



The role of musical intelligence

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ABSTRACT

The role of musical intelligence was investigated at a Central Florida elementary school. Four participating teachers implemented the Theory of Multiple Intelligences (MI) by Howard Gardner in their classroom curricula. Extent and quality of musical experiences, corresponding assessments, and comparison with representative schools from MI literature were examined through case study data collection methods. Only one assessment for musical growth and one assessment for musical ability were found in the MI literature. No such assessments were present in the school setting. Influences on the role of musical intelligence included perceptions about: MI, music integration, musical growth, assessment of musical growth and assessment in general. Political climate at the school and district were also cited as highly influential in determining the role of musical intelligence in the school's MI curriculum. Recommendations to correlate MI learning strategies and music activities with *Sunshine State Standards* benchmarks learning, and to allow time and resources for such training, were suggested by participating teachers. Other recommendations include greater contributions to MI literature from the arts education community, music specialist involvement in curriculum planning, and support from school and district administration.

INTRODUCTION

The educational reform movement of recent years has spawned the search for innovative approaches to teaching. One theory that has impacted the design of many schools and curricula is the theory of Multiple Intelligences (MI) posited by Howard Gardner (1983). This theory suggests that there are several human intelligences that are relatively independent of one another and can be fashioned and combined in a multiplicity of adaptive ways by individuals and cultures. Schools have been reformed and, in some cases, created to include teaching methods and learning activities and assessments suggested in literature about MI theory.

Although Gardner did not posit this theory with the intent that schools would embrace it as a basis for comprehensive school reform, many have done so. At this point, little attention has been paid to questions of whether teachers are thoughtfully addressing the development of musical intelligence. Also unknown is whether by parents or children involved in MI programs even recognize or desire development of musical intelligence.

Music educators and other stakeholders have cause for concern because music has often been marginalized in the public school curriculum of America. Teachers in MI schools may be enhancing the growth of musical intelligence in a conscious and effective way; however it is also possible that their practices do little to enhance such growth. Should the latter be true, then it should be imperative that schools based on the theory of Multiple Intelligences supplement the musical training of children by work with specialists so that adequate growth is accomplished.

Music activities may be helpful, harmful or ineffective for musical growth in MI schools. The purpose of this study was to examine the question of the extent and quality of musical activities designed to stimulate the use of musical intelligence by children in grades Kindergarten through three in one MI school in Central Florida.

In the time since Howard Gardner's *Frames of Mind: The Theory of Multiple Intelligences* was published in 1983, educators, administrators and parents have questioned traditional assessments of intelligence in America's schools. Standardized tests in the public schools have historically been concerned with only two categories of aptitude; verbal and mathematical.

Instead of defining intelligence as a combination of verbal and mathematical aptitudes, the theory of Multiple Intelligences (Hatch and Gardner, 1996, p. 11) includes the following:

- **Linguistic Intelligence** – sensitivity to the sounds, rhythms, and meanings of words; sensitivity to the different functions of language.
- **Musical Intelligence** – abilities to produce and appreciate rhythm, pitch, and timbre; appreciation of the forms of musical expressiveness.
- **Logical-Mathematical Intelligence** – sensitivity to patterns, orderliness, and systematicity; ability to handle long chains of reasoning.
- **Spatial Intelligence** – capacities to perceive the spatial world accurately, to perform transformations on ones' initial perceptions, and to re-create aspects of one's visual experience.
- **Bodily-Kinesthetic Intelligence** – abilities to control one's body movements and to handle objects skillfully.
- **Interpersonal Intelligence** – capacities to discern and respond appropriately to the moods, temperaments, motivations, and desires of other people.

- **Intrapersonal Intelligence** – access to one's own feelings; the ability to discriminate among them and draw upon them to guide behavior.
- **Naturalistic Intelligence** - the capacity to draw on materials and features of the natural environment to solve problems or fashion products (Hatch, 1997).

Elementary students enrolled in MI schools or classrooms often engage in music learning activities for two reasons. First, the music activities may be designed for musical growth, and second, music activities may be designed as entry points to enhance learning academic content (Gardner, 1991). In either case, individual teachers must determine how well students are growing musically and what other value the activities hold for their students.

Teachers make many choices about the types of activities students will experience in MI schools. Teachers base these choices on their perceptions of the nature of musical intelligence as a construct, the appearance of evidence of musical growth, the criteria for assessing musical growth, and their particular interpretations of Gardner's theory (Campbell, 1997).

THE PROBLEM

Since all participants in MI school development consider music an intelligence, it seems that musical growth should be assessed in some fashion in any model of curriculum design. If, as Gardner has argued, musical intelligence (and the other intelligences) can be identified and developed, the MI teacher could be assumed to be concerned with students' musical abilities, musical growth and assessment of both ability and progress.

While there is some evidence in MI literature that musical intelligence may be tested as a capacity or ability, there is little evidence that MI educators are bridging music activities to musical growth, rather than academic content. Without assessment of musical intelligence, or some aspect of musical growth, there is no way of knowing whether music activities are helpful, harmful or ineffective for musical growth in MI schools.

WHAT IS MUSICAL INTELLIGENCE?

Two important facets of MI theory appear to have significant bearing on the nature of musical intelligence. First is the premise that the intelligences can be educated or developed through

schooling and learning (Gardner, 1993 p.334). For example, if someone learns to play an instrument, the knowledge to be acquired is musical. The material mastered falls squarely in the domain of musical intelligence. Secondly is the premise that the intelligences may each be exploited as a means of transmission, often referred to as an entry point or catalyst for learning all manner of content (Gardner, 1993, 1995a, 1996).

For many educators, musical intelligence is often regarded as a talent derived from natural ability, or a gift that only certain people possess (Gardner, 1993, Hinckley, 1998, Reimer, 1998). Intelligence associated with musical understanding does not always relate to superior levels of achievement in other academic areas. Yet MI theory holds that the nurturing and development that takes place in musical learning is autonomous and on par with the processes that take place in studying languages, mathematics and the sciences (Potter, 1997, p.3). Thus, musical intelligence (like all intelligences) can serve as both form or means of learning, and message or content learned (Gardner, 1993, p. 334).

Musical intelligence in the context of MI theory has been examined and reported thoroughly by only a few scholars (Eisner, 1994; Elliot, 1995; Fowler, 1990; Potter, 1997; Reimer, 1998). In all the cases cited above, music as the message or content learned was discussed thoroughly. This is in stark contrast to the emphasis on music as form or means (entry point) in most MI literature (Armstrong, 1994; Campbell, Campbell and Dickinson, 1999; Emig, 1997; Failoni, 1993; Fogarty and Stoehr, 1995; Lazear, 1991, 1994, 1995; Liess and Ritchie, 1995; Rauscher and Shaw, 1998; Smagorinsky, 1996; Tucker, 1995).

The audience of readers for the former group of scholars is most often comprised of music educators or affiliated colleagues, evidenced by presentation of these articles or chapters in journals and books about music or arts education. The larger group of scholars and reporters, those who fall in the latter category of music as an entry point to academic learning, write for general education and media publications. Those types of publications include curriculum and leadership journals and books about the application of MI in the classroom that are more accessible to the classroom teacher. This contrast in emphasis about the form versus the content of music in education may affect the implementation of MI in elementary classroom curricula by classroom teachers.

CRITICISM OF MI THEORY

Implementation of MI into elementary curricula means many different things to many people (Campbell, 1997). Because the theory was not designed as an educational reform vehicle, it is possible that teachers do not fully understand the theory. Of those who do understand, many focus only on a theme or idea from MI that serves pre-determined purposes (Gardner, 1995a). Criticism of MI needs to be examined in two ways. First the theory itself must be analyzed for possible problems, and secondly, the implementation of any learning theory must be carefully considered in the context of schooling.

Some criticism of MI implementation in elementary education is based on concerns about integration. There are also some concerns evidenced by commentaries on the theory itself, especially the notion of artistic intelligences.

LEARNING STYLES

Since Gardner's definition of intelligences indicates not only capabilities, but often preferences for learning, some critics have charged that MI is simply another name for learning styles or cognitive styles (Morgan, 1992). Morgan's literature review shows numerous compatibilities between what he called "styles of cognition" and the MI intelligences. His example of "field dependent" learning in comparison with logical-mathematical intelligence is present in other commentaries on MI referenced by Morgan in his research report, which criticizes the definitions of seven of the eight intelligences.

According to Morgan (1992), Gardner's descriptions of the various intelligences, include the terms sensitivities, abilities, capabilities and capacities; resulting in inconsistent definitions of each intelligence. The musical intelligence is an example of an intelligence which Gardner defined as an ability to produce and appreciate rhythm, pitch and timbre or appreciation of the forms of musical expressiveness. Morgan pointed out that there is a noticeable absence of the ability to produce and appreciate paintings, sculptures and other arts from Gardner's MI theory.

ARTISTIC INTELLIGENCE

Like Morgan, Elliot Eisner (1994) expressed concern about language, especially with regard to artistic intelligence. While Morgan's criticism centers around using another name for already similarly recognized theories of intelligence, Eisner's criticism points to disagreement with Gardner's version of artistic intelligence, whether manifested in bodily-kinesthetic, musical or any other intelligence required to produce works of art. Gardner is unclear about musical intelligence, in both his definition and his lack of explanation about developing musically. The artistic aspect of intelligence is not sufficiently well addressed according to Eisner.

Citing MI theory to support his argument, Gabriel Salomon (1997) claimed that mental processing depends on the structure of the symbol system along with the maturation of neurophysiological functions. Different symbol systems may offer different meaning, require different mental capacities, be differently perceived, and leave differential cognitive residue or impressions on a mind. In making his argument that media is part of information itself, Salomon created a case for the artistic context of learning musical and other artistic intelligences within MI theory.

THE CONTEXT OF MUSICAL INTELLIGENCE

Both Eisner and Sternberg (1994) argue that the context of learning and the tasks assigned are important in how each person's configuration of abilities is manifested. Reimer expanded on the concept of intelligence offered by Gardner, emphasizing the importance of roles in understanding the intelligences. Reimer's view of musical intelligence is less general, in order to "illuminate the diverse roles operative within and essential to the domain of music" (Reimer, 1998, p.2). Musical intelligences are described as many, instead of one intelligence because of the many roles and contexts in which the musical intelligences operate. The importance of that context was the point of Gardner's own Project Spectrum research, which remains inconclusive (Hatch and Gardner, 1996). Regardless of terminology, musical meanings are arrived at through a culture which is a context of learning and growing.

Gardner is opposed to the exclusive emphasis on logical-mathematical and linguistic symbol systems in most schools. He stated that "separate psychological processes appear to be involved" in dealing with the various intelligences (Gardner and Hatch, 1995, p. 149). The conditions for music learning would require a musical context, using musical symbols. The

symbol systems used in most MI schools and the creative conditions established in most MI settings are not truly those typically used by creative, artistic children.

Creativity requires conditions and skills that enable students to produce creative works (Webster, 1987). The skills are the basis for musical intelligence, according to Webster's theory, and the conditions include environmental and motivational in addition to conditions within a person such as subconscious imagery and personality. Gardner's concern for the lack of such external conditions might serve as a response to the concern voiced by Barbara Osberg who termed MI students a new category of losers. Osberg (1995) was skeptical about the application of MI in situations where children might not be creative and therefore might fall into another category of losers. Osberg noted that some will always fare better on assessments than others and that because of assessment, there are always winners and losers in education.

GARDNER'S RESPONSES TO CRITICISM

As founder of the theory of multiple intelligences, Gardner has responded many times in writing and in public debate to all of the issues brought to light by the aforementioned critics and commentators (Gardner, 1995a. 1996b). The domain in which one may be considered intelligent is quite different from the learning style such as "field dependent" or personality style such as a Myers-Briggs type indicator. While Gardner recognized that there are various learning styles and preferences, MI holds that styles cannot be equated with intelligences and that a learning preference in one content area does not necessarily dictate the same learning preference in another content area.

This distinction, though important, is confusing. Since the theory supports the use of several intelligences at once, the learning preferences and cognitive styles might be in conflict with one another. Gardner (1995a) argued that intelligence is a new kind of construct and should not be confused with a domain or discipline, although his theory includes intelligence as both form and content. The confusion may lie in some of his own description, since he referred to content area in his above explanation about learning style in the same article.

In defense of the inconsistencies among the definitions of each intelligence, Gardner refused to constrict his view of intelligence so that scholars would be more comfortable with the

theory. Since the intelligences are manifestations of quite different abilities, this refusal to streamline the definitions may make sense in support of a theory of the multiplicity of intelligences, rather than the sameness of all great intellect.

The trouble with the artistic treatment of a symbol system as required by Eisner appears to be part of a continuing debate. While Gardner allows the intelligences to remain inconsistent in definition, there is no evidence that artistic treatment of any kind of content will ever be required as far as he is concerned. Perhaps the lack of a specific artistic intelligence explains the stand taken by Gardner. Unlike Morgan, Eisner and Reimer, Gardner's comments only require appreciation for and understanding of the elements in music in order to have musical intelligence.

The guiding question in this research was "What, if any, musical growth takes place as a result of an MI curriculum?" Data sources included information provided by participants in a Central Florida MI school compared with fifty-five books, articles and essays (Wilson, 1999) written about the theory of Multiple Intelligences since its inception in 1983 (MI literature) until the study was completed in 1999.

Central Florida elementary MI schools were identified and placed into four categories of curricular design models classified by Campbell, Campbell and Dickinson (1999). Tables 1 and 2 illustrate the four categories and their characteristics, including how each may assess growth. With the exception of Celebration School, Central Florida MI schools are code named for confidentiality.

Table 1
Curricular Design Models of MI Schools

Model	MI Emphasis	Instructional Strategies	Music Activities
Multimodal	Multiple intelligences as entry points into disciplinary content	Single and multi-grade classrooms	Varies from school to school and teacher to teacher. Integrated and taught separately
Developmentally-based	Multiple intelligences as tools of instruction toward in-depth knowledge and	Themes, student choice, cooperative learning, group processing, life skills development, less information, more	Unknown

	development	application	
Arts-based	Multiple intelligences as strong rationale for learning in and through the arts. Arts as disciplines in their own right	Both integrated and separately taught arts courses	Important as discipline as vehicle for developing all intelligences
Intelligence-based	Teaching for intelligence rather than through intelligences	Programs significantly reorganized to accommodate students' individual interests. Flow rooms, non-directive, non-cooperative	Varies according to students' choices. Often music as optional activity in Flow room

Table 2
Assessment and Location Information of MI Schools

Model	Assessments	Central Florida Schools	U.S. Schools
Multimodal	Portfolios, skills checklists, Hypercard stacks, letter grades, S-U in music, A-F in other academic subjects	Evergreen Elementary Trailblazer R-6	Hart-Ransom K-12 Modesto, California
Developmentally-based	Correspond with teaching strategies to determine degree of success in decision-making and problem-solving	Celebration K-12	Lincoln High School, Stockton, California New City School Elementary* St. Louis, Missouri
Arts-based	Both graded and non-graded music lessons, progress charts with checklists of areas of achievement and areas of more work needed	True School K-8	New City School Elementary* St. Louis, Missouri
Intelligence-based	Unknown	Phoenix Elementary	The Key School Indianapolis, Indiana

*In part

**Data for Tables 1 and 2 provided in part by Campbell, Campbell and Dickinson (1999). *Teaching and learning through the multiple intelligences*. Needham Heights, Massachusetts: Allyn and Bacon

Trailblazer School is a Multimodal MI school in which the researcher taught and consulted with elementary teachers to infuse music activities into the existing curriculum. Since Multimodal design is common in new or newly adapted MI schools, this teaching and consulting experience provided the researcher with insight into the process of curriculum adaptation to include music activities.

Finally, data were collected at the selected site, Evergreen (Multimodal) School, to examine the role of musical intelligence in four participating classrooms. Information provided by the three groups of participants was compared with the information about music learning and assessment from MI literature. These two sets of information are the sources of data on which this report is based.

In order to find evidence of musical growth, three related research questions were formulated. These questions were asked in the context of MI schools, defined as a school that has a curriculum inclusive of teaching methods and learning activities based on the theory of Multiple Intelligences by Howard Gardner, or based on subsequent work grounded in Gardner's theory.

Case study methodology using interviews, observations, artifact review and a questionnaire for parents and teachers were employed at Evergreen. Analysis of data included coding of interviews, observations and follow-up discussions using a contact summary sheet and a document summary sheet for artifacts. Field notes, a researcher journal, and all documents were examined for patterns of perception, behavior and teacher theorizing. The questionnaire was analyzed for frequency and percentage of item response and individual items were reviewed by participating teachers for explanation of patterns and trends. Triangulation of all data completed the analysis in the form of a naturalistic (Smith, 1990), descriptive report.

DEFINITION OF TERMS

The following terms are defined here to clarify author's intent in discussing this research.

- Entry Point--This term refers to utilizing a student's strength, one of the eight Multiple Intelligences, to learn and understand academic content (Gardner, 1983).
- Academic Content--The information contained in textbooks, including historical, scientific, linguistic and mathematical facts. The term also implies non-artistic content and would not include aesthetic and expressive understanding.
- MI School--A school that has a curriculum inclusive of teaching methods and learning activities based on the theory of Multiple Intelligences by Howard Gardner, or based on subsequent work grounded in Gardner's theory.
- Assessment--The measurement of ability or growth of an individual student.
- Musical growth--The progress of a student's ability to read music, perform music, create music and analyze music.
- Music activities--Learning activities undertaken by students in MI classes either as entry points to learning or as stimulus to musical growth.

RESEARCH QUESTIONS

1. What assessments for musical growth can be found in the literature?

MI literature was examined for content inclusive of comments about both musical intelligence and music assessment (of any kind). The majority was intended to provide practical ideas for implementing MI theory in the elementary classroom. The intended audience was elementary educators.

2. What are MI parents', students', and teachers' perceptions of musical growth?

The question required an examination of the music activities and assessments, if any, at Evergreen School. Fifty-four parents or sets of parents provided information about their perceptions of musical intelligence and learning on a researcher developed questionnaire. Teachers and the school principal provided artifacts such as lesson plans, tape recordings and word sheets to songs for researcher analysis. Each teacher allowed several observations of music activities and other learning tasks and participated in three or four interviews. Their

classrooms became the social settings in question and their responses to interview questions formed the basis for focusing the data.

Students participated in music activities during class observations. In addition, fifteen students were individually interviewed and asked about their music activities and their thoughts on music learning. Their responses and behaviors became the basis for analysis of student perceptions at Evergreen School.

Targeted areas of inquiry were: 1) perceptions of musical intelligence as a construct, 2) musical growth and 3) assessment of musical growth. Students, teachers and parents contributed conflicting information, at times. The researcher compared information provided by the participants with observed behaviors and artifacts. These comparisons formed the basis for interpreting the data.

3. How are the assessments provided by the representative models in MI literature demonstrated in an existing Central Florida MI school?

This question called for a comparison of the music assessments in the MI literature and the participants' perceptions about the role of musical intelligence in the curricula. Perceptions about MI theory, music integration, musical growth, assessment of musical growth and the school's political climate were all important areas of study and findings. Since formal assessment practices did not exist, perceptions were examined for insight into the value teachers hold for music activities and experiences.

Music-related practices in an existing Central Florida MI school were compared to the representative model MI schools in educational literature across several factors. Those factors include: amount of time spent on music activities, use of assessment rubrics or other instruments, types of activities, selected, (ie instrumental improvisation, listening to music recordings); and teacher experience and training. Further investigation into teachers' experience with MI training; teachers and parents understanding of MI; and students' teachers' and parents' perceptions of musical intelligence was used to complete the portrait of music learning in an MI school.

Rationale for Qualitative Methodology in MI Research

At the outset of this research in 1996, assessment of musical growth in MI schools was sought as an answer to the question of what evidence Central Florida's MI schools could provide of musical growth. Teachers were unaware of *National Standards* or *Sunshine State Standards* in the area of music. The standards were quite new and had not become compulsory in education at that time. Comparison of music activities with the achievement levels described in the standards proved inappropriate, since participating teachers had no knowledge of the standards.

At Trailblazer School, teachers revealed insights about their learning theories and their perceptions of music's role in education. This phase of the study allowed participants to raise and discuss questions about Gardner's theory, the importance of music, the impact of the parents on the curriculum and the students' perspectives. The teachers' insights and the two-way nature of the contact with participants yielded data that better illuminated the essence of the role of music, than the more quantifiable checklist used in the first phase of the study. "In field-focused research into education, teachers' narratives, including their beliefs and their theories, comprise the questions that researchers investigate in order to understand the setting" (Latoruneau-Fallon, 1996; Liess and Ritchie, 1995).

The inclusion of the perceptions of research participants has been established as useful information in qualitative methodology. The perceived importance of music integration was investigated by Waibel (1998) in a study of elementary curriculum targeting teachers' perceptions. "The research on teacher thinking generally agrees that teachers' personal theories and beliefs serve as the basis for classroom practice and curriculum decision making, yet the nature of this relationship is not well understood" (Ross, Cornett and McCutcheon, 1992). The understanding obtained from the perceptions and insights of teachers, students and parents helps clarify the relational aspects of the school as a culture. The role of musical intelligence is described here through an examination of the relationships between all of the influencing factors in the curriculum. Those factors include the people, their perceptions and the setting in which the learning occurs.

While teacher/researcher authored studies on MI implementation in elementary schools have been established as accepted research in MI literature, musical growth is not addressed in any

of the case studies or reports from the field. This study provided a missing perspectives on music learning in a Central Florida MI school by including qualitative methodology, case study data collection and descriptive, comparative analysis.

Research Question One: MI Literature

Although assessment is a key component of MI (Gardner, 1993), a review of existing literature suggested confusion over the assessment of musical intelligence. In the theory of Multiple Intelligences, Gardner's view differed from earlier theories about intelligence, because his theory included the idea that intelligences can be developed through schooling (Gardner, 1983). Therefore, musical intelligence is more than an innate ability, and would logically require some evaluation or measurement of progress for purposes of quality and accountability.

Very few studies focusing on music activities and their corresponding assessments were evident in MI literature, yet suggestions of music activities often appeared in accounts of and articles about MI learning. Gardner did not advocate assessing every lesson or intelligence without regard to context or content. "The intelligences must be seen at work when individuals are carrying out productive activities that are valued in a culture" (1995b p. 207).

Rubrics for musical assessment generally focused on assessing students' utilization of music to master non-musical content (eg Bellanca, Chapman and Swartz, 1994; and Campbell et al., 1999). Gardner participated in Project Spectrum, a research study designed to determine whether young children have distinct profiles of ability that included assessments in music ability (Hatch and Gardner, 1996). The testing did not attempt to measure growth, but was used to examine the influence of context in reasoning process. One other assessment model, The Teele Inventory of Multiple Intelligences was used to demonstrate abilities in dominant intelligences, but not to determine musical growth (Teele, 1996).

One portion of the MI literature included works by music educators or advocates of quality music and arts programs, and featured repeated concerns about the surface applications of music activities, the context of musical learning in integrated and arts-infused settings, and misconceptions about the assessment of musical growth. The placement of these articles in journals such as *Teaching Music* and *Music Educators Journal* points to music educators as the

intended audience for these writings in most cases (Colwell and Davidson, 1996, Kassell, 1998, Hinckley, 1998, Mallonee, 1997, Vincent and Merrion, 1990).

In the MI literature available to and referenced by Evergreen faculty, assessment of musical growth was not established as a viable goal for MI educators who wish to help their students develop their musical intelligence. Even where musical outcomes were expected, such as to "accompany a recorded song with an instrument" (Campbell, et. al., 1999), no measurement or evaluation of that ability or the improvement of that ability is included. Assessments of musical growth, which help to determine the progress of a student's ability to read, perform, create or analyze music were not found in the MI literature from 1983 to 1999.

Research Question Two: Music Activities

Parents and teachers answered questions in the three targeted areas of perceptions about music used in their children's classes via the questionnaire. (See Appendix.) Teachers and students provided this information in interviews and observations.

Activities

Parents guessed or assumed that instrumental activities were a regular part of the classroom experience, when in fact such experiences rarely occurred. While parents correctly reported that their children were singing (90%), listening to recorded music (60%), and in some cases responding to recorded music with actions or dance (25%), many parents incorrectly reported that their children were playing musical instruments (35%). In fact, teachers reported almost no instrumental activities, with only one of the teachers using any kind of musical instruments more than once per school year.

Parents and teachers indicated great value for exposure to a variety of music and music listening as important experiences for developing musical intelligence. Misconceptions about the variety of music and the type of listening experiences were indicated in parent responses and teacher interviews. These two groups reported that their children (students) were engaging in listening activities and that they were listening to a variety of music. Observation and artifact analysis determined that this was not the case, and that teachers and parents did not make a distinction between background music and music listening, and that recordings were usually similar in style.

Teachers placed great importance on the music played in the background during class, called focus music. Teachers played focus music in order to "put children in the alpha state," hoping to improve standardized achievement test scores. During the data collection period, one teacher evaluated her students' writing in the FCAT practice tests and concluded that students were "writing better." After the actual test, the third grade students scored lower than the previous year's third grade class. The teacher attributed the drop in scores to the testing prompt.

During the interviews, teachers provided additional information about the impact of the FCAT tests. The school principal prioritized the test scores, and teachers reported changes or limitations in music activities as a result of the new priority.

Students were, by teacher accounts, extremely accurate in naming the musical activities that had occurred during the data collection period. Kindergarten and first grade interviewees did not remember one-time music activities as well as the older children, but did accurately report daily singing, their most frequent musical activity. Older children accurately reported focus (background) music every day and singing occasionally. Students did not remember titles of songs sung occasionally or seasonally, although they provided much information about the academic content from the songs. All but one child reported great enjoyment for the musical activities and felt that the activities were very important.

Musical Growth and Assessment

Parents and teachers held vastly different views on how teachers determined what students were learning and to whom this information was provided. Although both groups felt that students were learning musical skills, no formal assessment of students' musical ability or musical growth was used. Only 19% of parents felt that parents were given feedback by the teacher and 26% of parents felt that neither the child nor parents were given teacher feedback on musical projects. All four teachers disagreed and reported that feedback was provided to students, with two of the four reporting that feedback was also provided to parents. Most teachers and parents indicated that they thought children were learning musical skills in their elementary classrooms, although they did not identify specific skills learned. Although neither teachers nor parents addressed musical growth in their comments and answers, their

responses to this area indicate that musical intelligence is developed by exposure to a variety of styles and musical experiences.

Students were asked what they had learned from their musical activities. Songs were the richest source of learning for them. Third grade children were specific in their list of academic content learned through the music. Pilgrims, polar bears, animals, recycling, earth care, the diet of Hawaiians, the number of people on the Titanic, and Christmas customs in other countries were all listed. Some children distinguished what they learned musically, from non-musical learning. They often demonstrated their abilities for the interviewer, singing, and naming musical terms such as line and space notes, rhythms, loud and soft sounds. When asked how teachers could tell what they had learned from their musical activities, only three children were able to answer. One student reported "she can tell by the look in our eyes," while the other two guessed that "she keeps track on a paper or something."

Research Question 3: The Role of Music

Answering questions about the importance of music as an intelligence, 57% of parents stated that some of the intelligences are more important than others. This group listed the intelligences they considered to be the more important. Their most frequent choices were verbal (55%) and mathematical (62%) intelligences. Musical intelligence was the fifth most frequent response. While 94% of parents indicated that musical activities should be part of the elementary classroom, their reasons varied greatly. Most common was that music helps children memorize or learn academic content, but parents also cited enjoyment of learning and relaxation as reasons for inclusion. Several parents also stated that music was important because it was in the curriculum. Exposure to a variety of music was parents' most frequent response to what constitutes a valuable music experience, with instrument play as the second most frequent. Parents clearly believed that their children were listening to music and playing instruments regularly in their classes.

Teachers all agreed that it was very important for children to develop musical intelligence, although the common belief was that strengthening one intelligence strengthens the other intelligences. One teacher qualified her answer with this remark. "It may not be as practical as some of the other intelligences. If you work in a factory, you need more verbal and analytical skills. Musical intelligence isn't going to get you that job." This teacher cited verbal and

interpersonal as the two most important intelligences, but for her students, logical-mathematical intelligence was important as well, because "the curriculum calls for more mathematical intelligence." Another teacher disagreed with the curriculum, stating that the "musical activities have to be justified academically because of the benchmarks." In her first grade classroom, development of new music activities ceased due to her understanding of the priorities set at the district level.

Discussion

The concept of musical growth was defined by the researcher, but never used by teachers unless directly asked. While parents and teachers felt confident that musical skills and knowledge were being learned in the participating classrooms, musical growth was neither identified or evaluated by them. Teachers reported no assessment of musical growth and agreed that there had been no effort to explicitly teach musical skills, yet felt that students had learned musical skills. Student perceptions about assessment of musical growth reflect the emphasis on academic content, even during musical activities. All Evergreen participants appeared to hold vague notions regarding the need to assess all the intelligences. Since assessments in the literature exist only for purposes of measuring ability (Hatch and Gardner, 1996) or for measuring academic content learned (Armstrong, 1994; Bellanca Chapman and Schwartz, 1994, Campbell et al., 1999; Duval and Mark, 1994; Marks-Tarlow, 1996; Smagorinsky, 1995), it is not surprising that teachers did not address the content of musical intelligence. The omission of assessment rubrics designed to measure musical growth in classrooms could be related to the omission of the same in the MI literature. Teachers felt that the most influential factor in their decisions about assessment was the current political climate at the school and in the school district. Another influencing factor may have been the perceptions by parents, teachers and administrators that inclusion of music experiences would necessarily stimulate musical growth.

In the MI literature, one suggestion for background music includes the use of Mozart's music and music at extremely low volumes (Campbell, D. 1998). Such activities are intended to engage the learners in the musical or academic material at hand. The activities involving recorded music observed at Evergreen School were more passive in nature; primarily focus music. During passive music experiences, no musical skills were required on the part of students.

Teachers played the Mozart music frequently, at extremely low volumes, yet children did not demonstrate any knowledge of the composers, titles or stylistic descriptions of background music. Teachers also played what they considered to be educational songs such as "The Silent E Song" and "Alligators All Around." One of the teachers played several varieties of popular music in short excerpts. The Native American Drum beat, as it was identified, was found in one classroom and used to create a sound buffer between the classroom and other nearby classes. Teachers, parents and students did not distinguish listening to music from background or focus music.

Singing, was the most frequent activity identified as musical. The singing observed in classrooms was always led by the teachers, and in low registers. Using a tuning fork, the researcher determined the approximate pitch range for most songs as the octave from E below middle C, to E above middle C. Developmentally, this range is far below appropriate singing registers for children (Campbell and Scott-Kassner, 1995, p. 128). The passive music experiences did not serve to teach music concepts, singing skills or musical content.

Context of Musical Learning

Kathy Kassell, a researcher of music and multiple intelligences, expressed concern that "much of the MI literature suggests exercises that link memorizing academic content with rhythms or simple songs; it suggests that music is simply a tool for enhancing memory." Gardner, (1995b, p. 207) expressed similar concerns about the use of intelligences to drill students, calling such activities a lack of "genuine or performance understandings, and makes the uses of the intelligences essentially trivial." The inappropriate singing range of Evergreen participants, and the use of music as activities, instead of the context of musical problems or situations are examples of Kassell's and Gardner's concerns represented in the school studied.

Reimer's description of the diverse roles found in the domain of music (1998) affirms the importance of musical context for developing musical intelligence. Even Gardner's critics (Eisner 1994) noted the importance of context in developing intelligences. From the participating teachers' own accounts, it appears that this portion of MI literature has not reached the audience of elementary teachers who are including music in their MI classes.

While MI literature included some of Gardner's own reflections and revisions of his theory (Gardner, 1995a, 1995b, 1996, 2000; Gardner and Hatch, 1995), most of the theorizing of this type has been left out of mainstream educational journals. None of the concerns from arts educators, the criticism from scholars or the disturbances that Gardner wrote about appear in the MI books for teachers.

In all classes, the integration of music was reported, but did not meet conventional requirements for integrating learning in the arts (Ackerman and Perkins, 1989; Campbell and Scott-Kassner, 1995, p. 376). At Evergreen School, the scheduling of music and art classes taught by specialists was reduced from one 45 minute period per week to one 45 minute period every other week during the study. The principal felt that more time could be spent on academics in preparation for the FCAT tests since teachers were integrating musical intelligence in their classrooms. This decision affected twenty-four classes in all six grade levels, yet only six classes in the entire school reported inclusion of musical activities more than once per year.

Political Climate

Due a restructuring of personnel at the district level, the priorities set for individual schools were determined by the new district administration. After the restructuring occurred, the training for teachers and support for their MI studies was terminated. Teachers felt that they had to limit the "MI" activities to allow time for more activities that could be justified academically. This seems to represent a failure to perceive the work of MI as a way of approaching academics and a resort to earlier models of teach and test that Gardner was trying to help educators disband. School reform requires significant support from administrators, and a new approach to teaching is a form of school change. Without administrator support for an extended period of time, school change is known to fail.

Certainly, public school administrators, parents and teachers would all be concerned about standardized test scores and the severe consequences of failure. Parents and teachers frequently justified the importance of academic subjects by deferring to the curriculum – one established by their administrators. Their concerns, as well as the fact that they had not been trained to assess growth in all areas of intelligence are as important as their perceptions about

musical intelligence. Leaving the teachers to voluntarily implement MI any way they wished, shows a clear lack of commitment to ongoing support necessary for teacher change.

Recommendations

Based on this research, several recommendations are suggested for promoting the role of musical intelligence at Evergreen School.

Preparation for MI Educators

Participating teachers suggested improvement in training and materials, as well as clear leadership from administrators. In their MI training, they learned how to design learning activities for all of the intelligences, but did not learn how to correlate those activities with the *Sunshine State Standards* benchmarks for learning. The teachers felt that although the test scores could be improved by teaching to all of the intelligences, most of them felt that training was needed to learn the standards and to design effective activities. Materials and training for teachers interested in an integrative curriculum need to be available.

Contributions to MI literature are needed from the arts community in order to help teachers and parents define the role of musical intelligence based on a common understanding of what it is. Books and articles about MI intended for elementary teachers often leave readers with the impression that any use of music in the classroom is helpful for developing musical intelligence. Such materials emphasize music as an entry point, rather than a body of content as well.

Some teachers may not understand the differences between entry point and content approaches to music or other intelligences in elementary classes. Inadequate preparation in any one intelligence may reinforce its place as a frill or non-essential part of the curriculum. This unfortunate reality which stems from limited training and understanding, may cause true change not to occur. Teachers who continue assessing only the subject area academic content do not show any evidence of change from more traditional treatment of both intelligence and assessment.

Teachers also need "how-to" materials in which appropriate music activities and assessments are provided. In order to accurately determine whether or not students are growing musically,

teachers need music assessment strategies that are included in their publications about MI. Teachers relied upon readily available curriculum materials, good or bad, for music activities. They expressed that they were unable to spend enough time learning about related music for their music activities, yet would like to continue improving the musical intelligence areas in their curricula.

If a music specialist can only work with students once every two weeks, then teachers need to understand musical skills and knowledge well enough to help their students think musically about music activities and experiences. Teachers indicated a desire to grow and learn about developing musical intelligence, but needed assistance from an appropriate trusted source. If the only music experiences children have are passive, such as focus sessions, they will not grow in their abilities to read, perform, create or analyze music. The music specialist's role could be redefined, in such a situation, serving as a consultant to assist teachers in planning their music activities.

Beyond the music specialist's help, teachers need instruction during pre-service and workshop training in how to create enabling conditions for musical thinking. Differences in musical and non-musical contexts should be explored during these training opportunities to help MI teachers discover ways to instruct children in the use of instruments and assess their music making and singing for musical growth. Students could benefit from teachers' training by undertaking thoughtfully integrated music activities. Effective integration would integrate musical content, musical skills needed or practiced, and performance assessments appropriate to musical tasks.

Music and arts education advocates need to bridge the gap between what elementary teachers and parents read and what members of the arts community read by writing for elementary educational journals and training materials. The MI literature has not integrated concern for arts education with implementation of multiple intelligences focused education. If this were accomplished, strategies for integration, rather than mere infusion of music activities and experiences might be more available to MI teachers. Parents might also become more interested in music activities and more involved with the assessment of musical growth.

Music Learning Environment

Conditions supportive to musical learning must be provided and supported by teachers, administrators and parents if students are able to grow musically, and to develop musical intelligence. Creative thinking requires enabling conditions (Webster, 1994). Time allotted for both music class with the specialist and music activities integrated in the classroom needs to be great enough for children to engage in active involvement with music, rather than passive experience of background music during non-musical tasks. Instruments, songbooks, stereo equipment, recordings and instruments need to be available in all classrooms for optimum use. In order for teachers to create a context for musical learning, proper equipment is essential.

Finally, the commitment to an MI focus in the curriculum needs to be fully supported by the principal and in the school district. Teachers, although they had received training in MI expressed concerns about their own lack of musical intelligence. Training for those teachers, emphasizing music activities and assessments is needed in order to strengthen MI teachers' musical skills, and their confidence in music.

Teachers' perceptions of musical growth are complex and are informed not only by their operational learning theories (Wilson, 1999) or backgrounds, but by district and school support of musical growth. Parents' perceptions are likely to be affected by the emphasis voiced by the school's principal and teachers. Students' perceptions are based on their daily experiences, and largely reflect the perceptions of their parents and teachers. The triangulation of data from all three sources lent consensual validity to the study, however, the small number of participants limits the generalizability of the findings.

In order to transfer some of the research findings to other settings, the development of a survey instrument inquiring about particular conditions in an MI school would be helpful. A survey using the findings from this study of the major factors influencing the role of music could be used as a basis for the questions. Evidence of MI training that includes materials designed by arts educators, appropriate facilities and time allotments for music learning, and commitment to MI from school and district administration are all relevant areas that could be identified through the survey. Results of the study might be helpful in formulation of MI schools and schools that wanted to promote the role of music.

CONCLUSION

This study provides evidence an ineffective model of musical growth and assessment, as a result of developing elementary curricula based on MI. The idea of separate musical intelligence is so new for many educators and parents that it is not yet affecting policy change or parent expectation. Administrators are required to serve the higher authority of district leaders and taxpaying citizens, who may be unaware of MI or its impact on the current curriculum. In addition, there seems to be a great deal of confusion about the meaning of musical intelligence. Confusions began with Gardner himself, when he termed musical intelligence as the ability to produce and appreciate rhythm, pitch and timbre; and appreciate the forms of musical expressiveness (1983). The ability to appreciate may have been interpreted by teachers as a passive experience that requires no knowledge about music, or development of identifiable musical skills.

Elementary education depends on capable teachers, who seek out effective strategies for teaching and activities for learning. Most teachers expressed an awareness of the limits of their musical activities and experiences. Some teachers attributed the limits to their own perceived lack of musical intelligence, others attributed the limits to external factors, primarily the role of music in elementary education as a diversion from the more important academic subjects.

Including music activities in an elementary classroom can enhance the overall learning environment. Yet the role of musical intelligence as a separate, important area of growth and assessment does not necessarily follow based on this research. Parents are not trained in the subtleties of assessment and rely on teachers' judgments about their children's progress in school. MI educators and parents need to address music as an area worthy of time and expense if they are to succeed at developing the highest degree of intellect in all children. Commitment to facilities and training in all areas of intelligence should not omit those of musical intelligence if the musical intelligence is sincerely valued as a viable part of the entire Theory of Multiple Intelligences.

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Appendix
Questionnaire Responses
Music Learning and Assessment

1. My child's teacher uses the following to determine what children are learning:

	Report cards and grades	Portfolios or projects	Tests of children's skills	Other*
Parents N=54	44 %	52%	43%	15%
Teachers N=4	75%	75%	75%	75%

*Teachers' "other" answers included anecdotal records and teacher observation

2. My child's teacher provides feedback on musical projects to:

	Child	Parents	Neither child nor parents
Parents	46%	19%	26%
Teachers	100%	50%	

3. I can tell that my child is learning by:

	Report cards & grades	Child shows more interest in subject	Child demonstrates newly learned skills	Conversations with my child
Parents	56%	44%	43%	72%
Teachers	75%	100%	100%	100%

4. I can tell that my child is learning musical skills in class by:

	Report cards & grades	Child shows more interest in music	Child demonstrates musical skills	Conversations with my child
Parents	22%	30%	39%	59%
Teachers*	75%	50%	75%	75%

*One teacher wrote "does not apply" in response to this question

5. I think my child is learning the following skills in my child's class:

	Musical skills	Academic skills	Neither musical nor academic skills
Parents	63%	78%	2%

The Role of Music in the Classroom

1. Does your child show interest in subjects when musical activities are involved?

	YES	NO
Parents N=54	96%	4%
Teachers N=4	100%	

The Multiple Intelligences			
Verbal	55 %	Interpersonal	35 %
Mathematical	62 %	Intrapersonal	26 %
Musical	16 %	Bodily-kinesthetic	6 %
Spatial	6 %	Naturalist	2 %

2. Do you discuss music with your child?

	YES	NO
Parents	87%	13%
Teachers	100%	

3. Is it possible for all children to learn music?

	YES	NO	No answer
Parents	74%	7%	19%
Teachers	100%		

4. Is music an important intelligence?

	YES	NO	No answer
Parents	89%	6%	19%
Teachers	100%		

5. Are some of the intelligences more important than the others?

	YES	NO	No answer*
Parents	57%	28%	16%
Teachers	50%	50%	

*Two teachers wrote that circumstances sometimes required the use of certain intelligences over others, so they did not mark "yes" or "no."

If you answered yes to question # 5, please circle the intelligences you consider to be more important in the box above.

6. Do you think musical activities should be part of regular elementary school classes such as your child's?

	YES	NO
Parents	94%	2%
Teachers	100%	

7. Regarding question # 6, please state why or why not?

Parents	36%	helps memory/learning
	11%	enjoyment of learning
	11%	relaxation
Teachers	75%	helps memory/learning
	50%	fun/enjoyment of learning

Parents' Other Answers:	
stimulates creativity	can learn music history
can show what you've learned	enhances mood
learn about music business	gives break in routine
important in our home/family	to dabble in arts
broadens mind	

Teachers' Other Answers:	
music is a natural progression from K to 1 st	
music is a link that connects us all together	
relaxing	
children - people in general - relate readily to music	

8. What does your child learn from musical activities in his or her classroom that is different from weekly music classes?

Parents	36%	academic content
	11%	singing skills
	11%	listening
	11%	relaxation/mood
	7%	certain songs
	7%	cultural traditions
	7%	memory work
Teachers	75%	academic content

Parents' Other Answers:

Repetition	dances
Order	music is part of curriculum
there is no difference	persistence
motivation	coordination
stories through music	music in familiar environment
different types of music	learning to read
music more often in classroom	

Teachers' Other Answers:

use of music as study aid	patterning/rhythm
celebrate	cooperative activity
set mood/change attitude	
able to do things spontaneously/without time restraint of music class	
can better integrate subjects in curriculum	

9. What experiences do children need to become more musically intelligent?

- Parents**
- 57% exposure to a variety of music
 - 36% instrument play
 - 32% listening
 - 14% practice
 - 14% music in familiar/home environment
 - 11% participation in music activities
 - 11% note reading/musical skills

Teachers 75% Exposure to variety of music

Parents' Other Answers:

understand the message in a song	counting
dancing	music appreciation class
music in worship	quiet time
singing in all times, good and bad	

Teachers' Other Answers:

- exposure to different kinds of musical activities
- any kind of musical experience
- a non-threatening environment
- time
- opportunity