A Thesis

entitled

The Effect of Music Learning Theory on Sight-Singing Ability of

Middle School Students

by

Nicole M. Kielczewski

Submitted to the Graduate Faculty as partial fulfillment of the requirements for the

Masters Degree in Music Education

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An Abstract of

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The purpose of the study was to determine if tonal and rhythm pattern instruction and ear training exercises improve middle school students’ sight-singing ability. Participants (N=73) were designated to a control or experimental group based on class schedule. Both groups received sight-singing instruction using sight-singing examples accompanied by the piano. Additionally, the experimental group was given tonal and rhythm pattern instruction, and ear training activities based on Music Learning Theory. Solfege syllables and hand signs designed by Zoltan Kodály and John Curwen were also incorporated in sight-singing instruction for the experimental group to help with pitch accuracy. Each participant sang the assigned sight-singing test twice with resulting audio samples of 219 pre-test and post-test recordings. The assessment procedures for both tests were identical and the measurement tool’s Cronbach’s Alpha reliability was .88. Evaluation was based on the abilities to sing in tune, sing correct rhythms, and sing correct solfege syllables. Results indicate that after two weeks of instruction, both groups improved their sight-singing ability. The pre-test mean results shows that the control group scored significantly lower than the
experimental group. Due to that significance, the post-test improvements in the experimental group did not surpass the gains in the control groups mean scores. Possible time restrictions of the study may have inhibited the improvement of the experimental group’s scores.
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Chapter One

Introduction

A primary instructional goal in a music classroom is music literacy. (The National Standards for Music Education, 1994) The development of knowledge and skills associated with styles, genres, technologies, and structures in the broadest sense, are similar when music and language literacy skills are compared. Such music skills contain appreciation of conventions linked with creating, performing, and evaluating composition and performance. But for many music educators, as with many language teachers, the literacy that is of most value is found in developing skills related to reading and writing the symbols commonly associated with their fields.

In 1994, music curriculums around the United States incorporated revisions based on the nine National Standards for Music Education. Reading and notating music is the fifth National Standard for Music Education in the United States, which is a specialized component of music literacy in a choral classroom. A similar term for reading music in a choral classroom is called sight-singing. This refers to the ability to sing or perform written or notated music without preparation or prior acquaintance. Sight-singing remains a challenging skill for many young musicians to master and equally challenging for music educators to instruct.

School districts with competitive music programs often compete in annual solo and ensemble and large group adjudicated events. Many adjudicated events include a sight-singing requirement, whether it be a solo or group evaluation. Although the requirement may be intimidating for directors and students, it specifically insures that music literacy is essential in order for successful ratings.
According to Edwin Gordon, the founder of Music Learning Theory, children become sequentially acculturated to music in much the same way they become acculturated to language, by listening to sounds, formulating theories about the sounds, and organizing them into patterns to create meaningful communication (Gordon, 2001). For instructional purposes, Gordon has developed a system of tonal and rhythm patterns based on harmonic and beat functions. These structural patterns allow a student to associate various intervals, and rhythms to specific tonalities and meters. When a student is able to associate the function of the structured pitches or rhythms, he or she develops a better understanding of the structural sound of music. As the student gains understanding with the structural sound of music, one may assume the skill of reading music improves.

Research has shown that in American music classrooms, most educators favor some type of movable do system for sight-singing instruction (Demorest, 2001; Johnson, 1987; May, 1993; McClung, 2001; Pembrook & Riggins, 1990; Smith, 1998). When instructing movable do, educators rely on the solfege syllables developed in the 1800’s by John Curwen. Theses syllables are: do, re, mi, fa, so, la, and ti. The syllables are sung relative to the matching scale degree. For example, if the desired pitch is scale degree number one, the solfege syllable would be called do. The Movable Do (la based minor) system emphasizes each note’s function in the given key or tonality. In major tonality, Do is always scale degree 1, So is always scale degree 5, etc., no matter what the key. Movable Do also corresponds with the system of tonal and rhythm patterns Edwin Gordon developed for instructors using The Music Learning Theory teaching approach.

Since The National Standards of Music Education do not dictate how a music educator should teach sight-singing, many choral directors explore various resources and
teaching tools to create the most effective methods for this type of instruction. The
director, with personal strengths and weaknesses in mind, select tools and resources to
best suit his or her needs. For example: If an available resource contains instruction
involving extensive piano skills the director cannot meet, he or she is less likely to use
that particular resource for daily sight-singing instruction. On the other hand, if a director
does not have any sight-singing resources, the possibility for successful student music
literacy is slim.

Whether sight-singing instruction is intimidating due to personal issues of an
educator’s musical skill, or demanding requirements by various adjudicated events, it is
safe to state that no matter what the challenge, sight-singing is required to be instructed in
American music classrooms. In 1988 Daniels stated, “The development of competency in
sight reading is a subject that is frequently neglected in the field of choral music” (p. 22).
Surveys and other research on instructional objectives and the use of rehearsal time in
secondary choral programs have generally supported this perception. The problem
educators face is how to instruct sight-singing, and if the instruction benefits the students
ability to sight-sing. Some instructional approaches develop through trial and error. This
study will explore two types of instructional approaches with the intention to benefit
sight-singing ability.

**Purpose of the Study and Summary of Methodology Elements**

The purpose of the study is to determine if tonal and rhythm pattern instruction
and ear training exercises improve middle school students’ sight-singing ability. The
tonal and rhythm pattern instruction will be based on Edwin Gordon’s Music Learning
Theory. Solfege syllables and accompanying hand signs designed by Hungarian Zoltan
Kodály and Englishman John Curwen were also incorporated in sight-singing instruction
to help with pitch accuracy. The ear training activities administered in the study were composed and designed by the author and theory advisor, based on Music Learning Theory’s notion that children associate music with pattern recognition. The musical patterns used in the ear training activities corresponded with the sight-singing practice examples as well as the tonal and rhythm pattern instructions, to capitalize on the aural, oral, and visual challenges presented in the sight-singing examples. Each technique used, the tonal and rhythm pattern instruction, and ear training, were instructed with the intent to create musical memories in the students’ mind which would in turn aide in his or her sight-singing ability.

**Goals of the Study**

1. Implement a successful sight-singing approach for middle school choir students.
2. Increase music literacy as a music instructor.
3. Provide other music educators with a possible sight-singing approach for their own classroom.
4. Increase confidence in educators and students that hesitate to participate in adjudicated events because of lack of sight-reading ability.
Chapter Two

Review of Literature

This chapter is divided into five sections. This first section will describe the term sight-singing and how the skill contains multiple tasks while being performed. The second section will review previous research in the field of sight-singing. In the third section, I will review the historical relevance and benefit of solfege syllables and accompanying solfege hand signs, to sight-singing. The fourth section will describe the role of Music Learning Theory and sight-singing instruction. Ear functions and listening skills related to music literacy will be discussed in the fifth section with a summary to close the chapter.

What is Sight-Singing?

Sight-singing is instructed in a vocal music setting and is considered a multi-task endeavor. Additional word expressions such as sight-reading or music reading are also associated with, and in turn insinuate the same referential meaning as sight-singing. According to Darrow & Marsh (2006), when students sight-sing music, they are called upon to: (1) note the key and time signature; (2) determine the starting pitch; (3) examine the direction and degree of the change in successive notes; (4) determine rhythmic values; and (5) process expressive markings. It is also a task that requires a singer to sing or perform written or notated music without preparation or prior acquaintance.

Darrow & Marsh (2006) investigated the validity of a middle school singer’s ability to predict and assess his or her sight-singing skills. Darrow and Marsh randomly selected fifty students from a community children’s chorus to take a prediction questionnaire containing five musical examples, each accompanied by a Likert-type scale of five degrees. Participants were asked to assign a rating for each example, based on how well
they predicted they would sight-sing that example. An answer of ‘1’ indicated that the participant felt he or she would sing no pitches or rhythms correct on that example. An answer of ‘5’ indicated that the participant felt he or she would probably sight-sing the example with no errors.

After making a prediction, each student proceeded to sight-sing the five examples and then evaluate how well he or she sang. Following the testing of all participants, two middle-school choral directors were asked to evaluate the performances using a grading sheet designed to parallel the subjects’ prediction and evaluation questionnaires. Both the prediction and evaluation responses were then used to evaluate the participants’ ability to predict their performances. Inter-rater reliability was .83. The judges’ scores were averaged for each example for all participants.

The results of the study indicate that young singers are reasonably reliable in predicting and evaluating their sight-singing abilities. Darrow and Marsh state, “It must be recognized that if students are simply able to indicate what they think they know without any real assessment, self-assessment can be easily abused.” Other forms of evaluation may be more objective, but prediction allows a student to communicate with the teacher and become involved in the evaluation process personally. This interaction gives the student a sense of accountability and personal critique. The only negative effect of this research noted by Darrow and Marsh was the amount of time it took to test all the students.

In April 2011, Henry researched the relationship between pitch and rhythm tasks occurring concurrently as a person is sight-singing. Previous research by Henry (2001, 2003, 2009) had identified difficulty levels for pitch and rhythm skills individually but not in combination. In the study, high school singers (N = 252) sang melodies with
varying combinations of pitch and rhythm difficulty. The results indicated that pitch and rhythm skills retained their relative difficulty levels, regardless of the presence of other factors. Both rhythmic success and pitch success were significantly related. Rhythmic accuracy without pitch success occurred least frequently. Pitch accuracy without rhythm success occurred most frequently. Singers appeared to give priority to pitch over rhythm, performing pitch correctly at the expense of rhythmic accuracy.

The second portion of the study compared experience to the results. This data was collected through a survey taken by each participant before singing the required melodies. Henry reports that singers with instrument/piano experience and singers with piano experience only scored significantly higher than did those with no instrument/piano training ($p < .05$). Those with instrument and/or piano experience were more proficient at performing pitch and rhythm together than those without such experience. Implications for teachers include the necessity of emphasizing rhythmic continuity.

Henry describes the complexity involved in sight-singing. The knowledge of music notation and the ability to translate this information into performance is only the tip of the iceberg. It involves an understanding of discrete pitches and tonal relationships and an ability to produce pitch accurately without outside stimulus. It demands an understanding of rhythmic figures and metrical frameworks and the ability to operate within a given framework while manipulating other musical properties. Further, it requires the ability to perform accurately both pitch and rhythm simultaneously. While inerrant success in sight-singing may indicate mastery of all of these skills, the study indicates it is possible that overall ability is not equal simply to the sum of these skills.
Sight-Singing Research Through Survey Based Responses

Steven Demorest from the University of Washington has spent several years researching sight-singing. His 2004 findings, published in the International Journal of Research in Choral Singing, gathered online information from various choral directors around the United States about sight-singing instructional methods, time devoted to instruction, tonal and rhythm preferences, sight-singing assessment and factors pertaining to why sight-singing is an important skill to teach. The work of Demorest and other similar researchers will be discussed in the following paragraphs.

Previous research discoveries also surveyed choral directors dating all the way back to 1940, presenting similar survey responses and important research information. In 1988 Daniels stated, “The development of competency in sight reading is a subject that is frequently neglected in the field of choral music” (p. 22). Surveys and other research on instructional objectives and the use of rehearsal time in secondary choral programs have generally supported this perception. A 1998 review of sight-singing research (Demorest, 1998b) listed four surveys of sight-singing instruction conducted from 1961-1993 (Daniels, 1988; Hales, 1961; Johnson, 1987; May, 1993). The results of those surveys indicated that while directors agreed on the importance of music reading instruction, they differed widely in the approaches used and the amount of time spent teaching it. The same review discussed numerous studies of individual sight-singing achievement conducted between 1940 and 1996 (Carey, 1959; Demorest & May 1995; Gaston, 1940; Henry & Demorest, 1994; Nolker, 1996). Those studies reported a wide variety of individual ability and relatively poor performance in sight-singing overall for high school choral singers.
In a study of Florida middle school choral sight-singing practices, Kuehne (2003) found that sight-singing was taught most consistently in suburban, as opposed to urban or rural schools. Kuehne also reported that the majority of Florida middle school teachers employed methods consistent with a Kodály approach.

Demorest (2004) asked choral directors of both middle and high schools, questions about the role of music reading in their curricula, the time spent teaching music reading, the methods used to teach it, the materials preferred, and approaches to assessment. Results confirmed that over 70% of the directors reported teaching sight-singing equally to all their performing groups. The majority reported teaching sight-singing all year with 28% teaching it every rehearsal and 52% almost every rehearsal. Majority of the responses reported teaching sight-singing primarily as separate from the literature, but occasionally as a part of rehearsal and 71% chose to teach sight-singing after warm-ups. According to Demorest, respondents spent an average of 9.5 minutes per rehearsal on sight-singing instruction, which is in the upper range of the times reported by other previous surveys.

Tonal and rhythm methods for sight-singing instruction have been a topic for much debate among directors and reportable research. Consistent research findings have reported that directors preferred the use of movable “do” (Kuehne, 2003; May, 1993) regarding the tonal aspect of sight-singing instruction. Demorest (2004) also reported similar preference, but also concluded that 47% of the 64% movable “do” instructors also favored minor “la.”

There was less agreement on approaches to reading rhythm in the 2004 study conducted by Demorest. Counting rhythm was clearly favored. Forty-seven percent of directors used some variation of a counting system to read rhythm, while 23% used
syllables (e.g. ta-ti). The rest were split between neutral syllables, Gordon’s syllables and other.

When it comes to commercial publications, the two most popular sight-singing materials preferred by the director participating in the survey conducted by Demorest in 2004, were the *Jenson Sight-Singing Chorus* and *Successful Sight-Singing*. These two dominating texts also corresponded to Kuehne’s findings (2003) for Florida middle school teachers. Both survey analysts conclude that although the two materials stated above were the most popular, they were not the only materials used for instruction. Many directors seem to prefer using self-created materials along with the purchased texts.

The value of sight-singing assessment according to director responses in the survey conducted by Demorest (2004) seemed of importance, which was not the case for previous reports. The frequency of actual assessment used in their ensembles reported doing some kind of sight-singing test during the year, though only 47% reported doing formal as opposed to informal evaluation. The time restrictions for sight-singing assessments seemed to concern many directors.

Survey responses report sight-singing assessment occurred at adjudicated events such as contests (Demorest 2004; Johnson, 1987), and these contests appear to be the motivation for spending more time teaching sight-singing and for including it as a large part of the course grade (Demorest, 2004). On the other hand, in 2004, a national study by Norris surveyed sight-singing requirements at large group choral festivals across the United States to examine the prevalence of such requirements. He found that less than half the states included sight-singing in their large group contest, and even fewer included sight-singing scores in their final contest ratings. Results from this national study indicated that participation in all areas was lower for junior high than for high school,
suggesting that music reading does not yet occupy a central role in many of our choral programs.

**Solfege Syllables and Hand Signs**

The use of movable solfege syllables, reinforced kinesthetically with hand signs, is the core element of the music reading system attributed to Hungarian Zoltan Kodály (1882-1967; Chosky, 1974). In practice, Kodály incorporated the work of many music educators into his eclectic approach to music education (Zemke, 1977), including the hand signs developed by Englishman John Curwen (1818-1880; Rainbow, 1979).

Integrated into many North American public schools in the 1960’s, the Kodály approach to music education has influenced vocal music education generally and the development of music reading skills specifically (Sumner, 1998).

John Feierabend discusses the philosophy and beliefs Kodály had regarding music and music instruction in an article titled, *Integrating Music Learning Theory Into The Kodály Curriculum*. Kodály suggested that a cappella singing should be the means by which children develop music understanding. He believed that the voice is the most natural instrument to man, is accessible to all people, and enables one to develop inner musicianship that will later allow him to express musical thinking. As a result to his beliefs, Hungarian theorists and educators were inspired to develop a method for Hungarian music educators.

Alan McClung from The University of North Texas incorporates solfege syllables and Kodály hand signs in his music curriculum. His discussion which is similar to the explanation in chapter one explains, in movable *do* systems, students are taught to associate a specific scale degree with a specific solmization syllable and to connect that syllable with the specific shape and thoratic location of a hand sign (McClung, 2008).
He continues by stating:

Teaching strategies used to achieve this objective require a variety of simultaneous responses from the student: (a) an aural response – to listen, audiate, identify, and label pitches with specific solfege syllables; (b) a visual response – to identify and connect solfege syllables to modeled hand shapes or notated pitches; (c) a kinesthetic response – to create the physical hand shape for the various solfege syllables while using the same hand to relate the intervallic rise and fall of pitches to the appropriate thoracic region; and (d) an oral response – to match with the singing voice a specific solfege syllable. (p. 256)

The solfege syllables and hand signs that were designed and used by Kodály and Curwen are adaptable to the tonal pattern instruction from Gordon’s Music Learning Theory, learning sequence activities. The incorporation of the syllables and hand signs while instructing tonal pattern activities is intend to provide a stimulating visual, kinesthetic movement, and aid in pitch stability for the singer.

In comparison, Gordon’s Music Learning Theory supports many of the tenets that Kodály teachers advocate: the use of relative solfege, the use of rhythm syllables, sequenced instruction, singing before playing and a goal of music literacy. Although there are some differences between both approaches, it is not necessary to elaborate because they do not hinder nor enhance the results of this study. An example of the solfege syllables and hand sign chart are located in Appendix F.

**Music Learning Theory**

Music Learning Theory is a theory of how children learn musical skills and content most effectively. The foundation of this study will be incorporating many
principles of Edwin Gordon’s, Music Learning Theory and how it affects the success of middle school sight-singing skills. Eric Bluestine, author of *The Ways Children Learn Music* (2000) explains, “Music Learning Theory is child-centered; that is it’s about how children learn and not about how teachers teach.” In short, once we understand how children learn, then we, as educators, are ready to create a learning method or series of sequential and comprehensive objectives to base instruction. Music Learning Theory often confused, as being a method of teaching, is a foundation on which to build a music curriculum.

Pete Seeger (1973) suggested that children should learn musical skills in much the same order that they learn language skills: they should hear and perform before they read and write. Music Learning Theory is rooted in this concept, and was inspired by the learning theories and music curriculum guidelines designed by Pestalozzi, and Mason (1838), during the nineteenth century for Boston schools. The five guidelines incorporated in Boston include (Bluestine, 2000 pg. 35):

1. Teach sound before sign.
2. Lead the student to observe by hearing and imitating instead of explaining.
3. Teach but one thing at a time – rhythm, melody, and expression - before the child is called to attend all of them at once.
4. Require mastery of one step before progressing to the next.
5. Give principles and theory after practice.

According to Gordon, in order for children to receive optimal music instruction, he or she needs to develop audiation skill, the ability to sing in tune, and the vocabulary of tonal and rhythm patterns through audiation and performance (Bluestine, 2000). Once these
basic skills are in place, a student will be able to read and write music notation with comprehension.

The four levels of music education included in Music Learning Theory are: Irrefutable Truths about Music Education, Music Learning Theory, Learning Methods and Classroom Teaching. An in depth explanation of these levels can be found in chapter eight of Bluestine (2000). The following information will briefly describe each level.

Level One - Irrefutable Truths about music and Music Education:

1. Children should develop audiation skill, the ability to sing in tune, and the ability to move in a coordinated manner. They should build a vocabulary of tonal and rhythm patterns through audiation and performance. These skills enable children to learn to read and write music notation with comprehension. And these skills, in turn enable children to learn music theory.

2. Children understand the tonal dimension of music when they learn to organize pitches into functional tonal patterns that relate to a tonal center.

3. Children understand the rhythm dimensions of music when they become aware of their own physical symmetry through movement and begin to relate that symmetry to reiterated beats, rhythm patterns, and phrases (Bluestine, pg. 61).

Level Two - Music Learning Theory:

This level is made up of three sequential parts: 1) a sequence for learning musical skills, 2) a sequence for learning tonal content, and 3) a sequence for learning rhythm content (Bluestine, 2000). Although the three learning hierarchies follow closely on the
heels of the “irrefutable truths,” they are still, for all their complexity and sophistication, just theories. Each sequence will be discussed one at a time in the paragraphs following.

The tonal learning sequence is based on the notion that tonality is basic to the human species. The following information will explain how children isolate and audiate tonal patterns, and how they keep track of these complexities in music. The “sound” part of sound-before-sign refers to the tonal and rhythm dimensions of music. During a lecture on tonal intervals, Leonard Bernstein (1992) said:

One simple note by itself is not music – not even a molecule of music, not even an atom. A single note is more like a single proton or an electron, which, as you know, are meaningless all by themselves. You need one of each in order to create an atom. And in exactly the same way you need at least two notes before you can begin to have an atom of music….

(pp.255-256)

The outcome of tonal learning sequences explained by Bluestine (2000) is called tonal syntax. Tonal syntax is the way children audiate structured pitches, notes that are organized into functional patterns and related to a tonal center. It is usually practiced and developed during learning sequence activities in a music classroom, and is considered a higher-level music literacy skill. Although tonal syntax is a developed skill through practice, a child’s musical memories in the earlier stages of life are highly influential to the development of tonal syntax. The discoveries of how children associate different sounds and functions of sounds indicate that teachers need to first teach functional patterns in specific tonal contexts, so that, later on, intervals will mean something to students (Bluestine, 2000).
Rhythm learning sequence is based on the notion that human beings organize rhythm by pairing beats, rhythm patterns, and phrases. In Gordon’s opinion, children should learn patterns in duple and triple meters before they learn patterns in unusual meters. Also, students should be taught to audiate and perform the macro and micro beat patterns before they are taught more complex rhythm patterns.

Gordon’s rhythm theories are also rooted in movement, unlike other music methods that stress note values and counting beats. This instructional requirement for some educators is not ideal because some teachers are uncomfortable moving rhythmically. They would much rather read rhythm notation or theorize about it, which conflicts with the sound-before-symbol foundation. Music Learning Theory bases rhythm syntax on one’s ability to audiate rhythm and engage in smooth, flowing, and continuous movement. The ultimate goal is for students to incorporate movement and feel the beat instead of theorizing rhythm symbols.

Without getting too carried away with Gordon’s elaborate explanation and research developments of rhythm in various meters and time signatures, this complex element of music will be kept as brief as possible. Rhythm and flow is linked with symmetry. Leonard Bernstein (1966) explains how symmetry is involved in rhythm by stating, “All music has one great factor in common: symmetry, that precise balance that derives from the physical biformity of the human being.” In other words, symmetry in music is the composer’s way of pairing beats, patterns and phrases into one composition. By movement, a child is able to transfer the “feeling” of their own physical symmetry into the music’s symmetry. Once that is mastered rhythm patterns and rhythm notation may be introduced to enhance music literacy.
Music Learning Theory is designed for instructional purposes, with a sequential order, keeping in mind the foundation of sound-before-sight. An example of the sequence outlined by Bluestine (2000) is as follows:

**Step 1:** Children build a vocabulary of tonal and rhythm patterns by listening, singing, chanting, and moving.

**Step 2:** Children sing and chant the same tonal and rhythm patterns but with solfege.

**Step 3:** Students recognize the tonality and meter of various series of familiar patterns.

**Step 4:** Students read and write music notation. Specifically, they associate sounds with symbols with the aid of solfege.

**Step 5:** Students read and write tonal and rhythm patterns in a series and with understanding of the tonality and meter of each series.

**Step 6:** Students generalize information about unfamiliar music based on previous learning.

**Step 7:** Students create, improvise, and compose music with or without the aid of solfege.

**Step 8:** Students learn theoretical information, such as the letter names of the lines and spaces on the staff.

**Level Three: Learning Methods:**

Within this level, educators develop lesson plans according to the learning sequence stated above. Since the learning sequence begins with very basic skills and ends with extensive skills in music literacy, lesson planning may need to be adjusted depending on grade level. Assessments may be given at any point of the sequence.
depending on the goal of the teacher. Opinions have been expressed that Music Learning Theory is very difficult and the objects are too fixed. Bluestein skillfully squishes such assumption by creating classroom scenarios and stating that Music Learning Theory can be as flexible and you (educators) want it to be.

Level Four - Classroom Teaching:

Many teachers are consistently searching for the best materials to use during instruction. Although Music Learning Theory does not exclude any form of educational material intended to promote music literacy, Gordon’s discoveries are available as a curriculum guide to help teachers develop the best way to instruct music education. There are specific Music Learning Theory textbooks available for teachers on the website www.giamusic.com. The Jump Right In! series of textbooks have been geared toward elementary general music and beginning band.

Summary:

The purpose of Music Learning Theory is that one cannot use it directly. Utilizing Music Learning Theory means a music teacher must design a method based on it, and use techniques, materials, and musical examples to get the approach off the ground. The design of a method based on Music Learning Theory may take one of many possible forms. The curriculum may combine Music Learning Theory with Orff and Kodály activities. Another curriculum may incorporate Music Learning Theory with performance based repertoire and sight-singing material. No matter how Music Learning Theory is combined, “Think of it as the “theme” that may give rise to thousands of possible “variations,” says Bluestein.
Ear Functions

Alice-Ann Darrow reports on the anatomy and function of the ear in the article, *The Role of Hearing in Understanding Music*. Darrow explains that hearing is a sensory skill, which is developed by auditory exposure. According to Darrow, each individual has his or her own ability or skill level in listening, but good hearing does not necessarily ensure skilled listening. Conversely, poor hearing does not necessarily indicate an inability to listen. She clearly states that listening is a mental process and hearing is a physical process. She points out that after a music educator realizes the ear’s function of the physical process of hearing, he or she can work on the child’s mental ability to process what he or she is listening to. In other words, the teacher is able to work with the child to train the ear to listen.

Darrow explains that there are four basic levels of aural processing in nearly every auditory task. They include detection, discrimination, identification, and comprehension. Most children develop the first two skill levels through basic interaction with the environment. The third and fourth levels of the aural process, identification and comprehension, require the attention of the music educator. Identification is when the listener appropriately applies labels to the sound. Comprehension is when the listener makes critical judgments regarding the sound stimuli, for example, recognizing harmony.

Listening Skills Related to Music Literacy

The development of listening skills among early music education students is apparently significant in music curriculums across the United States. The importance of this skill is crucial enough to withhold the number six spot on the National Standards of Music Education. In 1990, Wang and Sogin’s research examined how listeners process musical information. Participants in the study listened to unknown melodic information
and were assessed on how well they could recall and decode a melodic pattern within that unknown musical phrase. Although the participants were collegiate music students, the results indicated a processing skill called grouping, which aided in their task. Pomerantz (1981) coined the term, “grouping.” Grouping is performed on incoming sensory stimuli such that unidentified parts are perceptually linked, creating relatively indivisible units to be recognized. The results of Wang and Sogin’s research indicated that listeners were more accurate when the musical stimuli were in familiar tonalities rather than a-tonal tonality.

Fine, Berry and Rosner (2006) reported similar findings in an article about researching the tonal predictability on sight-singing ability. Their study investigated the role of concurrent musical parts in pitching ability in sight-singing, concentrating on the effects of melodic and harmonic coherence. Fine, Berry and Rosner concluded that singers rely on all of the harmonic and melodic singing parts during sight-singing. The singer’s reliance aids in tonal predictability and pitch accuracy especially in tonalities with a tonal center.

Edwin Gordon, the founder of Music Learning Theory, developed a learning sequence incorporating both tonal and rhythm pattern instruction that improves listening skills. Throughout his research, Gordon has gain knowledge in the practical application of developing music skills according to age appropriateness and the National Standards of Music Education. An example of a music activity with the intention to promote listening skills, involving generalization, is to play a musical excerpt and ask students which of the four instruments on the board was not involved in the example. The ability to problem solve by using known information to decide if the sound is correct or incorrect or decipher what instruments are playing, would be a skill using generalization.
Specific ear training activities for this particular thesis were designed to capitalize on the third and fourth levels of the aural process explained by Darrow, and the generalization of already known musical memories and pattern functions to process what is being performed. The examples were crafted with the intention of positively affecting middle school aural and sight-singing skills. These activities are included in the appendix.

Summary

Sight-singing is undoubtedly a multi-tasking skill. With that being noted, this study has taken a whole-part-whole approach towards middle school beginner sight-singers. The intention of this study is to improve the sight-singing ability of middle school students as well as positively affecting the instructional process of this multi-tasking activity.

Since 1994, when the National Standards of Music Education mandated the skill of reading music, many educators have searched for the precise instructional method in order to provide music literacy. Although many publishing companies have developed resources for purchase, this study is focused on the process not the resources. The breakdown elements of the whole-part-whole are as follows:

1) Whole = sight-singing
2) Part = sequential instructional activities based on Music Learning Theory
3) Whole = successful sight-singing ability

The main question is, do the “parts” provide the success in the sight-singing ability or do they not affect it at all?
Chapter Three

Methodology

All of the participants (N=73) involved in this study attended a small town middle school in northwest Ohio. Each participant agreed to the study by signing a letter of consent as well as getting consent from parents or guardians. The student make up consisted of both regular education and special education students who were members of the seventh grade choir. The seventh grade choir is made up of two classes that meet at different times during the school day, but perform together. Participants were categorized into experimental and control groups during the study based on class schedule.

Procedure of Pre-Test and Post-Test

The study began with a pre-test to gather data for each student’s current sight-singing ability. The development of this eight-measure test was inspired by previous junior high contest examples used in the state of Michigan. The test was not an exact copy from the inspired examples. The layout and the difficulty were similar to the Michigan examples.

Both the pre-test and post-test were identical sight-singing examples designed to avoid statistical imperfections from factoring into the results. The pre-test and post-test consisted of a melody eight measures in length. The example was written in duple meter with major tonality. The melody line incorporated both steps and skips, beginning and ending on tonic. The rhythm fused combinations of quarter notes, half notes, and whole notes.

The testing location was in an empty private classroom. The purpose of this location was to keep distractions to a minimal. The recordings for this study were facilitated with a Zoom HD audio recorder and CD accompaniment. The CD recording
verbally directed the student’s sight-singing task and played accompaniment to the test example.

Once the directions were given, each student heard a piano play the major scale with a chord progression of I, IV, V7, I. Following the chord progression was a metronome introducing a steady beat. The metronome was set at quarter note equaling sixty. The student was verbally prompted to begin sight-singing after the fourth metronome beat by hearing, “one, two, ready, begin.” Once the student was finished with the test, he or she pressed record on the Zoom HD to complete the process.

Students independently facilitated the recording process due to the age and technological awareness of each participant. After a short verbal assessment, it was expressed by the participants that personal comfort levels were eased due to the confidentiality of the independent recording process.

Each recording was stored on a SD memory card located inside the Zoom HD. The contents were transferred from the memory card onto a computer, and saved in ITunes software. The recordings were evaluated and results were based on tonal proficiency, rhythm proficiency, solfege syllable proficiency and overall sight-singing proficiency. The test included twenty-four musical notes, which meant the tonal, rhythm, and solfege categories were based out of a possible twenty-four correct. The overall sight-singing ability the score was based on seventy-two possible correct.

Once the pre-test was administered, both groups were given two weeks of separate instruction. Sight-sing activities occurred directly after warm-ups daily. The attention given to mistakes and errors were verbally noted and discussed in both groups but the additional attention to tonal patterns, rhythm patterns and ear training only occurred with the experimental group. The control group relied the piano to help fix tonal
and rhythm. Once the majority of the students seemed to proficiently sing most of the notes correct (approximately 5-8 minutes), sight-singing was finished and the instructor moved onto the next classroom activity.

The experimental group was instructed differently. Although this group also experienced daily sight-singing after warm-ups, this group performed additional tasks to capitalize on the “parts” of the “whole.” These tasks were tonal pattern instruction with solfege hand signs, rhythm pattern instruction, and ear training. Each of these tasks will be explained in the following subheadings and added ten minutes to the total sight-singing instruction.

**Tonal Pattern Instruction**

One of Music Learning Theory’s basic concepts is tonal syntax. Tonal syntax, refers to how a tonal pattern or group of sounds are organized in one’s mind. Tonal syntax becomes organized into functional patterns that relate to a tonal center. A child can remember and audiate these patterns because they relate the patterns to a specific tonality whether it is major, minor, or any of the modes of music. Tonal syntax supports the teaching of interval and scales but may introduce a new order in which a teacher should introduce and teach these vital elements in the music curriculum.

Tonal pattern instruction is intended to prepare students to recognize aurally a tonal center, to understand the basic functions in tonalities, to create musical memories of a particular tonality and to begin the basics of learning how to sight-read. The tonal pattern exercise began by introducing Kodály’s hand signs to the experimental group and visually connecting a pitch to a hand sign. These steps were instructed in a call and response fashion. The hand signs and pitches when performed in order became the familiar sound of the major scale. Once the class accurately performed the seven pitches
of the major scale, the activity transitioned from singing hand signs to tonal pattern instruction.

The tonal pattern instruction isolated groups of pitches that would soon be represented by notation in the sight-singing exercises. Examples include but not limited to: 1) do do do 2) do mi do, 3) do so do 4) do ti re do, and 5) do re ti do. Various patterns were sung in the similar call and response manner of the solfege hand signs, but the response alternated between the entire group performing and an individual participant performing. The chosen patterns for the day were cycled through the group performances and the individual performances. The instruction was non-stop, one right after another and patterns were selected and performed by the instructor first. The difficulty of the tonal patterns varied when participants were isolated due to factors inhibiting accuracy such as changing voice or when patterns incorporated skips. Each student participating also had different audiation ability which either made the patterns with skips easy or more challenging. Additional instruction techniques may be found on the GIA website (www.giamusic.com).

The most important part of the activity is the audiation and engagement each students displays throughout the entire activity, even when he or she is not called upon. Gordon explains the meaning of audiation in the following quote,

“Audiation is the foundation of musicianship. It takes place when we hear and comprehend music for which the sound is no longer or may never have been present. One may audiate when listening to music, performing from notation, playing "by ear," improvising, composing, or notating music.” (www.giamusic.com)
If the tonal activity cycled through the chosen patterns twelve times, each student, although at times were silent, may have been audiating each pattern at least twelve times. Musical memories made from the tonal pattern activity and audiation is thought to improve and enhance sight-singing in a positive way (Bluestine, 2000).

Tonal pattern activities were designed for instruction at the elementary level of learning and were intended to continue throughout the student’s entire music education. Gordon has developed sequential tonal patterns according to the difficulty and function they represent in a specific tonality. These tonal patterns are further discussed in Gordon’s book titled, *Learning Sequences in Music: Skill, Content, and Patterns.*

**Rhythm Pattern Instruction**

Rhythm syntax is a way of teaching rhythm through patterns and movements instead of instructing beat-based note values. Under the learning sequences of Gordon’s Music Learning Theory, educators develop rhythm syntax by teaching macro beats and micro beats. Macro beats are verbally labeled as the long beats, while micro beats are associated with the short beats. Initially, these macro and micro beats are more challenging to teach a student by visually writing out durations on the board. The long and short beats are developed into rhythm pattern activities. These activities involve chanting rhythm patterns and fluid body movement. As the student repeats these various chanted rhythm patterns, and internalizes the feeling with the sound of the rhythm pattern, he or she begins to audiate the rhythm while performing the correct rhythmic flow and feeling (Bluestine, 2000). Once these rhythm patterns are accurately performed and audiated by the student, the educator should link the patterns to the melody of a song.
The rhythmic pattern instruction during the study was facilitated in a similar fashion as stated above, with the exception of linking the chanted patterns to a melody of a song. Much of the instructed patterns linked to the feel of the meter in the pre-test and post-test. Students responded during this activity by chanting the rhythm patterns and patting the macro beats on their legs.

In addition to chanting and patting during this activity, the students used Gordon’s rhythm syllables. Gordon has developed his own version of rhythm syllables that he suggests using for sequential rhythm pattern instruction. The syllables are not only used for simple meters but also complex and unusual meters to adequately aide in the division of beats and also help with fluidity. These syllables and patterns are also available in the book titled, *Learning Sequences in Music: Skill, Content, and Patterns.*

**Ear Training Activities**

Participants were given a series of ear training activities developed to enhance aural skills. One example of these activities used during the study included a worksheet titled Beginner Ear Training 1. This worksheet encompassed ten treble clef staves divided into four measures of various duple meter, major tonality melodies in each horizontal line. Instructions were: After listening to each line, circle the measure that was performed incorrectly. Students were also informed that each line would be played three times, with eight metronome beats of break in between. The metronome was set to quarter note equaling sixty. Once the worksheet was complete, students were to have ten circled measures total, one in each line. Students were encouraged to circle the incorrect measure at any time once they recognized it. It was not necessary to wait to circle the incorrect measure until the third example. The worksheets were collected after the discussion of the results as a class.
Chapter Four

Results

A total of 73 singers participated in the study. Each sang the assigned sight-singing test twice with resulting audio samples of 219 pre-test and post-test recordings.

Table 1 indicates the descriptive results of the sight-singing pre-test and post-test recordings for the middle school participants. The assessment procedures for both tests were identical and the measurement tools Cronbach’s Alpha reliability was .88. Each participant was evaluated on his or her abilities to sing in tune, sing correct rhythms, and sing correct solfege syllables. All three categories were worth 24 points each, with an accumulative score 72 possible points total.

Pre-test results indicate that the category with the highest mean score of 17.18 was solfege accuracy. The post-tests highest mean score of 22.27 changed from the solfege accuracy to rhythm accuracy. The overall scores indicate that there was improvement within both the control group and experimental group from the pre-test results to the post-test results. Although the standard deviation results were overall high, there is still wide variance among test scores when comparing the standard deviation to the mean (see Table 1).

Table 1

Descriptive Statistics for Pre-Test and Post-Test

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonal Pre-Test</td>
<td>73</td>
<td>12.40</td>
<td>9.552</td>
<td>-.122</td>
<td>-1.638</td>
</tr>
<tr>
<td>Rhythm Pre-Test</td>
<td>73</td>
<td>16.60</td>
<td>8.241</td>
<td>-.814</td>
<td>-.764</td>
</tr>
<tr>
<td>Solfege Pre-Test</td>
<td>73</td>
<td>17.18</td>
<td>8.138</td>
<td>-.858</td>
<td>-.734</td>
</tr>
<tr>
<td>Total Pre-Test</td>
<td>73</td>
<td>46.08</td>
<td>22.983</td>
<td>-.584</td>
<td>-.854</td>
</tr>
<tr>
<td>Tonal Post-Test</td>
<td>73</td>
<td>17.71</td>
<td>9.404</td>
<td>-1.137</td>
<td>-.479</td>
</tr>
<tr>
<td>Rhythm Post-Test</td>
<td>73</td>
<td>22.27</td>
<td>2.785</td>
<td>-2.782</td>
<td>9.004</td>
</tr>
<tr>
<td>Solfege Post-Test</td>
<td>73</td>
<td>20.90</td>
<td>5.432</td>
<td>-1.793</td>
<td>1.959</td>
</tr>
<tr>
<td>Total Post-Test</td>
<td>73</td>
<td>61.03</td>
<td>14.144</td>
<td>-1.166</td>
<td>.060</td>
</tr>
</tbody>
</table>
Tables 2 and 3 show the descriptive statistics for both tests between both groups. The pre-test results in Table 3 show that the Experimental Group (N=42) had a higher mean score in every category compared to the Control Group (N=31) mean scores in Table 2. The refreshing results that any educator would like to see would be an improvement in ability scores no matter what group a student belonged to. Tables 2 and 3 indicates these statistical improvements in both groups pre-test and post-test mean scores. Although both groups showed improvement after treatment, the gains in the control groups mean scores are higher than the gains in the mean scores of the experimental groups post-test (see Tables 2 and 3).

Table 2

*Descriptive Statistics for Pre-Test/Post-Test for Control Group*

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonal Pre-test</td>
<td>31</td>
<td>9.26</td>
<td>8.633</td>
<td>.362</td>
<td>-1.338</td>
</tr>
<tr>
<td>Rhythm Pre-test</td>
<td>31</td>
<td>13.61</td>
<td>9.390</td>
<td>-.240</td>
<td>-1.593</td>
</tr>
<tr>
<td>Solfege Pre-test</td>
<td>31</td>
<td>14.48</td>
<td>8.729</td>
<td>-.275</td>
<td>-1.414</td>
</tr>
<tr>
<td>Total Pre-test</td>
<td>31</td>
<td>37.39</td>
<td>23.569</td>
<td>-.160</td>
<td>-1.228</td>
</tr>
<tr>
<td>Tonal Post-test</td>
<td>31</td>
<td>17.48</td>
<td>8.812</td>
<td>-1.081</td>
<td>-.450</td>
</tr>
<tr>
<td>Rhythm Post-test</td>
<td>31</td>
<td>22.29</td>
<td>2.397</td>
<td>-2.261</td>
<td>6.648</td>
</tr>
<tr>
<td>Solfege Post-test</td>
<td>31</td>
<td>19.71</td>
<td>6.100</td>
<td>-1.340</td>
<td>.464</td>
</tr>
<tr>
<td>Total Post-test</td>
<td>31</td>
<td>59.48</td>
<td>14.594</td>
<td>-1.103</td>
<td>-.075</td>
</tr>
<tr>
<td>Group=1 (FILTER)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3

Descriptive Statistics for Pre-Test/Post-Test for Experimental Group

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonal Pre-test</td>
<td>42</td>
<td>14.71</td>
<td>9.63</td>
<td>-.542</td>
<td>-1.427</td>
</tr>
<tr>
<td>Rhythm Pre-test</td>
<td>42</td>
<td>18.81</td>
<td>6.556</td>
<td>-1.264</td>
<td>.602</td>
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<tr>
<td>Solfege Pre-test</td>
<td>42</td>
<td>19.17</td>
<td>7.143</td>
<td>-1.475</td>
<td>.930</td>
</tr>
<tr>
<td>Total Pre-test</td>
<td>42</td>
<td>52.50</td>
<td>20.537</td>
<td>-.966</td>
<td>.009</td>
</tr>
<tr>
<td>Tonal Post-test</td>
<td>42</td>
<td>17.88</td>
<td>9.92</td>
<td>-1.204</td>
<td>-.440</td>
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<tr>
<td>Rhythm Post-test</td>
<td>42</td>
<td>22.26</td>
<td>3.069</td>
<td>-2.95</td>
<td>9.557</td>
</tr>
<tr>
<td>Solfege Post-test</td>
<td>42</td>
<td>21.79</td>
<td>4.765</td>
<td>-2.374</td>
<td>4.717</td>
</tr>
<tr>
<td>Total Post-test</td>
<td>42</td>
<td>62.17</td>
<td>13.869</td>
<td>-1.268</td>
<td>.347</td>
</tr>
</tbody>
</table>

The concerning statistical information located in the mean score column indicates that the average pre-test total of the control group is 37.39. When the mean is divided into seventy-two possible correct pitches, rhythms and syllables, the average score is 51%. If the average score counted for a graded, the score would have been considered failing. Although previous sight-singing experience was not factored into the study, the alarming fact is that all the participants have been instructed beginning sight-singing skills (stepwise) for one year prior to the study. The same calculations were used to figure out the experimental groups average pre-test score, which was a passing grade of 73%. The post-test average scores were calculated indicating the control group scoring an 82%, and the experimental group averaging an 86%.

The treatment results in Tables 4 and 5 provide the improvement results within the groups, between the groups, and as a total. Table 4 indicates a significant difference in every category of the pre-test scores. Once again, the experimental group scored higher
on the pre-test than the control group. The post-test results in Table 5 show that there was no significant difference between the groups (see Tables 4 and 5).

Table 4

*One way ANOVA of Pre-Test scales by Treatment*

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Pre-Test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>4073.652</td>
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<td>4073.652</td>
<td>8.517</td>
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<tr>
<td>Within Groups</td>
<td>33957.855</td>
<td>71</td>
<td>478.280</td>
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<tr>
<td>Total</td>
<td>38031.507</td>
<td>72</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhythm Pre-test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>481.648</td>
<td>1</td>
<td>481.648</td>
<td>7.758</td>
<td>.007</td>
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<tr>
<td>Within Groups</td>
<td>4407.831</td>
<td>71</td>
<td>62.082</td>
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<tr>
<td>Total</td>
<td>4889.479</td>
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<td></td>
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<tr>
<td>Solfege Pre-test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>530.973</td>
<td>1</td>
<td>530.973</td>
<td>6.243</td>
<td>.015</td>
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<tr>
<td>Within Groups</td>
<td>6038.507</td>
<td>71</td>
<td>85.049</td>
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<tr>
<td>Total</td>
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<tr>
<td>Tonal Pre-test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>391.110</td>
<td>1</td>
<td>391.110</td>
<td>6.343</td>
<td>.014</td>
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<tr>
<td>Within Groups</td>
<td>4377.575</td>
<td>71</td>
<td>61.656</td>
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<tr>
<td>Total</td>
<td>4768.685</td>
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</table>

Table 5

*One way ANOVA of Post-Test scales by Treatment*

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
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</thead>
<tbody>
<tr>
<td>Total Post-Test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>2.812</td>
<td>1</td>
<td>2.812</td>
<td>.031</td>
<td>.860</td>
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<tr>
<td>Within Groups</td>
<td>6364.147</td>
<td>71</td>
<td>89.636</td>
<td></td>
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<tr>
<td>Total</td>
<td>6366.959</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhythm Post-test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>.014</td>
<td>1</td>
<td>.014</td>
<td>.002</td>
<td>.966</td>
</tr>
<tr>
<td>Within Groups</td>
<td>558.506</td>
<td>71</td>
<td>7.866</td>
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<td>Total</td>
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<tr>
<td>Solfege Post-test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>76.87</td>
<td>1</td>
<td>76.87</td>
<td>2.666</td>
<td>.107</td>
</tr>
<tr>
<td>Within Groups</td>
<td>2047.459</td>
<td>71</td>
<td>28.837</td>
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<td>Total</td>
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<tr>
<td>Tonal Post-test</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between Groups</td>
<td>128.37</td>
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<td>128.37</td>
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<td>.427</td>
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<td>Within Groups</td>
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<td>201.064</td>
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</tr>
<tr>
<td>Total</td>
<td>14403.945</td>
<td>72</td>
<td></td>
<td></td>
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</table>
Discussion

The results of the study prompt questions that deserve discussion. Since both methods of teaching improved sight-singing scores, were outside factors secretly weighing in on the results? An outside factor I noticed during the two-week instructional period was competitive talk and predictions between groups. Although the groups (control and experimental) were not announced to the participants, and competitive spirit became apparent and both groups expressed how they were going to sight-sing better than the other. This competitive attitude may have sparked some motivation in some participants to personally improve and possibly pay closer attention to sight-singing during class. Thus producing a possible “John Henry,” or “Hawthorne effect.” Although one cannot measure attitude and motivation, both factors may have had an effect on post-test improvements.

Instructional time for the methodology to noticeably improve sight-singing performance may need extension. Experiencing Music Learning Theory activities three to four times within a two-week period may not be sufficient enough for an expectation of mean scores to significantly improve. In middle school, pitch accuracy is a daily concern, especially with changing voices. Tonal pattern instruction is designed to help with pitch accuracy. Although there is not a designated time frame for practicing patterns, a two-week period may not be long enough, especially when the students participating in the study did not have Music Learning Theory instruction during elementary school. Gordon explains that tonal patterns are more challenging to perform correctly than rhythm patterns (Bluestine, 2000). With that being said, the overall results in the study compared to Gordon’s explanation, prove to be true. The tonal mean scores in both groups and in
both tests were the lowest. The rhythm scores ranked second to solfege in the pre-test and jumped to first in the post-test.

In future studies it may be more beneficial to change the post-test to a similar not identical exercise. That may show a significant difference between the groups. Each participant was informed that both tests would be identical. After experiencing the pre-test it may be possible that some students remembered the difficult tonal skips and other significant factors in the tests that may have been problematic. With a second test being similar but unfamiliar, scores may have been more innocent.

Another topic for discussion concerning the study relates to rhythm, and speaking rhythm syllables during the rhythm pattern instruction. Gordon created rhythm syllables to accompany pattern instruction. Due to the amount of previously introduced syllables, the concept of another new version of speaking rhythms is where the theory usually becomes debatable and instructors’ opinions differ. Since there are so many alternative versions already developed for rhythm instruction, educators do not want to take the time to personally learn the new technique and also introduce it to students that may have learned other counting systems. Although the participants in this study were originally educated in a different rhythmic syllable system, they adjusted to the new activity without question or missing a beat. Those results are indicated in the rhythm mean scores.

An interesting discussion worth noting occurred during an ear training activity with the experimental group. The discussion during the results of the first ear training activity was facilitated to intentionally link the activity with tonal and rhythm patterns, as well as sight-singing. Immediately students expressed their struggles with problem solving, especially deciding if the ear-training example included a rhythm error, a tonal error or both. Some students realized after the activity was over that there could have
been three types of errors. They stated that they were only searching for one of the three errors. Many students expressed a new understanding when detecting errors in music and were more aware of how ear training links to sight-singing skills. The hope is to transfer that awareness to the next ear training activity and the student’s sight-singing ability.
Chapter Five
Conclusion and Recommendations for Future Research

The purpose of the study was to determine if tonal and rhythm pattern instruction and ear training exercises improve middle school students’ sight-singing ability. The goals of the study were:

1) Implementation of a successful sight-singing approach for middle school choir students.
2) Increase music literacy as a music instructor.
3) Provide other music educators with a possible sight-singing approach for their own classroom.
4) Increase confidence in educators and students that hesitate to participate in adjudicated events because of lack of sight-reading ability.

The sample consisted of 73 seventh grade middle school choir students in a small town/rural setting. The students were divided into a control group receiving traditional music instruction, and an experimental group receiving instruction based on Music Learning Theory.

The results indicated improvement in sight-singing scores after the pre-test and post-test mean scores were analyzed. Students categorized in the experimental group that received tonal and rhythm pattern instruction and ear training, improved tonal scores by 3.17 points, rhythm scores by 3.45 points, solfege scores by 2.08 points. The overall improvements were gains of 9.67 points. The average score would be considered 86%. If an instructional approach could improve almost 10 points in two weeks, perhaps a longer period of time would produce more significant gains.

The overall goals of the study were attained, but some of the results were not as
successful as imagined. It is comforting to report that when sight-singing test scores improve, an increase in music literacy took place. Goals in successful sight-singing ability and possible sight-singing approaches were achieved based on improvement in test scores. The next paragraph will discuss potential pros and cons between instructional approaches that were not apparent in the results but factor into music literacy.

Traditional piano accompaniment approach seemed to out score the Music Learning Theory approach when scores were compared. Both approaches may improve any students sight-singing ability, but the Music Learning Theory approach appears to add extra benefits the traditional approach may not provide. Traditional piano accompaniment trains singers to rely on the piano for guidance and accuracy; Music Learning Theory trains a singer to rely on audiation skill, independence and vocal technique. At upper levels of education, acappella singing may be challenging for singers that rely on the piano for pitches.

Traditional piano accompaniment may be easier to teach because it requires less planning and adjustment by the instructor (ex. learning new rhythm syllables), but the students may not fully understand the structure of sound, and develop confidence in his or her own instrument. Traditional piano accompaniment may seem relative to rehearsing music during class. Music Learning Theory introduces new experiences during the class period to assist understanding not only sight-singing, but the function of music within the repertoire of a performance based group.

Increasing sight-singing confidence cannot be factually stated as achieved. The authors experience with sight-singing instruction provides personal confidence in participating in adjudicated events. Rehearsals can be planned to include variety of challenges for the students. Increased educator confidence in teaching sight-singing may
also translate to better success in adjudicated events.

**Results Related to Previous Studies**

Differences and similarities exist between other research literature and this study’s results concerning tonal and rhythm ability. The results of both the pre-test and post-test for both groups indicate that the participants were more accurate with the rhythm portion compared with the tonal portion. In various Music Learning Theory texts explaining pattern instruction, there are similar comments suggesting faster acquisition of rhythm pattern accuracy than tonal pattern accuracy. Elementary musical experiences tend to focus more attention on performing rhythms than developing the singing voice. Although other teaching methods such as Orff, Suzuki, or Dalcroze, support teaching vocal technique, they may not place as much emphasis on tonal accuracy as Music Learning Theory does. In this study, participants were not introduced to any concept of Music Learning Theory in elementary music. The exposure to pattern instruction, hand signs and ear training were unfamiliar to the students.

In contrast, Henry’s (2011) research indicated that many participants in the sight-singing study paid more attention to performing accurate pitches, and were more willing to compromise mistakes in rhythm to make up for pitch perfection. Henry’s study involved high school Honor’s Festival participants. The Henry study used more challenging sight-singing examples compared to the present study due to the age level of participants in the two studies. A survey was also given to gather research and information from the participants.

Another difference between the present study and Henry’s study would be the middle school changing voice and the vocal range limitations. With a limited vocal range, larger melodic skips are more difficult to accurately perform. Additionally, the level of
experience a middle school student has with sight-singing, compared to a high school Honors Festival participant should be incomparable. Again, the developmental sight-singers pitch accuracy is not as consistent, which would also tailor to Music Learning Theory’s explanation that rhythm accuracy is quickly developed and tonal accuracy takes more practice.

The results of this study did not relate directly to many previous survey studies mentioned in chapter two because the research in this study was mainly based on performance and methodology, not responses to questions. Some surveys asked questions about the role sight-singing in music education. They also included responses concerning the length of instruction and how often it should be taught.

On the other hand, survey questions that did relate to the study inquired about instructional approaches. Since the participants in both the control and experimental groups were evaluated on the type of approach they were given, it is safe to state that similarities in this study and respondents using Kodály hand signs with sight-singing instruction may improve sight-singing ability. It also suggests that Kodály, Traditional piano accompaniment, Music Learning Theory and any other approach when used with movable do (la based minor) may improve sight-singing ability.

**Future Adjustments**

Future research related to this study should examine different musical examples and extended treatment time. Although the identical pre-test and post-test isolated exact improvements based on tonal, rhythmic and solfege accuracy, an equivalent forms incorporating the same difficulty may indicate more of a significant difference between the control group and the experimental group. Recommendations of longer treatment periods may capitalize on the sequential learning process intended by Music Learning
Theory instruction. The individual instruction of tonal and rhythmic patterns did show improvement in two weeks, but may have heightened scores even more if given the opportunity with extended time.

In conclusion, educators should strive to teach music literacy. The results of the current study suggests that time spent in addressing sight-singing ability is a worthwhile endeavor. Directors are encouraged to incorporate sight-singing as a daily part of middle school choir instruction.
References


Convention, San Antonio, TX.


Music Educators National Conference (with CNAEA). (1994). *National standards for arts education: What every young American should know and be able to do in the*
arts. Reston, VA: MENC


Appendix A:

Definition of Terms
### Definition of Terms

The following definitions were cited from the glossary of the book titled, *Preparatory Audiation, Audiation, and Music Learning Theory* by Edwin Gordon.

**Audiation** - Hearing and comprehending in one’s mind the sound of music that is not or may never have been physically present. It is neither imitation nor memorization. There are six stages of audiation and eight types of audiation.

**Composite Synthesis-reading** - The highest (most advanced) level of discrimination earning. At this level of learning students learn by rote to read comprehensively, using tonal syllables and rhythm syllables, series of tonal patterns and series of rhythm patterns that were taught at lower levels of learning.

**Inference Learning** - The higher of two generic types of skill learning. In inference learning students are guided by the teacher to learn skills, content, and patterns by teaching themselves. Students are not taught by rote in inference learning.

**Learning Sequence Activity** - Activities that include skill learning sequence, content learning sequence (tonal and rhythm), and pattern learning sequence (tonal and rhythm).

**Music Learning Theory** - The analysis and synthesis of the sequential manner in which we learn when we learn music.

**Rhythm Pattern** - Two or more durations in a given meter that are audiated sequentially and form a whole.

**Rote Learning** - Information that students learn as a result of repeating what they are told or by repeating what has been performed for them, usually by a teacher.

**Syntax** - The orderly arrangement of pitches and durations that establishes the tonality and meter of a piece of music. Music has syntax but not grammar, that is, it does not have the equivalent of parts of speech.

**Tonal Pattern** - Two, three, four, or five pitches in a given tonality that are audiated sequentially and form a whole.
<table>
<thead>
<tr>
<th><strong>Tonal Syllables</strong></th>
<th>Different names that are sung for different pitches in a tonal pattern.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tonality</strong></td>
<td>That which is determined by the resting tone. If “do” is the resting tone, the tonality is major.</td>
</tr>
<tr>
<td><strong>Usual Meter</strong></td>
<td>Three types of meter in which macrobeats of equal length are audiated in pairs. Example: Duple Meter</td>
</tr>
</tbody>
</table>
Appendix B:

Pre-Test and Post-Test Singing Example
Pitch Sight Reading

Directions: Pitch Sight Reading will begin with a major scale and chord progression to help you establish the key. The metronome will introduce the steady beat. Please begin singing after the fourth beat.

Recording Directions:
1) Press record once on the zoom (flashing red)
2) Press record again (constant red)
3) Identify yourself as your research number
4) Begin CD
5) Press record to end
Appendix C:

Testing Rubric
Pre-Test Rubric

<table>
<thead>
<tr>
<th>Tonal</th>
<th>Rhythm</th>
<th>Solfege</th>
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<tbody>
<tr>
<td>/24</td>
<td>/24</td>
<td>/24</td>
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</tbody>
</table>

![Pitch Sight Reading Pretest](image1)

Post-Test Rubric

<table>
<thead>
<tr>
<th>Tonal</th>
<th>Rhythm</th>
<th>Solfege</th>
</tr>
</thead>
<tbody>
<tr>
<td>/24</td>
<td>/24</td>
<td>/24</td>
</tr>
</tbody>
</table>

![Pitch Sight Reading Pretest](image2)
Appendix D:

Student Ear Training Worksheets
BEGINNER EAR TRAINING 1

Directions: After listening to each line, circle the measure that was performed incorrectly.

Duple meter
Major tonality

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Beginner Ear Training 2

Directions: After listening to each line, circle the measure that was performed incorrectly. Triple Meter Major Tonality
BEGINNER EAR TRAINING 3

Directions: After listening to each line, circle the measure that was performed incorrectly.

Duple & Triple Meter
Major Tonality

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Beginner Ear Training 4

Directions: In lines 1-5, circle the measure that was performed incorrectly.
In lines 6-10 fill in the blank measure(s) with correct notation.

Enrythmic meter: Duple and triple
Major tonality

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Appendix E:

Teacher Ear Training Activities
Student Directions: After listening to each line, circle the measure that was performed incorrectly.

Teacher Directions: Perform each line as written. The measure with note stems going down indicates the incorrect measure that should be circled on the student worksheet.

Duple Meter
Major Tonality
**BET-Teacher 2**

**Student Directions:** After listening to each line, circle the measure that was performed incorrectly.

**Teacher Directions:** Perform each line as written. The measure with note stems going down indicates the incorrect measure that should be circled in the student worksheet.

**Triple Meter Major Tonality**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Music Notation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</tr>
<tr>
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<td>10</td>
<td></td>
</tr>
</tbody>
</table>

©2010 N. Kiel
SET-Teacher 3

Directions: After listening to each line, circle the measure that was performed incorrectly.

Duple & Triple Meter
Major Tonality
BET-TEACHER 4

Directions: In lines 1-5, circle the measure that was performed incorrectly. In lines 6-10 fill in the blank measures with correct notation.

Teacher Directions: Peer each line as written. The measures with note stems going down indicates what should be circled or filled in on the student worksheet.

ENRYTHMIC METER: Duple and TRIPLE MAJOR TONALITY

©2000 N. Kiel
Appendix F:

Kodály and Curwen

Solfege Syllables and Hand Signs