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THE EFFECT OF SINGING ON THE DEVELOPMENT OF MUSIC READING SKILLS IN YOUNG PIANO STUDENTS

By

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ABSTRACT

THE EFFECT OF SINGING ON THE DEVELOPMENT OF MUSIC READING SKILLS IN YOUNG PIANO STUDENTS

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The purpose of this research was to investigate the effect of singing on the development of music reading skills in young piano students. The specific problem of the study was as follows: to determine if students who have sung a song using neutral syllables perform the pitches and rhythms of that same melody on the piano better than if they have not sung the song. Sixteen students were taught how to read four pieces in the course of eight weeks using two methods. In the first method, only verbal instructions were given to teach the piece. In the second method, verbal instructions were given and singing was added as an aural aid to "hear" the music before it was played. Two one-tailed t tests were used to determine whether there were significant differences in the mean ratings of the pieces when learned through singing and explanation as compared to only through explanation. There was no statistically significant difference between singing and not singing for pitch accuracy, but there was a significant difference in rhythm accuracy. The students performed with significantly more rhythmic accuracy when they sang the pitches as compared to when they did not sing.

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CHAPTER I

INTRODUCTION

Literature Review

The art of playing piano and performing music successfully is one that requires the knowledge and assimilation of various musical concepts. Many approaches to beginning piano instruction focus on note reading and rhythm reading as well as recognizing interval patterns and relationships between keys. However, there are skills that are not as common in piano instruction that may be as necessary, such as listening, understanding, visual memory, and aural memory (Tobin, 1957). Many music scholars and researchers agree that the better one has internalized these skills, the more complete his or her musical performance will become (Bentley, 1966; Gordon, 1990; Newman, 1979; Robinson, 1996; Tobin, 1957).

It is a psychological fact, according to Hicks (1980), that small children first comprehend perceptually. Experience suggests that concentrating on one concept at a time helps students build a solid foundation and possibly helps save time in later stages of learning. According to Zimmerman (1971), conceptual development in musical learning is dependent upon aural perception, since musical learning begins with the perception of sound. She states that from our various perceptions of music, we develop the musical concepts that

permit us to make comparisons and discriminations, to organize sounds, to generalize, and finally, to apply the emerging concepts to new musical situations. During the first stages of learning, proper musical vocabulary should be taught and verbalization of the concept by the child should be encouraged.

Once conceptual development has been established, skill learning becomes necessary to further musical instruction. Music reading is among the various skills that have been difficult to teach, especially in young piano students. Difficulties in music reading may be attributed either to perceptual problems, in which the student must read notes up and down as well as left and right, as well as to association problems, in which the student must associate notes with fingerings (Newman, 1979). However, scholars agree that "knowing" a concept needed for music reading, should precede "doing" it (Bentley, 1966; Brown, 1974; Hicks, 1980; Klemish, 1970; Robinson, 1996; Tobin, 1957). Before being expected to read music, students should be able to internalize the following experiences: previous aural experience (listening), aural memory (retaining rhythms and pitches), visual memory (recognizing musical effects such as notes, rhythms, signatures, etc.), and basic musical knowledge (understanding the purpose and meaning of musical effects) (Tobin, 1957).

Once these experiences have been internalized, music skills can then be learned without extra effort or frustration

for the student. These skills (such as hand coordination, finger coordination, clapping, and singing) may seem too complicated for a young student, but they are necessary for successful music reading. Being able to recognize patterns from previous experiences enables the student to incorporate them into the new experience, and having the skills to execute the musical patterns allows the student an avenue through which to express his or her knowledge. If these concepts have not been internalized or skills have not been learned before reading takes place, then the music becomes no more than a series of unrelated notes on a page. Bentley (1966) believes that "to apprehend a melody the subject must be able to remember the sounds already heard in order to relate them to sounds currently being heard and those that are to follow" (p. 24). He continues that "in order to make accurate response to melody, a child must be able to perceive, and then retain in the memory for at least a short period of time, a given order of pitch intervals and note lengths" (p. 28).

A common question that music educators must resolve is how to teach their students to internalize the aural and visual memories most efficiently. The question arises because there are several different methods available. Each method is valid, but the "correct" one depends on the student's age, level, and ability (Brown, 1974). Hicks (1980) believes that "sound before sight" is an effective method for teaching a student,

because developing a listening and performing vocabulary is essential readiness for successful music reading, which depends on a reading vocabulary. Developing a vocabulary can be accomplished in many ways; it can happen by listening, creating music, performing with rhythm sticks, dancing, or singing (Gordon, 1990; Hicks, 1980, Johnson, 1984; Matthay, 1912; Ranke, 1989; Robinson, 1996; Zimmerman, 1971).

Finding an effective way to teach music depends on how children perceive and learn. Music Learning Theory, according to Gordon (1990), "is the explanation of how children learn music" (p. 25). He states that when beginning instrumental instruction, "a child must be taught sound before sign, that is, audiation before notation" (p. 114). Audiation, as defined by Gordon, is "hearing and formally comprehending in one's mind the sound of music that is no longer or may never have been present" (p. 117). However, before being able to audiate, a child must learn to produce musical sounds by imitating them, even though the responses may be incorrect at first (Gordon, 1990). For this reason, it is important to use singing as part of a child's musical experiences during a lesson.

Singing in the piano lesson can be introduced by incorporating rote song instruction. The songs that are introduced should include major and minor tonalities (as well as other tonalities), tonic and dominant patterns, and melodies beginning and ending on the tonic note (Gordon, 1990; Ranke,

1989). According to Ranke (1989), "singing is indispensable to the development of audiation skills" (p. 250). Repetition when learning rote songs is essential at this stage and necessary for the development of a musical vocabulary (Bentley, 1966; Ranke, 1989). Ranke (1989) states that "if the teacher applies Music Learning Theory (Gordon's) to instruction, the same students can be taught to audiate, thereby solving some of the problems in their playing" (p. 247). When students are able to predict what they see through audiation, their performances will be more musical and the notation that they see will remind them of what they can already audiate (Ranke, 1989).

Singing in the lesson can also be introduced by demonstration. Just as toddlers start to talk by imitating adults, young musicians can learn my imitating their teachers (Lanners, 1999). Lanners (1999) feels that "a quick illustration using singing, playing, conducting, and other movements can make teaching concise while eliminating a thousand confusing words" (p. 8). He also notes that singing is essential because "it makes a direct connection between the brain and the fingers" (p. 9). For example, a turn or trill may confuse students into thinking that they need to play many notes in a short period of time, when, if they sing the turn with the teacher's aid, they'll be able to play it without difficulty (Lanners, 1999).

Another approach to developing audiation skills through singing is to encourage students to sight-sing. Johnson (1984) believes that sight singing is the most important aspect of musicianship, because it can help to develop the skills needed for successful sight-reading. She states that:

> When sight-singing, students are forced to look ahead so they will be ready to adjust their voices for the upcoming pitches. Because they don't have to think about positioning their fingers, students can abandon the bad habit of looking up and down between the music and the keyboard and can concentrate on the line of music they are reading. When students sing, they hear what the music should sound like and are able to pay attention to the feel and sound of their voices rather than to the sound of the keyboard…. For these reasons when students sing as well as play music, memory becomes more secure and the ear develops more fully. (p. 30).

While singing in the piano lesson is crucial for developing audiation skills, it is also important to note that being able to sing allows the student to become an independent learner who is able to use his or her practice time efficiently (Robinson, 1996). It can, for instance, simplify the understanding of phrasing, promote better listening skills, and help to make one's performance meaningful. Matthay (1912) believes that one "must never touch the piano <u>without always trying to make music</u> [italics added]…. To make music we must make all the sounds <u>mean</u> [italics added] something " (p. 1).

The purpose of this study, therefore, was to investigate the effect of singing on the development of music reading skills in young piano students. The specific problem of this

study was as follows: to determine if students who have sung a song using neutral syllables perform the pitches and rhythms of that same melody on the piano better than if they have not sung the song.

CHAPTER II

RELATED RESEARCH

Because reading is a necessary part of music proficiency, music educators have made many efforts to learn more about teaching reading. Realizing that students were having problems organizing musical thoughts in this context, educators began looking for reasons that could explain their problems. Early researchers such as Tobin (1957) felt that sight-reading simply required the use of common sense. In his book, he wrote about the various difficulties of music reading, what students were doing wrong, and how to fix the problems. For instance, he explained how multiple rhythms such as two against three could be difficult, because students may not have conceptualized how they were to be subdivided. He then stated that the student would be able to understand the rhythm once he or she discovered the "unseen" combination of that rhythm. Tobin believed that the student needed to discover the combination based primarily on the teacher's explanation of that concept. He also hinted at the idea that aural awareness was important to the development of music reading skills but did not elaborate on it. He only stated that it was necessary for students to have an aural foundation.

As research in the area of music reading continues to advance, music educators are beginning to concern themselves

with how to teach aural foundation instead of assuming that the students either have it or do not. In her research, Klemish (1970) compared two methods of teaching music reading. She used two classes of first grade students and taught them to read patterns from the frame of major scales. Each class met four times per week for 20 minutes, with a total of 52 class periods. The first method (taught to one class) used hand and body movements as well as pre-notational symbols to demonstrate melodic direction. The second method (taught to the other class) used only staves and conventional notes. Although her study did not yield any significant results, both methods were effective in different ways. The students who were taught under Method 1 developed better aural skills than those under Method 2 did. However, those under Method 2 were able to recognize patterns, write tones dictated to them, and match visual patterns better. In her summary, she suggested that teachers focus on patterns that children already know so that they can strengthen their foundation. She did not suggest, however, that they sing these patterns but that they use them while learning to read music.

A possible solution to this dilemma of teaching the reading of music is to incorporate singing in the process of learning to sight-read. If a student can sing a passage in tune and with correct rhythms, the student has not only internalized that passage, but is now able to fix errors

without assistance (Robinson, 1996). Robinson believes that familiarizing one's self with a passage means that the next time the same passage occurs, it will be recognized, and less time will be needed to "decode" the music. This is comparable to the understanding of language; once a person has learned how to put words together to form a certain sentence, he or she will be able to use that same sentence or a similar one in a later situation. Singing, then, is just as important to the understanding of music skills as talking is to the understanding of communication skills.

Singing should take place during the earliest stages of music learning. Children need to develop the readiness for learning about music (as they develop the readiness for language) before they can begin to understand any formal music concepts (Hicks, 1980). Newman (1979) states that inner hearing develops through aural experience with music just as a child's language develops through hearing spoken language. Children have achieved rhythmic and tonal readiness when they can perform singing activities with consistency, accuracy, and confidence. Only then can music educators know that students are ready to understand and learn through formal instruction. For instance, Hicks (1980) suggested a sequence of instruction that follows a logical progression to music reading. He includes six stages: (I) non-notational playing, (II) melodies, (III) line notation, (IV) expanding staff, (V) rhythm, meter,

and tempo, and (VI) timbre and dynamics. Although there are several steps to his sequence and there is no singing incorporated, Hicks felt that these steps should be preceded by singing, because it will aid the student in finding the correct notes and rhythms.

When students first begin piano lessons, most are given books immediately and then are expected to progress through them as easily as if they were reading stories in literature books. However, if they do not understand all the symbols and notations, they must learn to read as they also learn basic piano techniques. This is too much for most students to concentrate on at once. Ranke (1989) believes that the best way to start piano lessons is to apply Gordon's Music Learning Theory to private piano instruction. This theory, which is based on the idea that music is learned in the same way that language is learned, helps students internalize musical concepts as well as teaches them to listen with their inner ear. In order to apply Music Learning Theory, a teacher should use the first lesson times as a time to chant rhythm patterns, sing tonal patterns, and incorporate movement. Being able to perform these skills allows the teacher to know how to assess the student's musical abilities and, more importantly, allows the student to learn music through experience away from the instrument. Once students can sing patterns in tune and can chant patterns with an accurate pulse, they are able to

internally understand the music and thus have the ability to audiate.

Singing is often associated with song learning rather than music learning, so there is no reason to ignore it when it comes to learning to play a certain piece. Robinson (1996) stated that "[singing] is used to help students develop aural skills, learn sight-reading, and make connections between the basic elements of music theory and the practical application of these elements" (p. 17). He believes that if a teacher could spend the first five minutes of band and orchestra rehearsals dedicated to singing musical passages, the class would be able to internalize the melodies, rhythms, and forms of their pieces before actually playing them. Robinson expressed that singing leads the student to become a better listener, better performer, and most importantly a more confident musician. He suggested that singing activities can be introduced gradually in the classroom by teaching short melodies by rote (perhaps four or eight measures) that the students do not recognize. In time, students become familiar enough with the melody that they should be able to play it correctly and in tune the first time.

The problems with singing arise when the teacher has not decided how or does not know how to introduce it. Music educators seem to agree that singing is necessary, and they suggest that by singing, one will have internalized the concepts of music. However, does it matter if a student begins

to sing with neutral syllables rather than with tonal syllables? Robinson (1996) suggested that neutral syllables work best at first; then tonal syllables should be added. Bentley (1966), on the other hand, suggested that students should learn to sing using tonal syllables from the start so that they learn the relationships between the notes. The importance of tonal and rhythmic syllables should be emphasized, but only after vocabulary has been developed (Robinson, 1996); this is how students begin to conceptualize the various directions and relationships of notes. According to Gordon (1990), the former method is more desirable because children must first learn to discriminate between familiar patterns before they can be expected to discriminate and generalize between new patterns and label those patterns. Discrimination learning, as explained in Music Learning Theory, is rote learning. The first stage of discrimination learning is the aural/oral stage. This is the time when students hear, audiate, and sing or chant familiar patterns using neutral syllables. The second stage is the verbal association stage. During this stage, students hear, audiate, and sing or chant familiar patterns that they learned at the aural/oral stage using tonal syllables (Gordon, 1990).

Although few studies have been done concerning music reading in young piano students, researchers agree that aural training is necessary in the development of music reading,

especially in instrumental education. Robinson (1996) found that students who are exposed to singing tend to perform higher on overall musical achievement and aptitude. He also found that singing could be used to teach general music skills, such as meters and tonalities, and could help students learn to think creatively. For instance, he suggests students be put in small groups and given a simple melody to sing. Then one or more students could be asked to create a harmony that would complement the melody. These methods of singing help the students to listen critically to what they hear and to understand what they are producing. This is comparable to the learning of language skills, such as when one hears a phrase and is able to respond to it.

Vocal melodies are often considered easier to produce than instrumental ones because instrumental responses require hand-eye coordination as well as aural and visual understanding. In his study, Petzold (1959) measured music reading in fourth, fifth, and sixth grade students. The purpose of his study was "to determine whether there are significant differences between normal children and children gifted musically in the ways in which they perceive and respond to the music symbols commonly associated with music reading" (p. 5). His sample consisted of three different schools within a single school district (one with small, one with medium, and one with large population). He individually tested two groups of children (with a total of

over 400 students) within a 25-minute period. He used vocal responses rather than instrumental responses because he thought that if instrumental responses were used, it would be difficult to judge whether the subject really understood and interpreted the musical symbols being read, or whether the responses were mechanical. He found that although the students performed better on the aural part than on the visual part of the test, there were no significant differences between the two groups of children.

Music reading is an important issue in music education, and many authors have made significant contributions to its development. Singing is an essential tool that can be used to introduce aural foundations to young students. However, there have been no significant studies to determine whether singing can help a young student's music reading ability as developed on piano.

CHAPTER III

DESIGN AND ANALYSIS

Sample

The sample for this study consisted of 16 children between the ages of seven and 12 who were in the initial stages of piano instruction. The children were part of the Community Music School program and the Piano Pedagogy department at Michigan State University and were private students of the researcher as well as other instructors in the programs. They were chosen based on their ability to comprehend basic musical concepts and to execute basic musical skills. The concepts necessary to know for this study were as follows:

1) understanding the rhythmic value of whole notes, dotted half notes, half notes, and quarter notes;
2) recognizing treble clef notes between c^1 and c^2 and bass clef notes between c and c^1;
3) recognizing the purpose of flat and sharp notes or what the flat and sharp symbols mean;
4) recognizing intervals of a 2^{nd}, 3^{rd}, 4^{th}, and 5^{th} within a major or minor five finger hand position;

Skills necessary were as follows:

1) being able to play in the C major, F major, D minor, and E minor five finger hand positions;

2) being able to clap the rhythmic values of whole notes, dotted half notes, half notes, and quarter notes;

3) being able to sing simple major and minor melodies.

The children participating in this study had been taking lessons anywhere from six months up to two years. Their referral was determined based on their playing ability and the level of material they studied. Students with perfect pitch could not participate, however, for concern that the results may be affected. Data was then collected and recorded over a three-month period by the researcher.

Design

Based on the knowledge that the students understood rudimentary rhythms, could identify notes on the staff, and could find the notes on the piano keyboard, the researcher composed four pieces to be taught through the course of eight weeks. (See Appendix A.) The pieces consisted of five finger patterns in major or minor tonalities and in duple or triple meters. Each piece had a four-measure single melody, used either the right or left hand, and was sung in the same key that it was played. The pieces became progressively more difficult as larger intervals and black keys were added. These pieces were arranged as follows:

1) key of C major, 4/4 time signature, left hand, intervals of 2nds, note values of quarter, half, and whole notes;

2) key of D minor, 3/4 time signature, right hand, intervals of 2nds and 3rds, note values of quarter and dotted half notes;

3) key of F major, 4/4 time signature, right hand, intervals through 4ths, inclusion of B^{b}, note values of quarter and half notes;

4) key of E minor, 3/4 time signature, left hand, intervals through 5ths, inclusion of $F^{\#}$, note values of quarter, half, and dotted half notes.

The decisions for the repertoire used in this study were determined through a pilot study that was conducted by the researcher. After asking students to read an initial set of pieces, the researcher found that some aspects of the pieces were too difficult for the children to follow, and as a result made changes to make the study more approachable. The changes were as follows:

1) four measures were used instead of eight;

2) one hand at a time was used instead of two hands;

3) larger notation was used.

Once completed, each piece was arranged sideways on an 8 ½ by 11 sheet with stickers around the edges and notes drawn

oversized so that the children would not feel uneasy or nervous about the study.

Procedure

In order to begin data collection, the researcher obtained approval from the University Committee on Research Involving Human Subjects (UCRIHS). (See Appendix B.) Then, prior to the first lesson, each parent signed a consent form allowing his or her child to participate in the research. (See Appendix C.)

The study was arranged so that each piece was read through twice: once with and once without singing. When teaching the piece without singing, the researcher introduced the lesson by explaining and reviewing rhythmic values and note symbols. Each lesson progressed according to the following steps:

1) careful detail was given to the clef, time signature, and hand position;
2) students were asked to determine the direction of note movement as well as the size of the interval;
3) the piece was clapped and counted using either rhythm syllables or numbers (depending on which method each student was most comfortable with);
4) the piece was performed once through by the student and recorded on an audio tape.

When teaching the piece with singing, the researcher introduced the lesson in the exact same manner except that an

extra step was added after the clapping and before the performance; the researcher sang the melody once through and then asked the student to sing it with her.

The order of events alternated every two weeks to control for the possible effect that order might have on how well the students performed. An outline of the order of events is as follows:

Week 1	Piece #1	No singing
Week 2	Piece #1	Singing
Week 3	Piece #2	Singing
Week 4	Piece #2	No singing
Week 5	Piece #3	No singing
Week 6	Piece #3	Singing
Week 7	Piece #4	Singing
Week 8	Piece #4	No singing

Each performance was tape recorded so that careful records would be kept of the progress from week to week and so that the results could later be evaluated accurately. (It took eight weeks to complete the project.) Since there were 16 students, there was a total of 128 excerpts. Once the study was completed, each performance was evaluated based on two dimensions; pitch accuracy and rhythm accuracy. Three experts not familiar with the study listened to each excerpt twice (once for pitch accuracy and once for rhythm accuracy) and rated each excerpt based on the following criteria.

The criterion measures used for this study were rating scales in which each dimension has five criteria. The rating scale for pitch accuracy (Dimension 1) is as follows:

5 - all notes were played correctly

4 - one to two notes were played incorrectly

3 - three to four notes were played incorrectly

2 - five to six notes were played incorrectly

1 - seven or more notes were played incorrectly

The rating scale for rhythm accuracy (Dimension 2) is as follows:

5 - all rhythms were played correctly

4 - one to two beats were played incorrectly

3 - three to four beats were played incorrectly

2 - five to six beats were played incorrectly

1 - seven or more beats were played incorrectly

Analysis

Two one-tailed t tests were used to determine whether there were significant differences in the mean ratings of the pieces when learned through singing and explanation as compared to through explanation.

CHAPTER IV

RESULTS AND INTERPRETATIONS

Inter-judge Reliability

In order to determine the reliability of the ratings between the judges, their results were correlated using the Pearson Product Moment Formula. Below is a table of the correlations, which were very high:

Table 1

INTER-JUDGE RELIABILITY

	Dimension 1 (Singing)	Dimension 1 (No singing)	Dimension 2 (Singing)	Dimension 2 (No singing)
Judge A and Judge B	.962	.906	.897	.729
Judge A and Judge C	.925	.971	.836	.691
Judge B and Judge C	.949	.920	.869	.646

Pitch Accuracy Results

There was no statistically significant difference in the tonal accuracy when singing as compared to not singing before keyboard performance.

Table 2

PITCH ACCURACY RESULTS (Dimension 1)

Teaching Method	M	SD	t
Singing	49.81	9.43	-.087
No Singing	49.94	8.65	

$p > .05$

Pitch Accuracy Interpretations

Out of the 16 students who participated in this study, 12 could match pitch and sing in tune. However, only eight students scored higher when singing prior to playing and seven out of the eight could sing in tune. Six students performed better when they did not sing prior to playing and four out of the six could sing in tune. One student who could and another student who could not sing in tune both performed equally when singing was used as compared to when it was not. Therefore, it is possible that singing is only valuable tonally to those students who can already sing in tune.

Another possible reason as to why singing did not significantly affect pitch accuracy in this study is that when reading music on the piano, it is possible to decode pitches. First of all, students must decipher the written note on the page and determine what they are looking for. Secondly, they need to locate the notes on the keyboard. Lastly, they must

physically play the notes. It is possible to accomplish all of this without audiation.

Another possible reason why singing did not make a difference is that many beginning students have not yet achieved the ability to audiate. Unfortunately, some children are not exposed to enough music in their own learning environment before they begin formal piano lessons, and for this reason, musical sounds are still foreign in the early stages of instruction. In order to audiate, a person must be able to internally hear the pitches before they are played, just as he or she can think words before they are spoken. If students are not able to audiate, they can not understand the relationship between the melodic line on the page and the direction or distance of the keys on the piano. Therefore, steps, skips, and larger intervals seem like random jumps on the keys instead of logical progressions from note to note.

Rhythm Accuracy Results

Although pitch accuracy was not affected by singing, the researcher found a statistically significant difference in the performances for rhythm accuracy. Students performed with significantly more rhythmic accuracy when they sang the pitches as compared to when they did not sing.

Table 3

RHYTHM ACCURACY RESULTS (Dimension 2)

Teaching Method	M	SD	t
Singing	48.56	6.84	3.012*
No Singing	44.75	5.46	

$p \leq .05$

Rhythm Accuracy Interpretations

Although only some of the students could sing in tune, all of them were able to clap or tap the rhythms accurately prior to playing the pieces. A possible reason as to why singing significantly affected rhythm accuracy in this study is because in their daily environment, children are exposed more to rhythm patterns than melodic patterns. For instance, when children watch television, they learn words and phrases that they hear and recognize. Instinctively, they also assimilate the rhythmic pulse of the nursery rhymes and chant them rather than sing them. In a musical situation, students will hear a song with a melody and steady beat, but they will most likely assimilate the rhythmic pulse before the melodic line. During the study, the researcher found that all the students who either could or could not match the pitches could sing with a steady pulse. It is possible that singing (in addition to

clapping) added an extra step to the learning process, which reinforced the rhythmic performance.

While conducting this study, the researcher found that singing with a steady pulse was easier for some children than singing in tune. This indicates that it is possible for students to play a note with the correct timing but to place it on the wrong key. Although they are concentrating on finding the correct rhythms at the same time as finding the correct notes, it seems that it is easier to land on the wrong key at the right time than to land on the correct key at the wrong time. Also, there is no way to "decode" rhythm notation. Therefore, the singing of a melody, which forces audiation, may be more essential from a rhythmic than a tonal perspective when performing on piano.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FUTURE RESEARCH

Purpose and Problems

The purpose of this study was to investigate the effect of singing on the development of music reading skills in young piano students. The specific problem of this study was as follows: to determine if students who have sung a song using neutral syllables perform the pitches and rhythms of that same melody on the piano better than if they have not sung the song.

Design and Analysis

Sixteen students between the ages of seven and 12 participated in the study. The students were part of the Community Music School and Piano Pedagogy department at Michigan State University. They were chosen based on their knowledge of rudimentary music concepts and their ability to use certain music skills.

Based on the students' level of comprehension and playing ability, the researcher composed four pieces to be taught through the course of eight weeks. The pieces varied in tonality, meter, and hand position and became increasingly more difficult. They were introduced at the beginning of each lesson and were taught in the same general fashion that all

other pieces are taught. However, each piece was taught and performed twice; once with and once without the help of singing. One week involved singing and the other week did not. The order of events alternated every two weeks to control for the possible effect that it might have on the results.

After teaching each piece, the performances were tape-recorded. There were a total of 128 excerpts that were evaluated based on two dimensions; pitch accuracy and note accuracy. Three judges not familiar with the study listened to each performance twice; once for pitch accuracy and once for rhythm accuracy. The criterion measures used for this study were rating scales in which each dimension has five criteria.

Once data had been collected, the researcher used two one-tailed t tests to determine whether there were significant differences in the mean ratings of the pieces when learned through singing and explanation as compared to only through explanation.

Results

There was no statistically significant difference between singing and not singing for pitch accuracy. There was, however, a statistically significant difference in the rhythmic performance between when the students sang prior to performance and when they did not sing. Singing a melody before playing it significantly increased the students' rhythmic performances.

Implications of this Study

Singing is important for the rhythmic development of young piano students who are learning to read. Therefore, piano teachers should have their students sing during their lessons.

Young children need to hear the singing voice as a model so that they can eventually learn how to use their own voices. It is the same when children learn to speak from adults; they hear words and then they imitate them. When musical sounds are produced, children begin to imitate them as well. At first, the responses may not be correct, but as the ear develops, so do the responses. Eventually, imitation turns into audiation and the child is not only able to produce accurate sounds, but is also able to discriminate between correct and incorrect sounds.

Conclusions and Recommendations for Future Research

In summary, singing before physically reading a piece makes a difference in young students who can sing in tune because it allows them to experience the music before actually having to perform it. Although there were no significant differences for pitch accuracy, students who could sing in tune were consistently accurate in their performances because they were able to retain the pitches and were able to find the notes on the keyboard. Those who were unable to sing in tune tried

to remember the pitches, but were retaining incorrect pitches and therefore were reaching for incorrect notes. Students who could keep a steady pulse and use correct rhythms scored higher when they had the opportunity to sing the song first because they were able to reinforce the rhythms of the melodies and as a result performed with better rhythmic consistency.

In order to continue learning about the development between singing and music reading, further research is necessary. An idea for a possible study could be to replicate this project either with a larger population or with older students learning more difficult repertoire.

The researcher is hopeful that research will continue to be conducted in the area of music reading as developed in young piano students and that music educators will continue to learn how singing can help children further develop their music reading skills. This particular study has helped the researcher learn a great deal in this area of music development and has provided her with valuable experience that can be used in future projects.

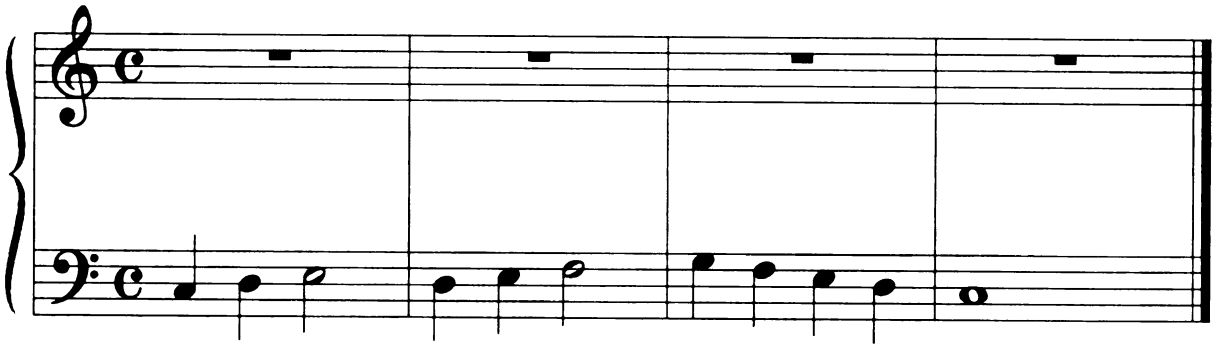
APPENDICES

APPENDIX A

REPERTOIRE

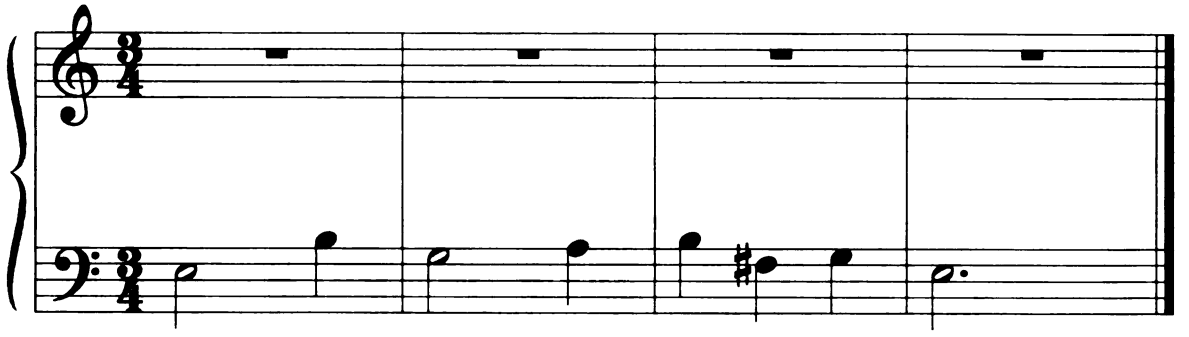
SONG 1

Week 1 - No singing
Week 2 - Singing



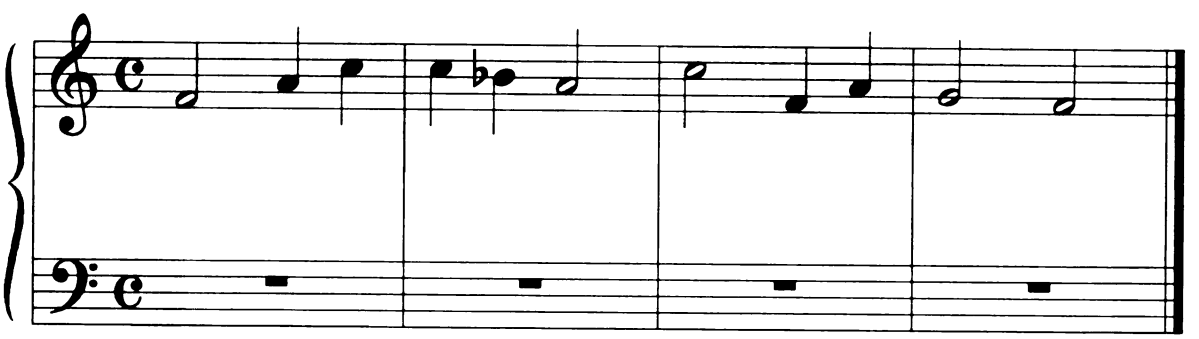
Song 2

Week 3 - Singing
Week 4 - No singing



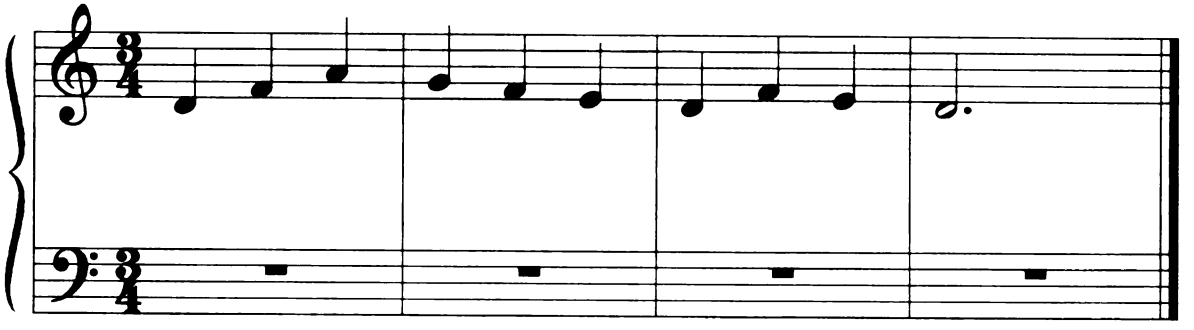
Song 3

Week 5 - No singing
Week 6 - Singing



Song 4

Week 7 - Singing
Week 8 - No singing



APPENDIX B

UCRIHS APPROVAL

MICHIGAN STATE
UNIVERSITY

April 12, 1999

TO: Dr. Midori KOGA

RE: IRB# 99172 CATEGORY: 1-A

APPROVAL DATE: April 6, 1999

TITLE: THE EFFECT OF SINGING ON THE DEVELOPMENT OF SIGHTREADING SKILLS IN YOUNG PIANO STUDENTS

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete and I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project.

RENEWALS: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Projects continuing beyond one year must be renewed with the green renewal form. A maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for a complete review.

REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB# and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

PROBLEMS/CHANGES: Should either of the following arise during the course of the work, notify UCRIHS promptly: 1) problems (unexpected side effects, complaints, etc.) involving human subjects or 2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of further assistance, please contact us at 517 355-2180 or via email: UCRIHS@pilot.msu.edu. Please note that all UCRIHS forms are located on the web: http://www.msu.edu/unit/vprgs/UCRIHS/

Sincerely,

David E. Wright, Ph. D.
UCRIHS Chair

DEW: ah

cc: Rosalia Emanuele

OFFICE OF
RESEARCH AND GRADUATE STUDIES

University Committee on Research Involving Human Subjects (UCRIHS)

Michigan State University
246 Administration Building
East Lansing, Michigan
48824-1046

517/355-2180
FAX: 517/353-2976

APPENDIX C

CONSENT FORM

Dear Parents,

I would like to invite your child to participate in a study I am conducting this semester that involves music reading. The purpose of this study is to show the effect of singing in the development of music reading skills in young piano students.

The project will last eight weeks and will take five minutes of each lesson to complete. There are four pieces (each is four measures long) and each will be read twice. On weeks one, four, five, and eight I will teach the piece as I would in a usual setting. On weeks two, three, six, and seven I will teach the piece as before, but will incorporate singing. My hopes are that I will find an efficient way to improve music reading when singing becomes a part of a student's practice routine.

Participation in this study is voluntary and you may withdraw at any time without penalty. All data collected will remain confidential. If you have any questions or concerns about your rights as human subjects of research, please contact David Wright at:

University Committee on Research Involving Human Subjects
(UCRIHS)
Michigan State University
246 Administration Building
East Lansing, Michigan 48824-1046
(517) 355-2180

I, (print name) _____, allow my child to participate in this study conducted by Rosalia Emanuele involving the effect of singing in the development of music reading skills.

_____ _____

(Parent's signature) (Date)

REFERENCES

REFERENCES

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