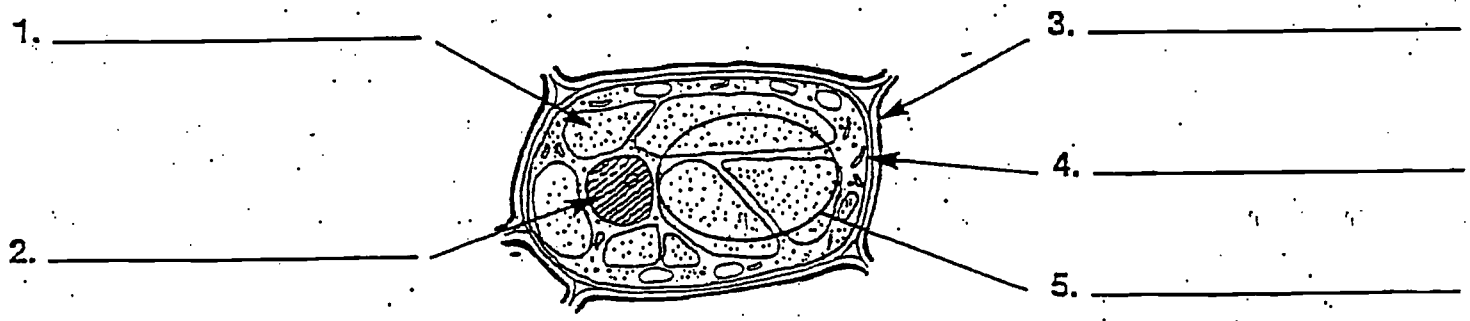
Cells are enclosed by a protective covering called a **membrane.** Everything entering or leaving a cell must pass through this membrane. Inside the membrane, cells are divided into **cytoplasm**, a watery, jellylike substance, and the **nucleus.** The nucleus controls the growth and reproduction of the cell.

In animal cells, the cytoplasm has **organelles** floating in it that take in food, distribute it, keep the cell healthy, and get rid of waste.

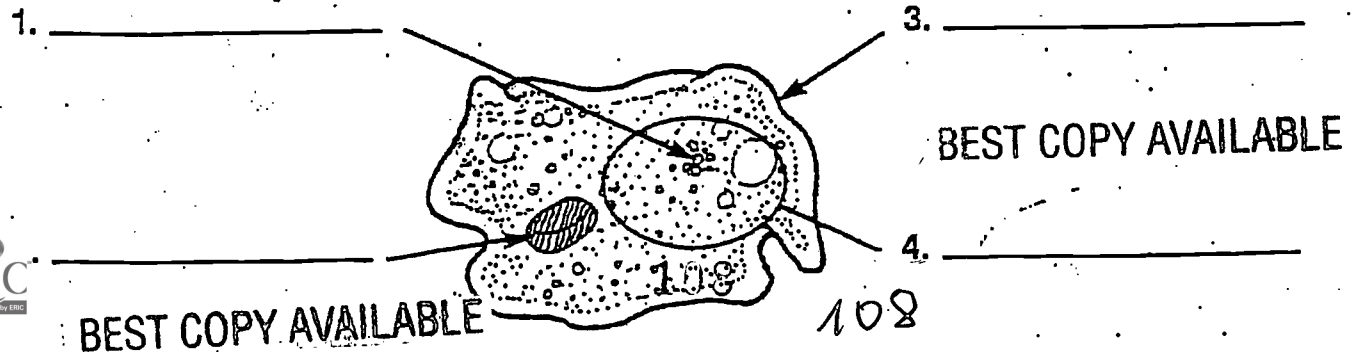
A plant cell has a **wall** around it. Inside the cytoplasm are **chloroplasts** that contain chlorophyll to give plants their green color.

ACTIVITY

Label the parts of a plant cell.



Label the parts of an animal cell.



Appendix C

PRETEST
POSTTEST
Site C

Basic-Facts Test

Multiplication Facts

Name _____

Find the products.

	A	B	C	D	E	F	G	H	I	J
1.	6 × 2	4 × 4	7 × 2	5 × 4	0 × 0	3 × 5	6 × 3	3 × 8	0 × 8	7 × 3
2.	5 × 5	6 × 4	3 × 9	8 × 3	6 × 5	0 × 1	3 × 6	8 × 2	7 × 5	6 × 0
3.	8 × 4	3 × 7	1 × 6	7 × 6	9 × 2	4 × 8	4 × 6	9 × 3	4 × 7	5 × 0
4.	0 × 3	5 × 8	9 × 4	5 × 7	2 × 1	9 × 5	5 × 6	1 × 5	5 × 9	9 × 8
5.	7 × 7	7 × 9	8 × 8	6 × 6	8 × 7	1 × 2	9 × 6	9 × 9	8 × 6	1 × 9
6.	9 × 1	2 × 5	1 × 1	3 × 4	3 × 0	1 × 3	8 × 0	8 × 1	0 × 9	8 × 9
7.	9 × 0	5 × 1	3 × 2	4 × 0	2 × 2	7 × 1	6 × 8	2 × 6	6 × 7	0 × 5
8.	8 × 5	4 × 1	2 × 8	9 × 7	0 × 6	1 × 7	2 × 9	7 × 4	0 × 2	6 × 9
9.	1 × 0	5 × 2	3 × 3	2 × 4	4 × 9	7 × 0	4 × 2	4 × 3	1 × 4	2 × 3
10.	0 × 7	6 × 1	7 × 8	5 × 3	2 × 7	1 × 8	4 × 5	0 × 4	3 × 1	2 × 0

Appendix C

Site C

NAME _____

DATE _____

WEATHER PRE and POSTTEST

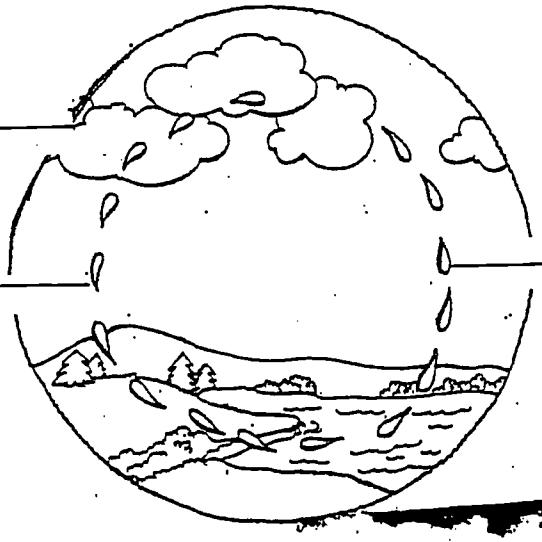
Directions: Label the water cycle using the vocabulary words.

condensation **evaporation** **precipitation**

A. _____

B. _____

C. _____



Match the cloud name to the picture.

1. cirrus cloud _____
2. stratus cloud _____
3. cumulus cloud_____

A.

B.

C.

WEATHER (pretest) (posttest)

MATCH

1. air pressure _____
2. blizzard _____
3. climate _____
4. forecast _____
5. global warming _____
6. greenhouse effect_____
7. hurricane _____
8. lightning _____
9. tornado _____
10 water cycle _____

A. a giant tropical storm

B. the process by which all the water on earth is recycled

C. a warming of climates around the world

D. a severe winter storm

E. a process of trapping heat

F. a small, severe storm that spirals

G. average weather conditions over a long time

H. a prediction of future weather

I. the force with which air pushes down on the earth

J. a huge electrical spark that jumps between clouds or to the ground

Appendix C

Site C

NAME _____

DATE _____

FIFTY STATES PRE and POST TEST

Directions: Oral conference test. Teacher will check off states student is able to recite.

1. Alabama _____
2. Alaska _____
3. Arizona _____
4. Arkansas _____
5. California _____
6. Colorado _____
7. Connecticut _____
8. Delaware _____
9. Florida _____
10. Georgia _____
11. Hawaii _____
12. Idaho _____
13. Illinois _____
14. Indiana _____
15. Iowa _____
16. Kansas _____
17. Kentucky _____
18. Louisiana _____
19. Maine _____
20. Massachusetts _____
21 Maryland _____
22. Michigan _____
23 Minnesota _____
24. Mississippi _____
25. Missouri _____
26. Montana _____
27. Nebraska _____
28. Nevada _____
29. North Carolina _____
30. North Dakota _____
31. New Hampshire _____
32. New Jersey _____
33. New Mexico _____
34. New York _____
35. Ohio _____
36. Oklahoma _____
37. Oregon _____
38. Pennsylvania _____
39. Rhode Island _____
40 South Dakota _____
41 South Dakota _____
42 Tennessee _____
43. Texas _____
44. Utah _____
45. Vermont _____
46. Virginia _____
47. Washington _____
48. West Virginia _____
49. Wisconsin _____
50. Wyoming _____

SCORE _____

Appendix C

Site C

NAME _____

DATE _____

VOCABULARY PRE and POSTTEST

MATCH

1. crimson	_____	A. a many-sided figure
2. preview	_____	B. a person who writes about the quality of a book or movie
3. entangle	_____	C. to bring "into" a country
4. misconduct	_____	D. the central part of a cell
5. respectful	_____	E. part of a line
6. reviewer	_____	F. an introduction section of a book
7. hazardous	_____	G. deep red
8. segment	_____	H. to take "out" of a country
9. polygon	_____	I. risky, dangerous
10. outcome	_____	J. wrong behavior
11 preface	_____	K. caught
12. import	_____	L. seeing something beforehand
13. export	_____	M. shows respect, honor
14. nucleus	_____	N. the end result

SCORE_____

Appendix C

NAME _____

Site C

DATE _____

PREPOSITION PRE and POSTTEST

Directions: Circle all the preposition words in the paragraph.

We heard some strange noises beneath us. Who else was in the old house? The wind whistled outside the house. Susie ran through the dark hall. I followed behind her. Susie climbed up the wide stairway. I was scared, but I climbed with her. We walked past some old portraits. The faces in the portraits watched us. I felt their eyes on my back. Susie and I walked through the hallway. Susie went inside a large bedroom. I followed behind her. I saw something move near the window. A sparrow flew inside the window. The bird landed on a chair. Susie and I ran down the stairs. We heard noises in the basement. Five noisy cats ran past us. We Turned around and studied the house. I thought I saw a light. Susie and I ran and didn't look back!

SCORE _____

Appendix D
Learning Reflection

Reflection Journal

Name_____Date_____

Topic_____

(draw a picture or write about it)

Something I liked:

Something I learned:

Something I want to know more about:

Appendix D
Student Reflection

Name_____

Journal Prompts:

Select a journal prompt for today's activity. Use a prompt only once.

1. My favorite part of the song activity today was...
2. This song made me think of....
3. Everyone laughed when the music....
4. Our group worked well today because the music...
5. The music today helped me relax because....
6. The soft music helped me focus on my work during...
7. The music activity made me imagine wonderful things to draw like...
8. I was angry, but the music today made me feel better because...
9. Moving to the beat of the music....
10. This song_____helped me memorize my facts like....
11. I was tired, but the music activity changed my day by.....
12. I used headphones today when listening to...
13. Today's music activity made me excited to...
14. The song today was powerful because....
15. I learned to like different kinds of music because...
16. The music today helped me do my best work in...
17. The music filled my brain like a thinking cap and helped me focus when...

Appendix E

SAINT XAVIER UNIVERSITY

Institutional Review Board

Consent to Participate in a Research Study
Music Enhances Memory

Dear Parent or Guardian,

I am currently enrolled in a master's degree program at Saint Xavier University. This program requires me to design and implement a project on an issue that directly affects my instruction. I have chosen to examine the enhancement of learning through music.

The purpose of this project is to strengthen students' academic performance in all subject areas using the multiple intelligences with a focus on the musical rhythmic intelligence. It will help your student strengthen their academic performance in all areas of the Second Grade curriculum.

I will be conducting my project from September 10, 2001 through December 7,2001. The activities related to the project will take place during regular instructional delivery. The gathering of information for my project during these activities offers no risks of any kind to your child.

Your permission allows me to include your student in the reporting of information for my project. All information gathered will be kept completely confidential, and information included in the project report will be grouped so that no individual can be identified. The report will be used to share what I have learned as a result of this project with other professionals in the field of education.

Participation in this study is completely voluntary. You may choose to withdraw from the study at any time. If you choose not to participate, information gathered about your student will not be included in the report.

If you have any questions or would like further information about my project, please contact me at (708) 795-2349.

If you agree to have your student participate in the project, please sign the attached statement and return it to me. I will be happy to provide you with a copy of the statement if you wish.

Sincerely,

PLEASE RETURN THE ATTACHED STATEMENT TO ME BY SEPTEMBER 4, 2001.

3700 West 103rd Street • Chicago, Illinois • (773) 298-3000 • FAX (773) 779-9061

Appendix E

SAINT·XAVIER·UNIVERSITY

Institutional Review Board

Consent to Participate in a Research Study
MUSIC ENHANCES MEMORY

I, _____, the parent/legal guardian of the minor named below, acknowledge that the researcher has explained to me the purpose of this research, identified any risks involved, and offered to answer any questions I may have about the nature of my child's participation. I freely and voluntarily consent to my child's participation in this project. I understand all information gathered during this project will be completely confidential. I also understand that I may keep a copy of this consent form for my own information.

NAME OF MINOR: _____

_____ _____
Signature of Parent/Legal Guardian Date

3700 West 103rd Street • Chicago, Illinois • (773) 298-3000 • FAX (773) 779-9061

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