The Effect of Kodály Training on Music Teachers' Sight Singing Skills

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Abstract

Music teachers need sound musicianship skills themselves before they can develop them in their students. However, many music teachers have limited opportunities to engage in professional develop that maintains and sharpens their skills after completing their college education. Professional development is often focused on pedagogy with little attention to musicianship skills. Music teachers (n = 38) in a comprehensive summer graduate Kodály certificate program that included activities designed to improve musicianship skills were study participants. They completed the following pre- and post-test tasks: a) sing a known song with solfège syllables and hand signs, b) sing a known song with rhythm syllables, c) sing a known song with scale degree numbers, d) sight sing a simple major melody, and e) sight sing a simple minor melody. Teachers improved their musicianship as illustrated by increased scores on all five of the measures on the post test, with statistical significance on the increase in four of the five measures. Music teachers need opportunities to engage in programs that improve their own skills while honing their teaching strategies.

1. Introduction

Often music teachers do not recognize the important role of their own musicianship skills in the effectiveness of their classroom teaching. Questionnaires designed to investigate professional development needs of music teacher indicated the need for further research in this area, with special emphasis on needs of specific populations [1; 2; 3]. Bowles' research indicated that teachers were interested in the following topics for their professional development: (a) technology (66%), (b) assessment (57%), instrumental/choral literature (53%), (c) standards (45%), (d) creativity (43%), and (e) grant writing (38%). Interestingly, enhancement of their own musicianship was not listed as a priority. Content analysis of the MENC: The National Association for Music Education national biennial in-service conferences from 1984-2000 revealed that from 1984 to 2000, the number of performance-oriented sessions decreased from 59.6% to 17.1% [4]. These findings are puzzling in light of the fact that "music teachers do not think of music-making and music teaching as two separate aspects of being music teachers. Instead, in my experience, they describe music-making and teaching as two essential aspects of their identities that intersect to form and inform the music teacher and positively influence student learning in a multitude of ways" [5]. Thus, it is of primary importance that teachers develop sight-reading skills by learning a song repertoire that can be used for both the development of their own sight reading skills and in their own classroom for teaching repertoire and developing students' musicianship skills [6].

2. Zoltán Kodály and Music Education

The Hungarian composer, ethnomusicologist, and educator, Zoltán Kodály (1882–1967) is internationally recognized for creating a new style of Hungarian art music based on the folk music heritage of Hungary [7]. The in-service curriculum for the Kodály Certification Program in Texas is based on his philosophical writings and incorporates principles of teaching music developed by his colleagues and students. His writings on the significance of folk music and music education provided the impetus of developing a new pedagogy for teaching music in schools. A foundation of this pedagogy is music literacy. Although he never developed a methodology for teaching music, his philosophical and pedagogical contributions to the field of music education have become known as the Kodály Concept or Kodály Method of music education.

Zoltán Kodály was born in Kecskemét, Hungary on 16 December 1882. As a university student he studied language and literature and was a member of the Eőtvős Collegium. During this time he studied composition at the Ferenc Liszt National Academy of Music in Budapest, Hungary and was awarded degrees in both composition and teaching in 1904 and 1905, respectively. He received a doctorate for his thesis A Magyar népdal strófaszerkezete [The Stanzaic Structure of Hungarian Folk Song] in 1906. In 1929 Kodály realized that music education should be more systematic or methodical and addressed the need quality music materials in the curriculum [8]. During this time Kodály began to write music that

was specially composed for school children and more advanced students. This material is commonly referred to as the "Kodály Choral Library" and examples from this repertoire are routinely incorporated into musicianship courses in Texas States. For example in 1941 he wrote Let Us Sing Correctly and provided a guide to achieving acoustically correct vocal intonation. He also composed other two-part music for more advanced students that includes Fifteen Two-Part Singing Exercises. In 1954 he composed 33 Two-Part Singing Exercises and Tricinia and in 1965 he wrote 22 Two Part-Singing Exercises. 77 Two-Part Singing Exercises was composed in 1967 and 1968 that were based on Ainu melodies from Japan. The importance of early music education and his philosophy of early childhood music education is reflected his essay "Zene az ovodában" [Music in the Kindergarten]. In 1943 Kodály's 333 Elementary Exercises in Sight Singing were published along with four booklets of Pentatonic Music [9]. In a 1945 lecture titled "Hungarian Musical Education," Kodály examines the importance of basing Hungarian musical education on Hungarian folk music. All authentic international adaptations of the Kodály Concept use indigenous music of their own culture(s) as the basis for a music education. Kodály also addressed the efficacy of teaching singing before beginning instrumental music lessons [10]. In a speech entitled " Who is a Good Musician" given at the end of the 1953-1954 academic year at the Liszt Academy, he summarized the characteristics of a good musician as someone that had (1) a well-trained ear, (2) a well-trained intelligence, (3) a well-trained heart and (4) a well-trained hand.

Kodály believed that everyone would benefit from a music education. "It is the right of every citizen to be taught the basic elements of music, to be handed the key with which he can enter the locked world of music. To open the ear and heart of the millions to serious music is a great thing" (p.77) [10]. Only excellent musicians should teach music in the classroom. Kodály Certification programs provide teachers with intensive musicianship training as well as music pedagogy to excel in the classroom. "There is a need for better musicians, and only those will become good musicians who work at it every day. The better a musician is the easier it is for him to draw others into the happy, magic circle of music. Thus will he serve the great cause of helping music to belong to everyone" (p.255) [10].

Kodály believed that a music education should be based on singing and is the most logical starting point for a music education:

> "If one were to attempt to express the essence of this education in one word, it could only be-singing. The most frequent word to be heard on Toscannini's lips during his orchestral rehearsals was "Cantare!" expressed in a thousand and one shades of meaning" (p.206) [10].
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> "Fortunate indeed is the child who creates with his own voice the first association linking it with the picture of the notes. If he starts singing based on the concepts of instrumental techniques, then our endeavors to make the singing and aural concepts primary can hardly succeed. And if he does not sing at all, it will be nearly impossible for him to achieve free and intimate "singing" on any instrument. Even the most talented artist can never overcome the disadvantages of an education without singing" (p. 204) [10].

The teacher's own singing voice is one of the most essential tools for developing students' musicianship in the classroom.

Kodály believed that a music education should begin with folk music, as it is best suited to the physical, developmental, and psychological needs of children. Kodály valued folk songs for their simplicity, beauty, and heritage and they also provided an essential bridge to understanding the finest art songs and art music.

> "Let us stop the teachers' superstition according to which only some diluted art-substitute is suitable for teaching purposes. A child is the most susceptible and the most enthusiastic audience for pure art; for in every great artist the child is alive—and this is something felt by youth's congenial spirit. Conversely, only art of intrinsic value is suitable for children! Everything else is harmful. After all, food is more carefully chosen for an infant than for an adult. Musical nourishment which is 'rich in vitamins' is essential for children" (p. 122) [10].

Incorporating folk songs into the music curriculum is essential at Texas State Certification Program. Teachers learn several hundred folk songs throughout the duration of their studies. Folk songs form the basis for developing singing, knowledge of music style, understanding the culture of a particular region, improvisation and music literacy.

The Kodály concept promotes beginning the study of music literacy with rhythmic and melodic patterns most common to children's singing games and chants. Teaching techniques include the use of the moveable do system of solmization (referred to as relative solmization), the use of hand signs to indicate the notes of the scale and rhythmic syllables. The 1964 Budapest Conference of the International Society for Music Education drew international attention to the phenomenon musical education taking place in Hungarian music education; this was called "the Kodály Method" [11]. Accordingly, Kodály was recognized as a prominent figure in twentieth-century music education.

2. Program Description

All teaching in the 3-week summer graduate program was based on the Kodály concept, as outlined by Zoltan Kodály in Hungary in the 1940's and adapted in the United States by music teachers such as Lois Choksy. Míchéal Houlahan and Philip Tacka have continued to develop Kodály's ideas [12]. The Kodály method is a sound to symbol rather than a symbol to sound approach, and develops the student's ability to hear, recognize, identify, and reproduce sounds before being taught to read musical notation [10].

Music teachers at the PK-12 level, both choral and instrumental were study participants. They were engaged in classes focused on musicianship, developing performance skills through singing and playing piano, knowledge of music theory through performance with solfège and written work, ear training, sight reading, music memory, pedagogy, music literature, folksong analysis, conducting, and teaching laboratory. The pedagogy was taught in the pedagogy classes and teaching laboratory and modeled throughout all classroom instruction.

As part of the musicianship training within the program, students were taught sight singing using rhythm and solfège syllables. Because of the unique orientation to teaching musicianship created by Houlahan and Tacka, the instructors in the Texas Kodály Certification program did not use the rhythm syllables that were created by Émile Chevé (1804-1864), a French music theorist and pedagogue that were originally adopted by Hungarian music teachers. In the original system of Hungarian music education the study of rhythms began with the singing of simple melodies accompanied by a physical motion that enabled children to develop the ability to keep the beat as well as clap the rhythm of the melody. Later play-words were substituted for the text that was then replaced by the Chevé rhythm syllables to represent long and short sounds. A shortcoming of this system is that the syllables themselves do not enable the learner to distinguish where a sound falls on a beat. If a child were reading the same melody written in duple meter where the beat is a quarter note or where the beat is a half note, they would have to use different rhythm syllables. This can be confusing for children as well as adults. Trying to read rhythms in compound meter with the Chevé system is also confusing. The rhythm syllable for the eighth note ti is used both in simple and compound meter. This system is used in common simple meter where the beat is equal to a quarter note or for compound meters where the beat is equivalent to a dotted quarter note. We advocate the use of the Takadimi system of rhythm pedagogy as a replacement for the Chevé system as it emphasizes the location of a sound within a beat [13]. For example, when we hear a melody in duple meter we can use the Takadimi system to identify the sounds of the melody. But when we read a duple meter melody, one written where the beat is a quarter note and another where the beat is a half note, then both versions can be sung with the same rhythm syllables. This illustrates that the rhythm syllables are associated with where sounds fall on a beat rather than with note values. Another advantage of the Takadimi system is that it closely aligns with counting with numbers, a system that is used extensively by music teachers.

Kodály believed in the importance of singing with solfège syllables:

> From the example of the Paris Conservatoire it will be seen that the time is approaching when it is acknowledged that, just as writing cannot be learned unless reading has been learned first, singing or playing an instrument cannot be mastered unless solfège has itself been mastered first [14].

Kodály was convinced that a music education that was based on systematic solfège, particularly relative solfège instruction, was valuable for developing both ear training and sight-singing abilities. Relative solmization known as moveable do or tonic-solfa system can be traced to the eleventh century when Guido d'Arezzo used a form of it for musical instruction. This system was later adapted by Sarah Glover (1785-1867) an English music teacher; her system was later adopted and improved by John Curwen (1816-1880), an English Congregational minister. Relative solmization links sounds to tonal images in one's hearing and may be used with any tonal system; major, minor, modal, or pentatonic music.

As part of the musicianship training within the program, students were taught sight singing using solfège syllables with moveable do (where do is the tonic in major and la is the tonic in minor), accompanied by hand signs. Hand signs are used to illustrate the notes of the scale (solfège syllables) were developed by John Curwen, in 1862. Hand signs physically and visually help orient students to intervallic relationships as well as aid in developing inner hearing or audiation [15]. The kinesthetic movement of the hand (hand signs) associates a pattern of bodily experience with a pattern of music. We enhance cognition by connecting a pattern of movement with a melodic pattern. Students linked prior knowledge and skills by singing known songs with rhythm syllables, solfège, and hand signs [16].

3. Methodology

Participants were PK-12 music teachers who chose to participate in the Kodály training at Texas State University in San Marcos, Texas in Summer 2014. A pretest was given to each teacher and

consisted of the following tasks: a) sing "Happy Birthday" with words, b) sing "Happy Birthday" with rhythm syllables, c) sing "Happy Birthday" with solfège and hand signs, d) sing "Happy Birthday" with rhythm numbers, e) sight sing a simple major melody, and f) sight sing a simple minor melody. Data from all participants with both pre-test and post-test scores were included in the study.

Each participant was graded by two music teachers, using a rubric developed by researchers. Each element on the rubric had possible integer values from 1 to 4, with 4 being the best. Scores from the two evaluators were averaged to obtain a score on each of the tasks as well as a composite score. Inter rater reliability was calculated to verify consistency of scoring. Cronbach's alpha was calculated on both pre- and post-test scores to check the reliability of the data. Validity of the instrument was determined through the review of an expert panel consisting of three university faculty from two different institutions and one K-5 music teacher. One of the university faculty and the K-5 music teacher were certified Kodály educators.

4. Results

The instrument used was assessed for content validity, and scores on the five tasks on pre- and post-tests checked for reliability with positive results for both. Statistically significantly different pre- and post-test scores resulted in good effect sizes.

4.1 Internal Reliability

Internal reliability was tested with Cronbach's α for the pre-test and post-test scores. For pre-test scores,$\alpha = 0.75$ and for the post-test scores, $\alpha = 0.77$. Generally a score of 0.70 or greater is considered acceptable [17].

4.2 Content Validity

To assure content validity, an expert panel of university music professors and a master music teacher at the K-5 level examined the instrument. The panel consisted of two faculty members with choral director experience and one member whose field is music theory. The K-5 music teacher and one of the university professors hold Kodály certification; the other two professors do not. The panel verified that the instrument did indeed measure what it was intended to measure: 1) the teacher's ability to sing a known song with solfège syllables and hand signs, rhythm syllables, and rhythm numbers, and 2) the teacher's ability to sight sing a major or minor melody that would be sung at the fifth or sixth grade level. There was some discussion about using the same melody for the pre- and post-test, but also the realization that a different melody might not give accurate results of the improvement in skills because it would be impossible to choose a melody the required exactly the same level of expertise. It was determined that because the instruction did not include the singing of "Happy Birthday" but included many other folk songs, it would be acceptable to use the same song for the pre-test and post-test.

4.3. Inter-rater Reliability

Each participant's pre-test and post-test was assessed by two different evaluators. Inter-rater reliability calculations resulted in a score of 0.73, indicating acceptable reliability for ratings between scorers. Both internal reliability of scores disregarding different scorers, and inter-rater reliability indicate that scores are reliable.

4.4 Effect Sizes and Confidence Intervals

Of the 38 teachers in the study, 37 improved the composite score on the singing of "Happy Birthday" and sight singing a major and a minor melody. One participant's score decreased from a composite score of 21 to a composite score of 20 (possible score of 24). The mean score for each of the six measures increased, and the mean composite score increased. Means and standard deviations for each measure are shown in Table 1. The p-value for mean differences was less than or equal to 0.01 for all except sight singing a major melody. In each case, except sight singing a minor melody, the S.D. for the post test was lower than the S.D. for pre-test, indicating that the training decreased the gaps in knowledge for students in the course.

Table 1. Pre- and post-test means and standard deviations

Measure (n = 38)	Pre-test Mean [S.D.]	Post-test Mean [S.D.]
Singing with solfège and hand signs	2.16 [1.104]	3.29 [0.827]
Singing with rhythm syllables	3.00 [0.952]	3.68 [0.563]
Singing with rhythm numbers	2.46 [0.968]	3.38 [0.809]
Sight singing a major melody	3.12 [1.000]	3.43 [0.924]
Sight singing a minor melody	2.34 [1.000]	2.93 [1.050]
Composite Score	16.71 [3.781]	20.53 [3.250]

Statistical significance at the 95% confidence level was not found for sight singing a simple major melody (p = 0.16), and the effect size was 0.319. The Hedge's g effect sizes for the four statistically significant results, along with confidence intervals (CI) are given in Table 2 with a visual for confidence intervals shown in Figure 1.

Table 2. Hedge's g effect sizes

Measure	Hedge's *g*	CI
Singing with rhythm syllables	0.861	[0.39, 1.33]
Singing with rhythm numbers	1.021	[0.54, 1.50]
Singing with solfège and hand signs	1.147	[0.66, 1.63]
Sight singing a minor melody	0.570	[0.11, 1.03]
Composite Score	1.073	[0.59, 1.55]

Confidence intervals around Hedges g effect sizes shown are for singing 1) with rhythm syllables, 2) with rhythm numbers, 3) with solfège, 4) sight singing a minor melody, and 5) composite score.

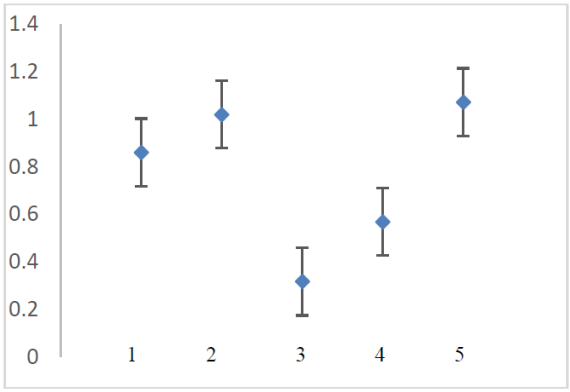

Figure 1. Confidence intervals for Hedge's g

4.5. Correlations

Some interesting correlations emerged in the analysis of the relationship between the skills assessed in the tasks. For the pre-test, there was a statistically significant positive linear correlation ($p < .01$) between the ability to sing a known song with rhythm syllables and the ability to sight sing a major melody ($r = 0.573$) and the ability to sight sing a minor melody ($r = 0.437$). Similarly, there was a statistically significant positive linear correlation ($p < .01$) between the ability to sing a known song with solfège and the ability to sight sing a major melody ($r = 0.428$). However, using solfège with a known song and sight singing a minor melody was not statistically significant. Note that using the do minor for sight singing a minor melody is quite different from using la minor, as used in the Kodály method, and a number of participants used do minor for sight singing in minor.

5. Discussion

Improving sight-singing skills is an integral component of any music theory curriculum because it enhances the student's ability to develop audiation skills. The use of musical tools such as solfège and rhythmic syllables and hand signs are effective pedagogical devices for developing sight singing [18; 19; 20]. Singing with solfège syllables with hand signs and rhythm syllables has been shown to help strengthen a student's ability to think in sound [21]. Therefore it becomes more evident that the growth of a student's ability to inner hear can be linked to his/her ability to read music.

Data from this study reveals that teachers improved significantly in their ability to use tools and techniques that can facilitate the improvement of sight singing. Teachers made significant improvements in singing a known melody, Happy Birthday with rhythm and solfège syllables. As might be expected, based on the typical experience with more major melodies, teachers did not improve their ability to sight read a major melody (grade 5 level of difficulty folksong) but they made significant improvements in sight-singing a minor melody (grade 5 level of difficulty folksong). A structured approach to teaching musicianship through a sound to symbol orientation with an emphasis on developing audition skills could be an effective pedagogical approach for conceptualizing musical thought and for building musical knowledge. Results of this study suggest that teaching musicianship through a sequential sound to symbol orientation could affect the ability of students to internalize (audiate). Music teachers who have a high level of instrumental expertise, benefit from this approach on two accounts: (1) they experience a sound to symbol pedagogy for mastering sight singing that they can implement in their own teaching, and (2) developing fluency with rhythm and solfège syllables combined with an intentional pedagogy for developing audiation is of paramount importance for developing sight singing.

Further study might begin to examine the sight reading abilities of expect musicians to read more complex music examples as is found in a traditional music theory curriculum at the undergraduate level and compare the effects of musicianship training of a more extended period of time. It would also be important to gather biographical information of each participant so that researchers could determine the participant's previous exposure to different kinds of techniques and systems for sight singing. This could provide valuable information as to the efficacy and

impact of different systems of solfège and rhythm syllables.

This study reveals that teachers are not as fluent reading minor melodies. Further study is needed to determine how teachers own musicianship is impacting their ability to teach music literacy in the classroom.

In summary we can make the following observations about the musicianship training in the Texas Summer Course:

- Singing plays a major role in the curriculum.
- Developing aural awareness (ability to hear music without any acoustical help) is embedded into the process of teaching musicianship.
- Teaching tools such as rhythmic syllables and solfège syllables are used to develop aural awareness skills, reading and dictation skills.
- Students enhance their knowledge of singing and music theory by singing folksong repertoire and art music.
- Musical examples selected for teaching are broken down into basic rhythmic and melodic patterns or building blocks that can be four to eight beats in length.
- The teaching process begins with simple musical examples and progresses to more difficult examples.
- The music examples become progressively more difficult and include both known and unknown building blocks.
- The teaching pedagogy associated with the Texas programs transcends all age groups.

6. Implications for Teaching

Teaching musicianship, particularly sight singing, is a complex activity. In reviewing the teaching process used by Houlahan and Tacka, several techniques were adopted that greatly impacted students test scores. Teachers were guided to develop their aural awareness skills as well as explore how music is organized and perceived as performers, critical thinkers, composers and listeners. Musical concepts were initially explored through singing, aural analysis (teachers would describe what they are hearing without using music terms, e.g. they could describe rhythms as sounds on the beat) and creating representations before sounds are labeled with rhythmic or solfège syllables are notated. Aural analysis is critical as it provides students with the opportunities to audiate particular phrases of music so that they can describe the sounds or pitches on particular beats. This systematic model of learning permits students to develop their aural awareness skills as well as their ability to read music as a consequence of music instruction that is perceptually based. Creating representations allows the teacher to check the perception and aural awareness of the student.

We are proposing the following Sound to Symbol principles for developing sight singing skills [22]:

- Music performance is at the heart of learning. All music knowledge should be derived through singing. Singing can be understood to also include the ability to internalize or inner hear a musical score.
- The initial introduction of all musical concepts and elements should be taught through simple music examples. These are easily learned and scaffold future learning. Students should learn to combine and manipulate these concepts; to read, write, improvise, and compose music that increasingly becomes more complex.
- Many instructors have dismissed simple music examples, such as folksongs, as being unsophisticated and not appropriate for developing aural awareness in older students. We have been able to successfully use these examples with students of all levels including those attending very elite liberal arts universities. The concept of repeatedly using simple musical examples is connected to cognitive schema theory; it provides us with the ability to think about a new element, to associate traditional forms of notation with the element and to assimilate this information.
- Students can benefit by being shown how to identify sounds and pitches in music with rhythm and solfége syllables presented in a very sequential manner. The presentation of all rhythms or introducing all major scales at once may facilitate conceptual orientation, does our experience suggests it does not promote aural awareness
- Repetitive exercises that focus on internalizing music, analyzing music by ear, and creating representations of music (without insisting on standard forms of music notation) are key to developing aural awareness.
- Students cannot sight sing if they cannot inner hear. Therefore they should be taught how to read known melodies before they read unknown melodies.

Aural awareness skills are necessary for students to develop the ability to successfully write down music they imagine; for this they need to be able to, first, inner hear music and play it back in their mind.

7. References

[1] C. Bowles, C. “The Self-expressed Professional Development Needs of Music Educators”, UPDATE: Applications of Research in Music Education, Sage, Thousand Oaks, CA, 2002, 21(2), pp. 35-41.

[2] C. Friedrichs, “The Effect of Professional Growth Opportunities as Determined by California Public High

School Instrumental Music Teachers," Dissertation Abstracts International, University Microfilms International, Ann Arbor, MI, 2001, 62(3), p. 955.
[3] S. M. Tarnowski and V. B. Murphy, "Recruitment, Retention, Retraining, and Revitalization among Elementary Music Teachers in Wisconsin and Minnesota," UPDATE: Applications of Research in Music Education, Sage, 2003, 22(1), pp. 15-27.
[4] H. E. Price and E. K. Orman, "MENC 2000 National Biennial In-service Conference: A Content Analysis," Journal of Research in Music Education, Sage, 2001, 49(3), pp. 227-233.
[5] K. Pellegrino, "Exploring the Benefits of Music-Making as Professional Development for Music Teachers," Arts Education Policy Review, Taylor & Francis, 2011, 112, pp. 79–88.
[6] M. E. Junda, "A Model In-service Music Teacher Education Program," Journal of Music Teacher Education, Sage, 1994, 3(2), pp. 6-20.
[7] M. Houlahan and P. Tacka. Zoltán Kodály: A Guide to Research. New York, London: Garland Publishing, 1998.
[8] Laszlo Eosze, Micheál Houlahan and Philip Tacka. "Zoltán Kodály (1882-1967)." The New Grove Dictionary of Music and Musicians, ed. Stanley Sadie. (London: Macmillan Publishers, Ltd.) Millennium Edition, 2002, pp. 716–726.
[9] Micheál Houlahan and Philip Tacka "Zoltán Kodály." Oxford Bibliographies Online. Ed. Bruce Gustafson. Oxford University Press, 2011.
[10] Zoltán Kodály, The Selected Writings of Zoltán Kodály, ed. F. Bonis, trans. L. Halapy and F. Macnicol. London: Boosey & Hawkes, 1974.
[11] Jenö Ádám. "The Influence of Folk Music on Public Musical Education in Hungary." Studia Musicologica, 1965, 7. 1-4, pp. 11-18.
[12] M. Houlahan, and P. Tacka. Kodály Today: A Cognitive Approach to Elementary Music Education Inspired by the Kodály Concept, 2nd ed., Oxford University Press, New York, 2015.
[13] Richard Hoffman, William Pelto, and John W. White, "Takadimi: A Beat-Oriented System of Rhythm Pedagogy," Journal of Music Theory Pedagogy, 1996, 10, pp. 7–30.
[14] M. Houlahan and P. Tacka. From Sound to Symbol. Oxford University Press, New York, 2011.
[15] K. A. Forero-Hordusky, Curwen Hand Signs and Pitch Accuracy in Sight-Reading in the Secondary Choral Classroom (Master's thesis, Colorado College), 2012.
[16] M. Houlahan and P. Tacka. "Revisiting 'Happy Birthday': Linking Perceptual Knowledge and Conceptual Understanding in Teaching Music Fundamentals," Paper presented at the European Conference of Developmental Psychology in Music Education, Jyväskylä, Finland, 2005.
[17] R. A. Peterson, "A Meta-analysis of Cronbach's Coefficient Alpha," Journal of Consumer Research, University of Chicago Press, 1994, 21(2), pp. 381-391.
[18] B. Colley, "A Comparison of Syllabic Methods for Improving Rhythm Literacy." Journal of Research in Music Education, 1987, 35(4), pp. 221-235.
[19] M. Palmer, "Relative Effectiveness of Two Approaches to Rhythm Reading for Fourth-grade Students," Journal of Research in Music Education, 1976, 24(3), pp. 110-118.
[20] P. K. Shehan, "Effects of Rote Versus Note Presentations on Rhythm Learning and Retention," Journal of Research in Music Education, Sage, 1987, 35(2), pp. 117-126.
[21] G. E. McPherson. "From Child to Musician: Skill Development During the Beginning Stages of Learning an Instrument," Psychology of Music, Sage, 2005, 33(1), pp. 5-35.
[22] M. Houlahan and P. Tacka, "Aural Awareness: A New Pitch for Developing Sound Thinking" in Sound Musicianship: Understanding the Crafts of Music, A. Brown, Ed., Australia: Cambridge Scholars Publishing, Australia, 2012.

