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The effects of range of notes, gender, and songs with text or without text on the vocal accuracy of first, second and third grade students

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THE EFFECTS OF RANGE OF NOTES, GENDER, AND SONGS WITH TEXT OR WITHOUT TEXT ON THE VOCAL ACCURACY OF FIRST, SECOND AND THIRD GRADE STUDENTS

by
Nancy J. Hanna

A Thesis

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ABSTRACT

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The Effects of Range of Notes, Gender, and Songs
With Text or Without Text on the Vocal Accuracy
of First, Second, and Third Grade Students

1999

Thesis Advisor: Dr. Lili Levinowitz

Master of Arts: Subject Matter Teaching Music

Graduate Division of Rowan University of New Jersey

There are four problems that address the effects of range of notes, gender, and songs with text or without text on the vocal accuracy of first, second and third grade students.

Thirty students from each grades one, two and three were recorded singing four songs in solo. Each student sang a song with a restricted range of notes with text and then on the neutral syllable "loo." Each student then sang a song with a wide range of notes with text and then on the neutral syllable "loo." The recordings of the students singing were then evaluated for accuracy of pitch and tonal quality by two judges.

The results of the study indicate that children sing songs with a limited range of notes more accurately and with a better tonal quality than they sing

songs with a wider range of notes. Additionally, students sing songs with the original song text better than they sing songs with the neutral syllable "loo". Results also indicate that children in grade three sing better than children in grade one. For only one of the problems did the results indicate that children in grade three also sing better than children in grade two. Finally, the results indicate that girls sing more accuarately and with a better tonal quality than boys.

MINI-ABSTRACT

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To my mother who had the wisdom to introduce me to music at a very young age and to my father who supported my interest in music.

And to both of my loving parents, thank you for your unfailing support, guidance and love. Thank you for all of the many sacrifices that you have made over the years to help me to reach my goals. Thank you for encouraging my dreams and for helping me to believe that I could accomplish any goal that I set for myself.

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CHAPTER I

INTRODUCTION

When planning lessons for the elementary music class, a music educator may choose from a variety of activities including singing, playing instruments, listening lessons, lessons focusing on music history or theory and movement activities. Considering this wide range of activities and often a limited amount of time to spend teaching children, it is important for the music educator to decide which activities are most important and focus on those activities. This author believes that while all of these activities have value for students, singing and the developement of the children's singing voice is the most important activity. Singing should be the activity from which all of the others grow.

Singing is the most accessible form of active participation in music for most individuals. Opportunities to participate in music through singing pervade our culture. Individuals have opportunities to sing at sporting events, religious services, family and social gatherings, and community choirs. Developing confident singers who feel comfortable participating in music throughout their lives does not happen by chance. It is the elementary school music teacher who may have the best opportunity to influence how children will view singing as they grow into adults. It is disappointing to hear adults comment that when growing up, their music teacher instructed them not to sing, but to just "mouth" the words to a song because of difficulties the student had in producing a good

vocal tone. These are individuals who do not feel comfortable singing as adults because they were discouraged at a young age. It seems only logical to believe that our job as educators is to remediate the vocal problems that cause children to have difficulty singing, not to simply ask that they not sing. By remediating these problems and instructing children in how to develop good vocal technique, we open doors to children that can impact them throughout their entire lives. Zoltan Kodaly said "A grown-up person will in any case sing differently if he has the opportunity to preserve the fervent enthusiasm of singing from his childhood. And the child will remember and understand that without conscientious work there are not results." [1]

Further, Kodaly believed that developing an audience for good music begins at an early age. He believed that if one is to appreciate listening to good music, he needs to experience creating good music first. Kodaly believed that all music education grew out of singing. "The belief that instruments are not necessary and counterproductive in the music education of young children, that the best possible instrument for instruction is the child's own unaccompanied voice is an astonshing one and one that made the possibility of public music education suddenly more accessible.[2]

Developing good singing voices in young children has far reaching consequences. "Research supports the conclusion that the music ear develops best when singing is an integral part of both vocal and instrumental music instruction."[3] Therefore, when the singing voice is developed, we are opening up doors to experiencing and enjoying music in many ways.

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[1] Zoltan Kodaly. *The Selected Writings of Zoltan Kodaly,* (New York: Boosey and Hawkes, 1974) , p.18

[2] Lois Choksy. *The Kodaly Method,* (Upper Saddle River, NJ: Prentice Hall, 1999), p. 16

[3] Betty Bertaux, "Teaching Children of All Ages to Use the Singing Voice, and How to Work With Out-Of-Tune Singers," in *Readings in Music Learning Theory.* Edited by E. Gordon (Chicago: GIA, 1989), p.92

Music educators also need to be aware that the singing voice is a unique aspect of each child that should be developed. Each child has a singing voice as unique as their own fingerprint. This unique aspect of each child should be encouraged and developed in the music classroom.

Once one is convinced that singing and developing good vocal sound is an integral part of the music curriculum, one needs to begin to investigate how we can best go about developing a good vocal sound. What activities need to be included and foused on to meet this goal? What kind of music needs to be included in the curriculum to achieve this goal? At what age is it reasonable to begin specific instruction in vocal technique? Many researchers have investigated the problem of how to best instruct children in the use of the singing voice. Since the music educator has limited time in which to instruct children, it is imperative to look at this research so that lessons can be planned in a most efficient and effective manner to meet the goal of improving the vocal quality of children.

British researcher Graham Welch has described a sequence of five stages that characterize the singing voices of young children.[4] The stages described are developmental although particular ages at which children may be expected to achieve these developments are not indicated by Welch. The research conducted to establish this scale has included children who would be in Kindergarten or First grade in the American school system.

An American researcher, Joanne Rutkowski, has also established a developmental scale to describe and evaluate the singing voices of children.[5] Her scale also indicates characteristics of children's singing voices in a

[4] Graham Welch, *"A Developmental View of Children's Singing"*, British Journal of Music Education, 3, no. 3,1986: p.300

[5] Joanne Rutkowski, *"The Measurement and Evaluation of Children's Singing Voice Development"*, The Quarterly, 1, no. 1 and 2, 1990: p.85

developmental sequence. In addition, the Rutkowski scale also considers particular pitch ranges that children are able to demonstrate with their singing voices. Again, though, particular ages at which one can expect to find theses characteristics are not suggested.

Nancy Cooper has investigated the developmental aspect of children's voices related to age. Cooper has found that while older students sing more accurately than younger students, improvement in vocal sound does not necessarily occur in a predictable, developmental pattern.[6] Phillips recommends that instruction in vocal technique begin at the first grade level.[7] Knowledge of competencies that children are able to demonstrate at particular ages can help a teacher to direct instruction for students.

The process of how children learn to sing is another important consideration for the music educator. Mary Goetze found that young children sing more accurately in solo than in groups of other children.[8] She has suggested that children who sing well in solo are unable to monitor their own voices when singing with others and therefore are less accurate when singing with groups of children. Including solo singing in the classroom therefore can be an important consideration for the elementary music specialist. Futher support for including solo singing in the music class can be found in "Goals 2000: Educate America Act",[9] which includes singing independently as a basic competence for elementary school children.

Materials used when teaching young children also are an important

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[6] Nancy Cooper, "*Children's Singing Accuracy as a Function of Grade Level, Gender, and Individual versus Unison Singing",* Journal of Research in Music Education, 43, no. 3 (1995): p.229

[7] Kenneth Phillips, *Teaching Kids to Sing, (*New York: Schirmer Books, 1992), p.72

[8] Mary Goetze, *"A Comparison of the Pitch Accuracy of Group and Individual Singing in Young Children",* Bulletin of the Council For Research in Music Education, 99, (1989):p.57

[9] Music Educators National Conference, *The School Music Program, A New VIsion* (Reston, VA: Music Educators National Conference, 1994) p.13

consideration when planning lessons. Goetze found that students may sing more accurately on a neutral syllable than when using text.[10] This diffference was found to be more pronounced with younger students than with students in the third grade. Reiko Hata has investigated the melodic ranges of notes found ins songs in a popular music series published in the United States.[11] Her research indicates that the majority of songs presented in these textbooks contain ranges of notes of sixths, sevenths, and eighths. These may not be the best teaching tools for students. Kodaly has suggested that "The range in which a young child can sing songs comfortably and correctly is limited usually encompassing not more than five or six tones".[12] Rutkowski also investigated the effectiveness of singing limited range songs and found that there was no advantage with kindergarten children.[13]

PURPOSE AND PROBLEM

The purpose of this study is to determine specific ways for improving the quality of children's singing voices in students in grades one, two, and three. Specifically:

1. If there are differences during the three early elementary years in children's singing performance of a limited versus a wide range song.

2. If there are differences during the three early elementary years in

[10] Mary Goetze, *"Factors Affecting Accuracy in Children's Singing,"* Ph.D. dissertation (University of Colorado, 1985) p. 123

[11] Reiko Hata, *"Japanese Children's Singing Ability and Songs Used as Teaching Materials, "* International Music Education Yearbook, 14, (1987), p.77

[12] Lois Choksy, *The Kodaly Method.* (Upper Saddle River, NJ: Prentice Hall, 1999) p.155

[13] Joanne Rutkowski, *The Effect of Restricted Song Range on Kindergarten Children's Use of Singing Voice and Developmental Music Aptitude"*, Ph.D. dissertation (State University of New York at Buffalo, 1986) p.227

children's singing performance of songs with and without words

3. If there are differences among the singing performance of children when they sing a song with and without words and limited and wide range of notes.

4. If gender differences in singing performance exist.

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CHAPTER II

RELATED RESEARCH

Goetze Study [1]

Mary Goetze conducted a research study and reported her findings in her doctoral dissertation "Factors Affecting Accuracy in Children's Singing." The study conducted in 1985 was designed to examine if young students sing more accurately in solo or in groups, and if students sing more accurately using song text or a neutral syllable. Her reasons for conducting this research were similar to this author's. She saw the impact of early singing experiences on an individual's feelings about singing in adulthood. Additionally, she wanted to find ways of best developing the singing voices of young children.

The specific problems used to guide this study were as follows:

1. Does individual singing versus singing in unison affect vocal accuracy over various grade levels?

2. Does singing in solo versus singing in unison affect vocal accuracy in girls and boys differently?

3. Do some children sing accurately in unison while others sing more accurately in solo?

4. Does singing on the neutral syllable "loo" affect vocal accuracy differently in children at different grade levels?

5. Does singing on the neutral syllable "loo" affect vocal accuracy differently in boys and girls?

[1] Goetze, M., *"Factors Affecting Accuracy in Children's Singing,"* Ph.D. dissertation (University of Colorado, 1985)

6. Do some children sing more accurately on "loo" while others sing more accurately with text?

The subjects selected for the study consisted of 165 students from kindergarten, first and third grade. To eliminate the influence of socioeconomic status, teaching styles and musical background of subjects on the results of the study, the students were selected from three different schools. All of the students received music instruction once or twice each week, although not all students received music instruction from a music specialist. The students were recorded singing under four conditions including singing individually with text, singing individually on the neutral syllable "loo," singing in a group with text and singing in a group on the neutral syllable "loo." The students sang songs that were introduced to them at the time that the data was collected, although the songs used intervals that were used in song material that the students previously learned and therefore were familiar to the students. The song material used for data collection was specifically selected to include a small range of notes, consisting of seconds and thirds. Additionally, the researcher selected song material using descending thirds, as those intervals have been found by previous research to be more easily sung by students. The subjects were asked to sing in the key of D with notes no higher than A1 (for the purpose of this study, A1 is the A above middle C on the piano keyboard).

The students were recorded using a Visipitch, an instrument that has the ability to translate sound into pictures that show the accuracy of the pitch. The results were evaluated considering accuracy of pitch and how closely each subject was able to match the melodic contour of the phrase of notes.

The results of the study indicated:

1. That students sang more accurately considering matching pitch and

following the contour of the line when singing individually than in unison.

2. That students were able to match pitch most accurately when using a neutral syllable.

3. The most accurate singing was demonstrated when students sang individually using the neutral syllable "loo."

4. The most significant benefit of singing with a neutral syllable was found with kindergarten students.

5. Generally, third grade students sang more accurately than other students in the study.

6. That girls were found to sing more accurately than boys

7. That boys were found to be more affected by the presence of other voices than girls.

In the current study, the students will be asked to sing individually and the question of vocal accuracy in groups versus individual singing is not a consideration.

The question of singing on a neutral syllable versus text and its effect on vocal accuracy will continue to be investigated in this study. Further, the question of limited versus a more extended range of notes will be a consideration for the current study. In the Goetze study, it is assumed that children sing more accurately when singing songs with notes limited to the range of seconds and thirds. The current study will include songs with ranges up to an octave.

A further difference between the current study and the Goetze study will be the evaluation tool used to assess the students' singing. The current study will use an evaluation tool consisting of a five point rating scale. While the scale considers pitch accuracy, it also considers the quality of the sound produced by the subject. Like the Goetze study, melodic contour is also a component of the

scale being used in this study.

The age of the students in the current study also differs slightly from the Goetze study. The current study will consider singing in students from three consecutive grades, first, second and third grades while the Goetze study was comprised of a non sequential group of students beginning in kindergarten and going up to third grade.

Unlike the Goetze study, the students included in the sample population all come from the same elementary school where they receive music instruction once a week from the researcher who conducted the study. The songs included in the study are familiar to the students as they are drawn from classroom material used during regular music classes. Gender differences will also be considered in the current study as they were in the Goetze study.

Cooper Study [2]

Another researcher who is interested in vocal development in young children is Nancy Cooper. Cooper conducted a research study to determine if children sing more accurately in solo or in unison. The same study was designed to find differences in vocal accuracy across grade level and gender. Her study differed from others that examined similar problems in that she included students of a wider age range than previous studies.

The sample population for this study consisted of 169 first through fifth grade students. All of the students came from the same urban elementary school. The students at the school received music instruction once each week from a music specialist.

The students were asked to sing a five note pattern having a range of

[2] Cooper, N., *"Children's Singing Accuracy as a Function of Grade Level, Gender, and Individual versus Unison Singing"*, Journal of Research in Music Education, 43, no. 3, (1995)

C#4 to F#4 (for purposes of this study C4 was considered middle C on the piano keyboard). This limited range of notes was selected specifically to fall below the register shift into the child's head voice since it was determined that some children have not learned to negotiate the shift into the head voice. The same melodic pattern was used for both the individual and unison singing. The students listened to a tape of a pattern sung by a child. The students were then asked to sing the phrase as an echo. The students were then asked to sing the same phrase with the recording. Half of the students performed the individual task first and half of the students performed the unison task first.

The subjects' responses were analyzed using a Visipitch, the same instrument used in the Goetze study. The instrument allows the sounds of the subject voices to be analyzed for accuracy and reported in frequency (in Hertz).

The results of this study found the following:

1. That various levels of singing accuracy may be found across grade level. A variety of singing abilities from highly accurate to highly inaccurate may be found in any given class.

2. While older students, (those in fourth and fifth grade for purposes of this study) generally sing more accurately than younger students, improvement does not occur in a predictable pattern.

3. No significant differences in accuracy of singing were found between boys and girls. Cooper suggests that differences in vocal accuracy between boys and girls that music teachers may observe may be attributed to other factors such as peer pressure, motivation and control of the vocal mechanism.

While the Cooper study investigated vocal accuracy in group versus individual singing which is not a consideration in the present study, the Cooper study has significance for the present study in other areas. While Cooper found no significant differences in vocal accuracy regarding gender, gender differences will be considered in the present study. All subjects for the present study will be from the same elementary school where they receive music

instruction once each week, as is the case in the study by Cooper.

Vocal accuracy in singing will be considered when using a neutral syllable and also text, while the Cooper study considered only vocal accuracy when using a neutral syllable. Additionally, the examples that the students will be asked to sing are longer than the four note patterns used by Cooper. While Cooper used patterns that were introduced to the subjects at the time of data collection, the present study will be using song material that is familiar to the students. Also, the songs for the present study will include notes that occur above the "lift" of a child's voice, considered to be around G4 or A4 (middle C being C4).

The age range for the current study is more limited than the Cooper study. Cooper designed her study to include students from first grade up to fifth grade. The current study will consider students in first, second and third grade only.

Another major difference between the current study and the study by Cooper will be the evaluation tool used. While Cooper used the Visi-pitch which may be considered a more "quantitative" evaluation tool, the current study will use a five point scale with points being assigned to the subject's singing by two judges. The five point scale used considers vocal quality along with pitch accuracy. This tool is a more usable one than the Visipitch in real classroom situations.

Rutkowski Study [3]

Joanne Rutkowski conducted a study to determine the appropriateness of song repertoire in traditional music textbook series. Specifically she wanted

[3] Rutkowski, J., *"The Effect of Restricted Song Range on Kindergarent Children's use of Singing Voice and Developmental Music Aptitude"*, Ph. D. Dissertation (State University of New York at Buffalo, 1986)

to determine if the range of notes in songs in these textbooks had an impact on the child's use of the singing voice. Additionally, she was investigating the impact of range of notes in songs learned on a child's developmental music aptitude.

Rukowski's specific problems were as follows:

1. To examine the effectiveness of two modes of instruction on kindergarten children's singing voice achievement and developmental music aptitude over a period of time.

2. To determine if gender differences exist between use of the singing voice and developmental music aptitude.

3. To determine the effectiveness of the two modes of instruction on each gender.

4. To determine if teacher differences play a role in the effectiveness of the two modes of instruction being investigated.

5. To determine the nature of the relationship between kindergarten children's use of the singing voice and developmental music aptitude prior to instruction and immediately following the instructional period.

Since only the first three problems indicated above have relevance to the current study, the last two problems will not be discussed here.

Rutkowski's study subjects included six classes of Kindergarten children from the same community. These students received music instruction once a week for thirty minutes from a music specialist for fifteen weeks. Three music teachers participated in the study with each music teacher instructing two classes. Each of the two classes taught by the teachers received different treatments. One class was taught only songs that used a restricted range of notes while the other class was taught songs with ranges of notes found in a popular music series textbook. A control group from a different school in the same community was also included in the study. The control group did not

receive music instruction from a music specialist. At the end of the fifteen week time period, the students' singing was evaluated. The results of this study indicated the following:

1. No significant differences in singing were found between the control group and the treatment groups.

2. No significant differences in singing were found between the treatment groups.

3. No significant differences in singing were found between gender among the groups.

4. A significant interaction was found between treatment groups and teacher.

Rutkowski interpreted these results to indicate that music instruction once a week for 30 minutes over a fifteen week period may not be sufficient for Kindergarten children. Additionally, she concluded that the curriculum that was used during the study may be ineffective. Rutkowski also concluded that teacher behaviors and attitudes have a significant effect on children's singing achievement.

The current study will be investigating the relationship between gender and singing achievement as did the Rutkowski study. Additionally, the questions of range of notes in song material used in the music class and its impact on singing achievement will be investigated. However, it should be noted that the definition of limited versus extended range of notes differs in the current study from the Rutkowski study. For purposes of her study, Rutkowski determined limited range to be songs with a range not exceeding C3 to B3 and a tessitura not exceeding D3 to A3. In the current study, limited range is determined to be songs with ranges of not more than a fourth. Extended range is defined as having notes of up to one octave. Unlike the experimental

procedures used by Rutkowski, all students participating in the current study have been taught songs of both a limited range of notes and an extended range of notes during their regular music classes.

While the songs defined as having limited range in the Rutkowski study generally fell below the "break" in a child's voice (commonly thought to occur around G4 or A4 with middle C being C4), the songs used in the current study were purposefully pitched to include notes that go above the break in a child's voice.

While the Rutkowski study concluded that teacher behavior and attitudes impacts on singing achievement, that aspect of her study will not be replicated in the current study. Again, unlike the experimental procedures of Rutkowski, students in the current study receive music instruction from the same music teacher once each week for 40 minutes, a longer period than those students included in the Rutkowski study. It should be noted that unlike all of the music teachers in the Rutkowski study, the music teacher conducting the current study believes strongly that singing can be taught to children and this is a major focus of lessons included in this teacher's curriculum.

The current study will also determine differences in singing achievement among a wider range of ages. While the Rutkowski study investigated singing achievement among Kindergarten children, the current study will investigate singing achievement in students in First, Second and Third grades.

In the current study, a random sample of children will be selected to represent the total population. While Rutkowski evaluated all children included in the experimental groups of her study, 30 children from each grades one, two and three will be evaluated for the current study. The assessment tool used in the current study will consider vocal quality of the subjects, unlike the Rutkowski

scale which considers only accuracy of pitch.

CHAPTER III

DESIGN AND PROCEDURES

PROCEDURES

Ninety students from a suburban elementary school in southern New Jersey were selected to participate in the study. Students from this school come from middle to upper middle class families. Thirty children from each grades one, two and three were randomly selected from 15 different classes. Fifteen students from each grade were boys and fifteen students were girls. A letter was sent home to the parents of those children who were selected explaining the project and asking for permission from the parents to include their child in the study. Only children who returned a signed permission form were included in the study. Each child included in the study received music instruction for forty minutes each week with the researcher conducting the study.

Data collection was conducted during the investigator's planning and lunch times. Most of these times coincided with the students lunch times although in some cases students were taken out of their class for the taping procedure. The students who were randomly selected came into a room with the investigator and no more than eight other students from the same grade. The students were all familiar with the other students as most of the time they were from the same class. In cases where students did not come to the room with their classmates, the students recognized each other from other school

activities. It was explained to the students that they were singing to help their teacher with a project that she was working on for a class that she was attending. The students were told that it was important for them to sing with their very best singing voice during the taping. Additionally, the students were reminded that what they were being asked to do was no different than what they do during the regular music class as students participate in solo singing on a regular basis during their music classes. Also, the students were told that they would be identified by only a number on the tape. It should be noted that many different emotions were displayed by students during the taping procedure ranging from confidence, excitement and enthusiasm to hesitancy and a slight degree of nervousness. Efforts were made to assure children that this was not a test or a situation meant to cause anxiety. In cases where students appeared especially nervous, other students of the group were allowed to sing first in an effort to relieve any anxiety. Each child was asked to sing four familiar songs. The songs had been sung during several music classes in weeks immediately prior to the data collection so that all students were familiar with the songs. Each child sang all four songs in succession while the other students in the room observed and listened quietly. Each child was able to determine the order in which he/she would sing the songs by randomly selecting pieces of paper that had the names of the songs written on them. The songs sung by each child included "Ten in a Bed" which has a range of an octave and "Good King Leopold" which has the range of a fourth. Each child sang each song on the familiar text and also using the neutral syllable "loo". Before singing each song, the children were given the first two starting pitches using resonator bells. After singing each song, the students were praised by the investigator.

It should be noted that many students were disappointed that their names were not selected for participation and that did not have the opportunity to participate in the study. One student commented during the taping "this is fun, I like singing these songs."

After the taping of the 90 participants was completed, the tapes were listened to by two evaluators, one being the teacher who conducted the study. The tapes were evaluated using a five point scale that considered pitch accuracy as well as vocal quality. The combined rating from the two judges served as the criterion.

DESIGN AND ANALYSIS

For all four problems, the data were organized into designs for differences as follows: for problem one, the data were separated by grade and by range, for problem two by grade and song, for problem three, all students were separated by song range and text and for problem four all data were separated by gender.

For problem one, a two way ANOVA (song range x grade) with repeated measures on the song range factor was calculated. A two way ANOVA (grade x text) was calculated on the combined scores from the restricted range and wide range songs from both judges. Similarly, for problem three, a two way ANOVA (text x range) was performed on the data combined by grade.

Finally, for the last problem, a one way ANOVA was performed on the combined scores from both judges from all songs separated by gender. In all problems, the .05 level of confidence was set as the criterion.

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CHAPTER IV

RESULTS AND INTERPRETATIONS

Interjudge reliabilities. The interjudge reliabilites are .797, .727, .805, .691 for the restricted range song with text, restricted range without text, wide range with text and wide range without text, respectively.

Problem 1: Means, Standard Deviations and ANOVA summary data are presented in Table 1. Both the grade and song main effects were statistically significant. Children performed a restricted range song better than a song with a wide range of notes. A post hoc test on the grade level main effect revealed that there is a difference in the singing performance of students in grade one and three.

MEANS, STANDARD DEVIATIONS AND ANOVA SUMMARY DATA FOR RESTRICTED RANGE AND WIDE RANGE SONGS

Table 1.

N	Grade	Restricted Range	SD	Wide Range	SD
31	1	12.452	4.538	11.484	3.714
34	2	14.941	4.163	13.000	4.068
36	3	15.972	3.676	13.944	4.302

ANALYSIS OF VARIANCE

Source	Sum of Squares	DF	Mean-Square	F-Ratio
Between Subjects				
Grade	305.016	2	152.508	4.865*
Error	3072.252	98	31.350	
Within Subjects				
Song	136.230	1	136.230	67.457
SongxGrade	11.198	2	5.599	2.772
Error	197.911	98	2.020	

*p<.05

Problem 2: Means, Standard Deviations and ANOVA summary data are presented in Table 2. A statistically significant difference was found for grade only. Neither the interaction or song factor revealed statistically significant differences. A post hoc test showed that there is a difference in the singing performance of first and second grade students and there is a difference in the singing performance of first and third grade students.

Table 2.

MEANS, STANDARD DEVIATIONS AND ANOVA SUMMARY DATA BY GRADE FOR SONGS WITH WORDS AND WITHOUT WORDS

N	Grade	Song with words	SD	Song without words	SD
31	1	11.161	4.375	12.871	4.105
34	2	14.029	4.502	13.912	3.841
36	3	14.639	4.072	15.278	3.859

ANALYSIS OF VARIANCE

Source	Sum of Squares	DF	Mean-Square	F-Ratio
Grade	294.675	2	147.338	8.654*
Song	27.821	1	27.821	1.634*
GradeXSong	27.226	2	13.613	0.800

*p<.05

Problem 3: Means, Standard Deviations and ANOVA summary data are presented in Table 3. A statistically significant main effect in favor of songs with words was found.

Table 3.

MEANS, STANDARD DEVIATIONS AND ANOVA SUMMARY DATA FOR SONGS WITH AND WITHOUT WORDS

	N	Mean	SD
Text	7.307	2.33	202
No Text	6.419	2.219	203

ANALYSIS OF VARIANCE

Source	Sum of Squares	DF	Mean-Square	F-Ratio
Text	79.949	1	79.949	15.476*
Range	10.323	1	13.323	1.998
TextxRange	2.462	1	2.462	.477

*p<.05

Problem 4: Means, Standard Deviations and t test summary data are presented below in table 4. A difference in singing was found in favor of girls.

Table 4.

MEANS, STANDARD DEVIATIONS AND t TEST SUMMARY DATA FOR BOYS AND GIRLS SINGING

Group	Mean	SD	
Boys	24.784	7.923	
Girls	29.760	7.657	
			t = 22.340*

*p<.05

INTERPRETATIONS

As can be seen in the results for problem one, children perform songs with a limited range of notes better than a larger range of notes. Although these results are not surprising to the researcher, it should not be assumed that children do not have the ability to sing songs of a wider range, only that it may be easier to sing songs of a smaller range of notes more accurately. This researcher has found that children have the ability to sing songs of a wider range of notes accurately when given assistance. Often when these students are guided through a series of short vocal exercises, they are then able to reach the higher notes of a particular song accurately. Although the effect of the vocal

exercises does not appear to last through several successive songs, perhaps what is demonstrated is the beginning awareness of the ability to sing a song with a wider range of notes accurately. It may also be that developmentally, these young students in first, second and third grade are not ready to sing songs of a wider range. They may need more time to understand how to control their own vocal mechanism to sing the higher notes of a song accurately. The ability to hear the pitches of a melody must also be developed in students so that they can sing the pitches of a song accurately. This also may be a skill that develops over a period of time with students.

Additionally, results in problem one indicate that children in grade three sing better than children in grade one. Results for problem two also indicate that children in grade three sing better than children in grade one. Additionally, for problem two, a difference in singing was found between children in grade one and two. Although some of this difference can be attributed to maturation, the activities that these students are engaged in during their general music class should also be considered. These students are taught by a teacher who emphasizes development of the singing voice during music class. The students begin their music instruction with this teacher in first grade, having all attended other schools in Kindergarten. Perhaps improvement in singing between first and second grade can be attributed to the concentrated efforts of this teacher to improve the singing abilities of the students. This teacher has observed that when the students enter the school as first graders, they do not have an understanding of how to use their singing voices. Therefore, the results of the second grade students reflect the effect of a year or more of singing instruction. Similarly, the improvement between grade one and three can be attributed to two years of concentrated singing instruction.

Results in problem three affirm that children sing songs better with words than on the neutral syllable "loo." Although the children in the study were all familiar with the songs used for data collection (since they had been sung several times prior to data collection in their music class), the students performed them better when they used the original song text. The reader should recall that children sang the songs on text and on the neutral syllable "loo" during class activities. Still, the students appear to need to use the words of a song to organize the notes of the melody in their memory. When a neutral syllable is used as a substitute for the text, students often become lost when trying to recall the melody of an entire song. Perhaps this would not be the case if shorter phrases of a song were used.

The results for the final problem indicate that girls sing better than boys. In some cases during data collection, the singing example of some boys did not give an accurate sample of their singing ability. This seems to be attributable to "peer pressure." Although the results were not separated out by grade, it seems that as students get older, the boys seem less anxious to use their "best" singing voice. Some third grade boys seemed reluctant to give an accurate sample of their singing voices when they were singing in front of their peers. In fact, one student (a third grade boy) included in the study commented to his parents that he "sounds like a girl" when he sings. Therefore, even though these students are only in third grade, the element of peer pressure and at times not being comfortable with their singing voice has a negative effect on the singing performance of these students. The reader should be cautioned that not all boys displayed this attitude, only that the attitude is present for some students. Therefore, while the results for this study indicate that boys sing better than girls, it should not be assumed that boys do not have the ability to sing well.

CHAPTER V

SUMMARY AND CONCLUSIONS

The purpose of this study was to determine ways for improving the quality of children's singing voices in students in grades one, two and three. The first problem was to determine if there is a difference in the quality of singing when children sing songs with a restricted range of notes versus a wider range of notes. The second problem was to determine if singing with text or on a neutral syllable impacts the quality of singing songs with a restricted range of notes versus a wider range of notes. The third problem was to determine if gender differences exist between children in grades one, two and three when they sing a song with words or without words. The fourth problem was to determine if gender differences exist in the singing performance of children in grades one, two and three when they sing a song with a restricted range of notes versus a wide range of notes. The final problem was to determine differences in quality of singing across grades one, two and three.

DESIGN

Ninety children from a suburban elementary school were selected to participate in the study. Thirty children from each grades one, two and three were selected at random. Fifteen of the children from each grade level were boys and fifteen were girls. Each child sang four songs individually. The first

song had a range of one octave and was sung with the traditional text and then sung on "loo". The second song had a range of a fourth and was sung with the traditional text and then sung on "loo". The tapes were then evaluated by two judges.

RESULTS

The purpose of this study was to determine specific ways for improving the quality of children's singing voices in Grades 1, 2 and 3. The results of the study indicate that both the grade and song main effects were statistically significant. Children perform a song with words better than a song without words. A post hoc test on the grade level main effect revealed that there is a difference in the singing performance of students in grade one and three.

A statistically significant difference was found for grade only. Neither the interaction or song factor revealed statistically significant difference. A post hoc test showed that there is a difference in the singing performance of first and second grade students and there is a difference in the singing performance of first and third grade students.

A statistically significant main effect in favor of songs with words was found.

Finally, a difference in the singing quality of the students was found in favor of girls.

CONCLUSIONS AND RECOMMENDATIONS

Based on the data from this study, it can be concluded that to improve

children's singing quality in the early elementary years, children should sing songs with words and with a limited range of notes. When children are able to demonstrate accuracy of pitch within a limited range, only then it is recommended that the range of notes be extended. Based on the results of this study, this would be appropriate in the later elementary school years (after third grade). Teachers should also recognize the importance of specific vocal instruction and that this instruction may improve the quality of children's singing voices. Specific feedback given to the students about their singing is recommended.

An additional study to follow this study may be indicated with some changes to further define the findings. In another study, it is suggested that a vocal model be used to give students the beginning pitches of the songs for data collection instead of using resonator bells. It appears that some students are able to sing beginning pitches more clearly with a vocal model than resonator bells. Also, considering peer pressure that appeared to affect the results in some cases, it may be wise to allow students to be recorded on an individual basis for data collection.

Another consideration would be to collect data from students who attend different schools. This would give indications of the role that teaching style plays in vocal development of the students. Additionally, if one were to collect data from single sex schools, perhaps the results for the question of gender differences in singing would be different.

APPENDIX A

Washington Township Public Schools

Music Department

Dear Parents,

I am currently finishing a Masters Degree in Music Education at Rowan University. As part of the graduation requirement, I am conducting a research study for my Masters Thesis. The research study that I am conducting is to examine ways in which children in First, Second and Third grade acquire their singing voices. I am writing to ask for your help in completing this research study.

I have randomly selected 30 students from each of Grades 1, 2 and 3 here at Hurffville School and hope to record each child singing four songs that they are familiar with from music class. Each example of student singing will then be evaluated by myself and Dr. Lili Levinowitz, the chairman of the Music Education Department at Rowan University. The results of the evaluation by myself and Dr. Levinowitz will then be written up to complete my thesis.

I have selected your child to participate in this study and am writing for your permission to include your child in the study. Please note that **children will be identified only by a number and no names will be used in evaluating or reporting the results of the study.**

I am excited to be able to conduct this study and hope that you will lend your support in allowing me to include your child.

Please feel free to contact me at Hurffville School should you have any questions.

Thank you for your continued support of the music program at Hurffville School.

Sincerely,

Miss Nancy Hanna
Music Teacher

_____ I give my permission for my child to be included in this research study

_____ I do not want my child to be included in this research study

Child's Name_____

Parent Signature_____

Dear Teachers,

I am currently in the process of finishing my Masters Degree at Rowan University. As part of the graduation requirements, I am conducting a research study for my thesis. I have chosen a research study that will examine aspects of how children in First, Second and Third grade learn to sing.

I am asking for your assistance in completing this study. I will be selecting 30 students at random from each grade level and will be taping them singing individually. I will need to complete the taping on my prep and lunch periods. I am hoping to complete the taping during the weeks of March 8 and 15. I will be selecting approximately six or seven students from each class and hope that you will be able to help in the following ways:

1. I will be sending permission slips home to parents of the children selected for the study. Could you please put these permission slips in my mailbox when the children return them or have the children give them to me at music time or have the students bring them to my office in the morning?

2. I am hoping to do taping for Third grade students during their lunch time recess. I will need to complete taping for other students during my prep periods. Therefore, I would appreciate you allowing me to have these students come to the music room during my prep periods to complete the taping. I estimate that the taping will take about five minutes for each student. I will provide you with a schedule of when I hope to work with the students.

Thank you very much for your support and assistance with this project. I know you all have many demands on your time and I appreciate your assistance and understanding as I complete this project!!

If you have any questions or concerns, please let me know.

Nancy Hanna

APPENDIX B

Three-tone

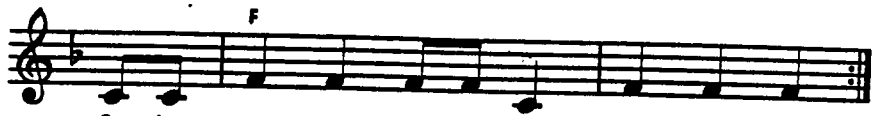
s, d m s

American Folk Song

1. There were ten
2. There were nine
3. There were eight
4. There were sev-en
5. There were six

in a bed and the lit - tle one said,

"Roll o - ver! Roll o - ver!"

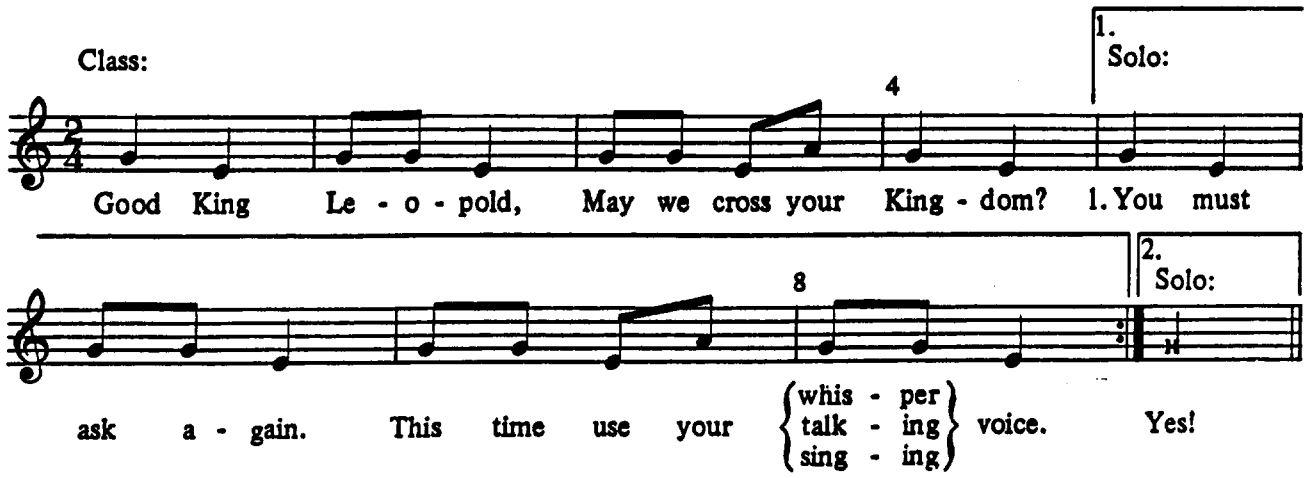


So they all rolled o - ver and one fell out!

10. There was one in the bed, and the lit-tle one said, "Good night!"

6. There were five . . .
7. There were four . . .
8. There were three . . .
9. There were two . . .

Good King Leopold (1–4)



APPENDIX C

RATING SCALE FOR CHILDREN'S SINGING VOICES

1. Uses speaking voice only while demonstrating awareness of contour of the melody

2. Moves between singing voice and speaking voice while demonstrating contour of the melody

3. Uses singing voice, follows contour of the melody, does not match pitch

4. Matches pitch most of the time, voice does not have a good quality, voice has a "breathy" quality

5. Matches all pitches correctly with a good tonal quality

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