Phases of Learning in Music: A Panacea for the Development of Musical Aptitude

Florence Nweke
Department of Creative Arts
University of Lagos, Akoka, Lagos

Abstract

The ordinary procedure in teaching and learning music appears to be wasteful, considering that known laws as applied in other subjects in the social sciences and sciences are not applied to the subject of music. The teaching of musical notation, ear training and sight reading as well as singing could be vastly improved by the simple application of a few principles as obtained in other disciplines. To this end, the psychology of music presents a challenge and a service to teachers and students of music. This study emphasises the phases that lead to the acquisition of musical skills in children using principles proposed by Gordon and Gardner. Ten secondary schools were selected through a stratified random sampling procedure from five education districts. The study used a sample of selected male and female participants for each of the selected schools as proposed. The musical aptitude test was used in investigating the level of musical aptitude in both male and female respondents. The Chi-square statistical tool was used for this purpose. The implication of the findings is that knowledge of students' musical aptitude would assist in the selection of musical materials, their content as well as the teaching strategies appropriate for each student.

Introduction

During the growth stage the individual identifies with parents and significant people in his/her school, gets feedback from them and develops his/her self-concept. Each stage has career developmental accomplishments that a given individual is expected by his/her society to achieve. When one succeeds in one task, he can negotiate the next more increasingly complex one without difficulty. Failure to do so will result in

unhappiness in this individual. In the music vocation, early childhood is characterised as the period of developmental music aptitude which is vulnerable to positive or negative influences through both instruction and environment (Gordon 1999). The child learns to process sounds, moves rhythmically, and eventually begins to use his or her singing voice such as one is able to do in the audiation principle of Gordon. This principle is the step by step process which helps the child to comprehend music fully. Onyiuke (2000:41) stated that one must be cognizant of the child's mental age, motor development, abstracting abilities, attention span, social development, as well as the level of certain academic skills, such as reading and comprehension. All these can help develop the child's ability to associate things with symbols or words as it gets and holds the young student's attention in class. Before age nine, the degree to which a child can audiate immediate impressions and give intuitive responses at any given time is the indication of the level at which his/her music aptitude will stabilise. This usually happens at age nine (Gordon, 1986). Every child therefore, has a chance for successful placement into a general or instrumental music class, on this wise, the successful participation of individual students depend maximally on the music teacher's awareness of individual learning styles and needs. This study identifies two theories which serve as the step by step process children must go through in order to excel musically.

Literature Review

Nzewi (1999) asserts that to determine uniqueness in creativity, production and appreciation for the gamut of a cultures's music practice, a distinctive body of knowledge proposes that there must be in existence, constant and standard norms. These constitute the prerequisites for meaningful authentic music creativity. In spite of the fact that the African music is largely an informal process, even in instances of musical families and music trades. There are still philosophies in African music such as the encouragement of mass musical cognition through active participation which enables the identification of special aptitudes and capabilities. However, formal music education is found in African cultures in the form of apprenticeship systems, training schools and music borrowing practices (Nzewi, 1999:53-54). To buttress the assertions of Nzewi, this study focuses on Gardner's theory of artistic development 1974 and the principle of audiation by

Gordon 1999. It is hope that this study will serve as a panacea to musical development in children as obtained in other cultures of the world.

Gardner propounded an elegant theory of artistic development which exposes more specific ways of viewing musical development and planning for its sustenance, the theory is an investigation of the steps children go through in acquiring the roles of an artiste in the field of music and the visual arts (Zimmerman, 1986).

Gardner lists four stages of artistic development that characterises a child who is involved in music and the arts. The First stage begins with the three systems of making, perceiving and feeling in relative isolation from each other. This stage makes possible the emergence of symbolic behaviour such as playing, drawing, singing, dancing, and rhyming. Onyiuke (2000) supports this statement by adding that the use of play in the music lesson can also help develop the concept of symbolism (the child's ability to associate things with symbols or words) this gets and holds the young student's attention in class. An example of adding play to the music lesson, this could be in form of children walking to a rhythmic movement of animals in a song about animals.

The Second stage reconstructs the making, perceiving and feeling in a language of symbolic communication. The child at this stage can perceive symbols in his environment, make representations of objects in his drawings and pretend play. He can project his feeling into artistic metaphors. At this stage, Gardner concluded, the child is now an artist because he has gained enough fluency in these roles. In the African society, a child is normally assigned the simplest looking instrument; the idea is to give confident to the child by assigning a crucial role. This inculcates a keen listening habit (Nzewi 1999). At the third stage the technical aspect of artistic media is developed. Harmony may be added to the simple tunes the child makes up on the piano. Training for expertise in master instruments is acquired intuitively by observing the expertise. The final stage is that of adolescence, self-consciousness and the desire for conformity have led them to imitate established models in the adult art tradition as well as to block the uninhibited expression of their personal feelings in an artistic medium. At this point most cultures encourage innovations within the norms of a known music style. This attitude promotes competition which in turn promotes the development of music

creativity and the extension of a culture's music heritage as well as standards. The stages enunciated above are significant in the African setting and its compliments the various steps that could be imbibed when identifying a child with musical aptitude. In most African cultures, the model for systematic life- music education is institutionalized according to Nzewi as follows: The Pulse sense, the Rhythmic sense, the General musicianship, all these are fundamental to music learning and development.

Furthermore, the Gordon's music learning theory is an excellent model for understanding learning in the music discipline. It is an attempt to answer the question "How do individuals learn music?" It is based on the "Audiation theory". Gordon (1999) referred that audiation is to music what thought is to language, and that audiation takes place when one comprehends music in the mind. Azzara adds that when we audiate we give meaning to the music we hear as well as the music we are predicting (2006: 107). Consequently, Gordon uses the term audiation to mean "ability to give meaning to what one hears" (1999: 42). He therefore describes the five stages in the audiation process. The first stage is when one perceives the sound, the second when one begins to give meaning to sound through tonal and rhythmic pattern within the concepts of tonality and meter, the third when one asks "what have I just heard" and begins to find meaningful answers. The fourth stage is marked by the question "where have I heard these pattern[s]and sounds before?" and the last is when one begins to predict what one will hear next. Rosamund concludes that the first two stages describe musical aptitude while, the last three stages represent musical achievement, which is not part of this study on music aptitude (1969).

The points emphasised in Gardner's theory sufficiently explain the stages children go through before becoming an artist. This involves being able to perceive and replicate a tune or a given rhythm. This study followed these steps in other to find out if the child actually can respond to pitch, to rhythm through listening and clap patterns. It is important to note that when these methods are properly utilized, the evidence that the child is now capable of symbolic behaviour such as musical performance is revealed. The audiation principle is used as a yardstick that could attest to the fact that a study of musical aptitude involves stages that reveal the musical aptitude in a child. These stages are synonymous to Gardner's method where the

child has to do the listening and responding to music as well memorizing musical pieces. This then enables the individual child to develop his or her aptitude in music.

The relevance of Gardner's theory to this study is that it provides a general understanding of what children of different ages are artistically capable of, which then enables us to better match our educational programmes to the child's developmental level. But the more important application of the kind of rigorous developmental methodology that Gardner advocates here is that it is often the best way to find out how learning actually takes place, particularly if the identification of a sequence of stages in the acquisition of certain concepts or skills turns out to be the same sequence of steps that everyone passes through regardless of age.

The step-by-step process of music audiation proposed by Gordon and the various stages involved in Gardner's developmental approach to artistic development helps both the student and teacher of music. The theory of Gardner emphasises other factors involved in the making of an artist. Most artists know the lengthy and arduous path to mastery of an artistic medium – the hard work, the intense periods of working with one theme, idea or emotion, and the discipline involved in translating an inspiration into a concrete, dramatic product. Similarly, for those doing music professionally, the lengthy hour of personal practice needed to perform a song of maybe less than ten minutes will help them to appreciate the difficulty that children face in imbibing musical training.

Consequently, to assess musical aptitude, this study outlined the conditions that should be present for a music aptitude test to be valid, special emphasis on Seashore's atomistic principle was applied as follows: the subtests have to be based upon the four aspects of sound wave: pitch, loudness, time and timbre.: (a) use of tones, from a musical instrument (b) tonal memory should be familiar and based on simple melody (c) time should be based on rhythmic pattern and musical memory should be melodically in line (d) music training must not affect the tests (e) the tests must yield valid results as proposed by the researcher. Seashore asserts that the learning process in music involves two primary aspects: acquisition and retention of musical information and experience, and the development of musical skills. Both of these are included in the common use of the term "memory" (Seashore, 1967).

It is important to state here that the four aspects of sound waves were used in test construction which Seashore also identified. The additional test item this study used from that of Seashore was the musical memory test. This study used a musical piece that was played to the pupils twice before it was altered the third time and students were asked to identify the altered notes. This is evident in the work of Herbert Wing (1970), who used an original melody that was later altered either with a diminution of notes or augmentation of notes at the tester's discretion. To effectively engage in the musical memory test, the pupils must listen attentively. This has a part in audiation, where the sound is heard first.

One researcher who elaborated on these assertions was Harountonian (2000), in this assertion the audiation process was described as "Metaperception" this is a perceptual/cognitive process in which the musician senses sound internally; remembers this sound; manipulates the sound to match expressive intentions and communicates this interpretation of sound to others (138). When one engages in such an act of listening, it becomes easier for one to create the music experience. Reimer, cited. In Zerull (2006), states that musical listening by individuals is the act of creation that brings "musical experience to life within their own experience". Reimer believes that "listeners are called on to make sense of music" and that this act is creative; otherwise, meaningless sounds could occur without acts of individual imagination to create meaning out of what is heard (Zerull 2006). This explains the level of musical skills that has been acquired overtime by the individual. Zimmerman then adds that "the ability to perceive, discriminate, and remember is essential in learning music" (1986).

Azzara succinctly states that one of the essential elements of the Gordon principle is the audiation of tonal and rhythm imagery (1991: 107). Karma affirms that "the ability to structure acoustic materials", that is, the physical basis of sounds which include tones, rhythm, timbre, among others, is essential in the study of musical aptitude (1985: 625). Just as children gradually learn to speak the language of their culture even without formal training, Thompson observes, children also acquire the ability to understand and appreciate music in their environment, a process Thompson describes as enculturation. This enculturation is responsible for some of the most basic musical abilities found in children. For instance, most people can tap or clap to music, detect if a musician plays a wrong

note in a familiar tune, and decide whether a piece of music is joyful, sad, peaceful or energetic (Thomson 2007).

Zerull describes the innate capacities of the child as an important aspect of his/her musical development which should not be overlooked (2006). Gordon argues that all of us are born with the potential to develop our audiation but to make use of that potential we must have an appropriate environment (43). Winter also adds that the environment is seen as an interactive learning situation in which the young child has the freedom to explore the elements of music (melody, rhythm, form, harmony, timbre, tempo and dynamics) when the child discusses these explorations with the music teacher and his/her peers, the child's musical development thrives.

The theories used are relevant to this study because they reveal that the kind of musical activities and sounds that are present in the environment largely determine a child's tendency to do music. Secondly, this study evolved principles from the audiation process which can be applied when the teacher of music is teaching voice lesson in class. This principle of audiation as well as other principles, such as the meta-perception of Harountonian and Zerull's listening procedures, urged more rigorous training in listening and this helps the phases of learning in music.

The elements of music used for the identification of those having musical aptitude have been identified. To buttress these points and their relevance to this study the researcher explains some of these elements and why they have been used for a musical aptitude test.

Rhythm: One of the most natural responses to music is to move in time with it, whether by clapping, tapping, head-bopping or dancing. Rhythmic responses to music occur virtually in all cultures of the world and at all ages, suggesting that temporal dimension is fundamental to music activities in the world. Thompson (2009) states that sensitivity to musical rhythms originates from our experience with other rhythmic phenomena, such as those associated with human locomotion (walking), heart rate, and speech patterns. Thompson observes further that sensitivity to rhythm emerges very early in development, with infants as young as two months of age showing the capacity to discriminate among rhythms. The

implication of this is that a respondent who is able to clap back to the set rhythms used for the study is said to be musically apt.

Memory for Music: Remembering specific pieces of music over significant amounts of time is one of the elements required to measure a child's aptitude in music. Thus, this study exposes students to a folk tune from the Yoruba culture of Nigeria for two consecutive times. Following this exposure phase, the music was altered. The researcher then assesses whether the respondent remembered the music. The researcher reasoned that if the respondent could identify the altered notes in the music piece as different from the main melody, then the test of musical memory will be an indication that the child has an aptitude for music. Thompson (2009) observes that the effects of learning that result from exposure to music are often subtle, occurring without conscious awareness, notes also that musical memory may explain how listeners develop an appreciation for the music of their culture.

Pitch: Sensitivity to consonance and dissonance allow one to differentiate musical intervals in terms of their degree of irregularity. This study discovered that sensitivity to pitch is essential and may be considered crucial and fundamental to our appreciation of musical structure. Other parameters measured in this study include test for intensity and timbre as well as interval tests. The limitation of these tests is that a level of exposure to musical training is a prerequisite for these kinds of test as the researcher found that most of the respondents found it difficult to respond positively to this section of the musical aptitude tests.

Methodology

This study covers twelve selected junior secondary schools (Basic 7-9) in six education districts in Lagos State in order to have an even representation of young people in the state. The target population for the study includes male and female students from junior secondary school (J.S.S. 1-3). These students' ages range between 11 and 17. For the main study, the remaining five education districts were included. Ten schools were selected through the stratified sampling technique. Two schools were selected from each education districts and the study proposed a sample size of 60 participants (30 male and 30 female students) for each of the selected schools. In the course of the field exercise, it was found

that the private schools selected had much fewer students than the public schools. In addition, school managements in the private schools were less cooperative. Consequently, all willing participants in all the selected schools were included in the sample. While a total of 612 participants took part in the study, 598 of the cases were successfully conducted and used for analysis in the study.

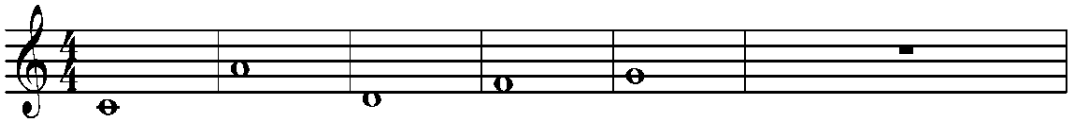
Significance of the Study

The results of this study will provide a systematic way of teaching and learning music for music teachers and the junior secondary school students in general.

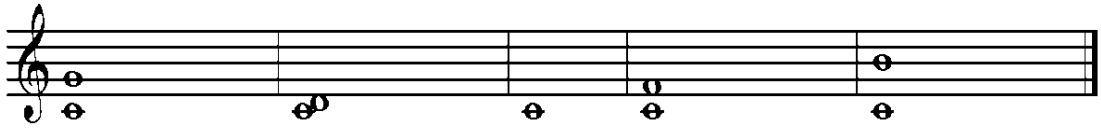
Musical Aptitude Tests

The musical aptitude test was conducted to enable the researcher finds out what musical experiences the respondents have prior to the testing time as test materials were not exposed before the test was conducted. Here are few examples of the tests conducted.

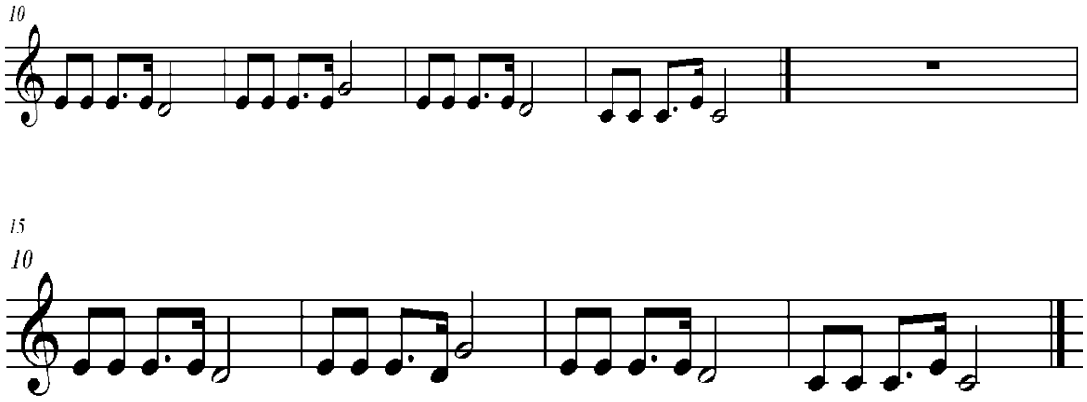
In the first section, the research respondents in smaller groups were asked to produce the sound individually in each of the ten schools used. The test was adopted from Herbert Wing test of musical aptitude (1970) and afterward was adapted to fit into the Nigerian environment. Respondents were asked to use La to reproduce the following pitch as was sounded on the piano.



In the second section, certain sounds were played from the piano and respondents were to indicate the sounds that were the same, those that were not the same and those for which they had no answer, which were marked as 'I don't know'.

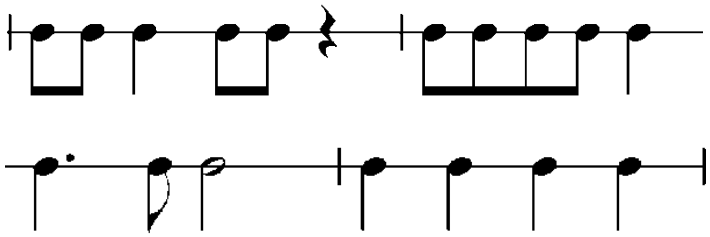


The third section includes the musical memory test; in the musical memory items, respondents heard two versions of a brief melody and were asked to identify the altered musical note as different from the original melody.



Items in the rhythmic section required respondents to clap to the correct rhythmic pattern from what is played from the tape recorder.

Items: i-iv



In the last section of this study, certain musical instruments produced certain sounds; respondents were asked to write the instrument that has such sounds and to indicate whether the sounds produced were (a) loud (b) soft (c) or I don't know.

The test basically assesses the recognition of pitch identification, rhythmic notation, musical memory, instrument identification as well as interval recognition. It was observed that respondents in this study fell short when asked to identify certain instruments that played the musical sound that was played to them. This is due to the fact that some of these instruments have not been given priority in the teaching-learning process in the schools. Also, the musical aptitude test does not require prior knowledge of music. This research found that those students who identified that they

could play musical instruments were actually able to identify some of the musical instruments that played these sounds. This shows that there is a significant relationship between musical ability and musical aptitude. It should be noted that in a test of musical aptitude, the test of identification of musical instrument should not be a priority on a musical aptitude test list as it does not justify what the intention of an aptitude test is. However, in a study like this where the correlation between musical ability and musical aptitude is being assessed, we can make do with the findings that those who possess high ability in music have high musical aptitude.

Findings

Table 1: Profile of respondents

Item	Options	No of students Frequency	Percentage
Name of school	Ajumoni Jnr Sec School	82	13.71
	State Jnr High School	99	16.56
	Girls Jnr Academy School	99	16.56
	Shame-el-deen Gram. school	68	11.37
	Ajeromi-Ifelodun Jnr High School	81	13.54
	Oloye Comprehensive College	28	4.68
	Vivian Fowler Girls High school	43	7.19
	Premiere Group of schools	34	5.68
	Chemline Schools	16	2.68
	Peaklane Schools	48	8.03
	Total	**598**	**100.0**
Gender of respondents	Male	271	45.3
	Female	327	54.7
	Total	**598**	**100.0**
Age group of respondents	Less than 12 years	82	13.7
	Between 12 – 14 years	428	71.6
	Between 15 – 17 years	80	13.4
	Above 17 years	8	1.3
	Total	**598**	**100.0**
Class of respondent	JSS 1	80	13.3
	JSS 2	407	68.1
	JSS 3	111	18.6
	Total	**598**	**100.0**

Table 2: Frequency and Percentage Distribution of Respondents by Musical Aptitude

Items	Options	Frequency	Percentage
Respondents pitched the sound on the piano	Poor	142	23.7
	Average	32	5.4
	High	215	36.0
	Very high	209	35.0
	Total	598	100.0
Respondents could not identify the sounds they listened to	Poor	489	81.8
	Average	21	3.5
	High	57	9.5
	Very high	31	5.2
	Total	598	100.0
Respondents remembered the original music	Poor	82	13.7
	Average	127	21.2
	High	221	37.0
	Very high	168	28.1
	Total	598	100.0
Respondents can clap to the rhythm	Poor	56	9.4
	Average	114	19.0
	High	225	37.6
	Very high	203	33.9
	Total	598	100.0
Respondents know the sounds produced by the musical instrument	Poor	262	43.8
	Average	51	8.5
	High	152	25.4
	Very high	133	22.2
	Total	598	100.0

The researcher awarded marks for the sounds produced by respondent and it was observed as follows: 35.0% of them properly pitched the sound on the piano; 36.0% were able to pitch the sound of the piano well but not perfectly; 5.4% were just average while 24% did poorly in pitch production. The students were tested in their ability to identify the sounds they listened to. From the results, it was observed that 81.8% identified the sound that was played; 3.5% of the samples were average; 9.5% did poorly, while the remaining 5.2% were very poor in sound identification.

Table 2 above reports the ability of the sample to remember the original music that was played. The result shows that 28.1% of the sample remembered the original music, while 37.0% of them also did fairly good; 21.2% were just average at remembering the original music; and 13.7% were poor at the musical memory test. The respondents were tested in their ability to clap to the rhythm and the results showed that 33.9% of the sample were able to clap to the rhythm; 37.6% could also clap to the rhythm but not very good; 19.0% were just average, and 9.4% of the respondents' clapping was poor. The level of knowledge of sounds produced by these musical instruments (violin, trumpet, drums, and flute) was tested, and the results show that 22.2% of the sample knew the sounds produced by the musical instrument perfectly; 25.4% were good at identifying the sounds produced, although 8.5% of them did not correctly get the exact sounds the instruments produced; 43.8% had poor results, as they did not know the quality of sounds produced.

Recommendation

There is no doubt that aptitude testing will thrive in music education research in the future. It is incumbent upon music psychology and music education research scholars to be cognizant of standardized test construction procedures and practices so that the modest efforts initiated by this study will continue to expand. Further research should be geared towards the investigation of the predictive validity of music aptitude tests and the effects of formal music experiences on students' musical aptitude scores which could lead to students' music achievement in the long run. Results from such research efforts may assist music teachers decide the contexts in which music aptitude tests could be most suitable for the students in the advancement of his/her psychological well-being and the immediate human environment. This study, also recommends the use of music education conferences and in-service sessions, from the local to national level, to transfer information and skills to music teachers in terms of aptitude and achievement assessment.

References

Azzara, Christopher (1991) "Audiation, improvisation and music learning theory". The quarterly, 2(1-2), pp. 106-109. http://www.usr.nder.edu.vrme.. Accessed 31/07/2013.

Gardner, H& D. Abrams, (1974) "The Arts and Human Development: A Psychological Study of the Artistic Process (Emphasis on the development of Creativity in the Child)". Review *Congress of Research in Dance,* 6(2) 42-47. jstor.org/stable/1477607.

Gordon, E. (1999) "All about Audiation and Music Aptitudes" *Music Educators Journal, Vol.* 86.2 Pp 41-44.

Harountounian, J. (2000) "Perspective of Musical Talent: A Study of Identification Criteria and Procedures." *Article of High Ability studies,* 11, 2(2000):137-160. EBSCOhost.

Kai, Karma (1985) "*Components of Auditive Structuring- Towards a Theory of Musical Aptitude". Bulletin of the Council of Research in Music Education,* (83), 1-13. www.jstor.org/stable/40318083. web. Accessed 15012014.

Nzewi, M. (1999) "Strategies for Music Education in Africa: Towards a meaningful Progression from Tradition to Modern." International Journal of Music Education. Institute of African Studies, University of Nigeria. Vol. 33. Pp 72-87.

Onyiuke, Young Sook. "Music as a Source of Aesthetic education" *UNIZIK Journal of Arts and Humanities. 1,* 1:13. (2000).

Rosamund, S.D. (1981) "The Psychology of Musical Ability". London: Methuen.

Seashore, C. E, (1967) *"Psychology of Music"* New York. Dover.

Seashore, C.E. (1920) "The Inheritance of Musical Talent" *The Musical Quarterly,* 6.4: pp 586-598. Oxford University.

Thompson, W. F. (2009) Music, Thought, and Feeling: understanding the Psychology of Music. New York: Oxford University Press.

Wing, H. (1970) "Tests of Musical Ability and Appreciation: An Investigation into the Measurement, Distribution and Development Of Musical Capacity". London: Cambridge University.

Zerull, David. (2006) "Developing Musical Listening in Performance Ensemble Classes". *Article on Arts Education Policy Review* 107.3:41-46. 711130. EBSCOhost.Web.10 Jan. 2013.

Zimmerman, M. P. (1986) "Music Development in Middle Childhood: A Summary of Selected Research Studies". *Bulletin of the Council of Research in Music Education, Early and Middle Childhood Research in Music Education*. Illinois Press University (84), (1986):18-35. jstor.org/stable/40317966.