

## CHAPTER TEN

# THE IMPORTANCE OF MUSIC TRAINING ON THE CHILD'S BRAIN AND COGNITIVE DEVELOPMENT

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### **Abstract**

A growing body of research reveals the beneficial effects of music on education. Research indicates that music plays an important role in the brain development of a child. Furthermore, researchers believe that children, who have more exposure to music and music training, benefit from enhanced brain activity, which has been shown to increase child's abilities to perform certain academic tasks. In addition, many practical life skills are acquired through music learning and music training. Therefore, music education is believed to deserve the status as an equally significant core subject. A review of the literature demonstrates the benefits of music education, discussing the influence of music on the child's brain development, academic performance, and practical life skills.

Keywords: Music education, child's brain development, cognitive development and practical life skills.

### **Music's Influence on Brain Development**

Music is generally perceived and viewed as an enjoyable, pleasurable, and aesthetic experience. Music is often used consciously or unconsciously as a vehicle to help create a certain feeling or mood within the listener. Life would be very humdrum without music's existence because music is a natural part of people's lives and influences their thoughts, feelings, and ways of interacting with themselves and others. Yet, the added power of music to develop one's brain and enhance learning is often overlooked.

Historically, music has been used as a tool for learning. Music has always helped people tell and remember stories. The early man sitting around campfires told tales of great battles accompanied by drumbeats. Bards sang about national heroes during the Middle Ages, informing their countrymen of the latest news. In African tradition, the talking drum and slit drum is essential means of communication to date. Today, music is used to help facilitate one's gaining knowledge of self, others, and the world (Davies, 2000). The power of music exceeds mere pleasure because it has strong biological roots, helps the brain to grow and integrate the two hemispheres, and plays a crucial role in the neurological development of the child.

### **Biological Roots**

Scientific literature suggests that music is part of one's biological heritage. Certain findings and observations confirm this scientific hypothesis. First, animals have fundamental abilities in music. For example, monkeys can think in terms of musical abstractions, such as the fundamental frequency of a harmonic series. Secondly, musical behaviours are universal. Music is prevalent in various cultures. Parents and caregivers across cultures communicate with infants through lullabies, musical baby talk and in Africa, folk songs.

Additional observations are confirming the biological roots of music. Musical behaviours are often revealed early in life before cultural factors influence and change behaviour. Recent studies indicate that infants have musical capabilities. For example, they can discriminate between two notes, remember the contour or pitches of melodies, mentally segment or "chunk" extended melodies into smaller phrases, as adults do, and comprehend rhythm (Weinberger, 1998).

Thus, the brains of children are well equipped to understand music. If parents and caregivers would reinforce children's spontaneous musical activities, then they would enhance children's natural development of communication, expression, and cognition (Weinberger, 1998).

### **Brain Growth and Integration**

The brain is divided into two halves: the analytical brain and the subjective artistic brain. When both halves of the brain are stimulated unequally, the brain cannot develop. Therefore, one's potential intelligence remains underdeveloped.

Thus, it is theorized that the artistic child optimizes the brain's bilateralism, which increases his intelligence (Lehr, 1998). Frank Wilson, a well-known neurologist, stated that scan studies indicate that music more fully involves brain functions in both hemispheres than any other activity the researcher studied. He also stated that research indicates that intelligence is increased when a child learns to play a musical instrument. Approximately 80 to 90 per cent of the brain's motor control capabilities regulate stimuli to and from the hands, mouth, and throat. Wilson believes that developing highly refined control in those areas during childhood almost stimulates the entire brain. Therefore, the brain's total capabilities are increased (Lehr, 1998).

Researchers indicate that the left hemisphere analyzes the structure of music, while the right hemisphere focuses on the melody; thus, music synchronizes the right and left hemispheres of the brain. "The hemispheres of the brain work together when emotions are stimulated, attention focused, and motivation heightened. Rhythm acts as a hook for capturing attention and stimulating interest. Once a person is motivated and actively involved, learning is optimized" (Davies, 2000, p.148). Electroencephalogram tests reveal that music changes brain waves, making the brain more conducive to learning. Don Campbell, Director of the Institute for Music, Health, and Education, explains that music "rhythmically and harmonically stimulates essential patterns of brain growth" (cited in Davies, 2000, p. 148).

### **Neurological Development**

Neurobiological and anthropological reasons call for high priority attention to the human need for music as a rhythmically organized sound experience and expressive tool for communication. Every human being is born with a certain level of musical potential. The most powerful neural networks and behavioural attitudes are developed during childhood. Therefore, music education plays an essential role in developing and consolidating this given potential.

Scientists, medical researchers, psychologists, and educators consider various subjects to try to connect how music and the brain are interrelated. They try to solve questions such as how music boosts the intellect, whether music stimulates an area of the brain associated with creativity, if children's musical preferences are wired into the brain or if is culturally determined, or if musicians' brains differ from those of other people. Tracing neurological development through the child's growth provides additional clues to this quest.

When children start school, they have a facility for rote memory, and simple facts have been

imprinted in their minds through songs and musical games. However, some lack comprehension of what they can repeat until at least age six (with many boys, eight). Phonics is often learned with musical games and rhythmic processes involving matching sounds to different objects, movements, and activities. Sensemaking comes through the perception of meaning in patterns. Music greatly assists the sensemaking of patterns (Finnerty, 1999). At about age four, the child gets ready for right-brain activities, such as creativity, artistic expression, and musical intelligence (Finnerty, 1999). This process is essential in developing thinking skills that will last a lifetime.

Learning occurs through movement and quick emotional associations until a major leap takes place in brain growth in the elementary years. The brain has already begun to connect with the body by age two through marching, dancing, and developing a sense of physical rhythm. By ages seven and nine, a great spurt of neural integration occurs. "The more music children are exposed to before they enter school, the more deeply this stage of neural coding will assist them throughout their lives" (Campbell, 1997, p. 192).

It is found that the musician's corpus callosum, the bridge between the left and right sides of the brain, is larger than in the non-musician brain. Therefore, music instruction needs to start before age seven to obtain optimal brain development ( Schlaug, 1999). Without active musical involvement, there is a loss of children's musical aptitude between ages five and six. Research shows that musical aptitude becomes stabilized before age nine and that more consideration must be given to the musical experiences of children between the ages of three and eight (Ball, 1991). The child commonly develops more complex skills such as listening, processing visual information, and coordinating movement in the brain and mind between the second and third grades. Jean Piaget's "concrete reasoning" is formed by and after fourth grade as a real conversation in consciousness begins, between the symbols in the outer world and the meaning in the inner world. This is facilitated through the process of phonics, music notation, and math linking the auditory centres to the left and right brains (Campbell, 1997). Additionally, music training improves verbal memory (Chat et al., cited in Schlaug, 1999).

During the ages of nine to eleven, the corpus callosum, completes its development, allowing both hemispheres to respond to an event at the same time. (Campbell, 1997; Yakovler&Lecorus cited in Schlaug, 1999). It is also found that no one has been able to acquire absolute pitch after age ten (Schlaug, 1999). Studies have found that the corpus callosum of musicians is thicker and more fully developed than in other people, reinforcing the idea that music enlarges neural pathways and stimulates learning (Campbell, 1997).

Educators report that by approximately age eleven, the circuits of the neurons that govern perceptual and sensory discrimination go through a change. They also think that children who have not had music in their education may no longer be able to develop the ability to identify pitch and rhythm after this age. From ages eleven to thirteen, self-consciousness begins to develop as the right hemisphere of the brain becomes harder to access. From thirteen to fifteen, early teenagers lose the more intuitive and emotional characteristics that were once more prevalent. During these ages, activities that stimulate right-brain function, such as listening to music, are important to full mind and body integration (Campbell, 1997).

Throughout the teen years, thinking becomes more abstract and musical skills more mathematical. By late teen years, music and other rhythmic activities had a maximum effect on brain development. Although the brain will continue to grow into early adulthood, the potential for the greatest neurological development has passed (Campbell, 1997). Campbell (1997)

emphasizes the power of music on brain development: The nervous system is like a symphony orchestra with different rhythms, melodies, and instrumentations. There are many rhythmic and melodic system that keeps the brain synchronized. When any part of the brain is damaged, the natural rhythms of the brain and body are disturbed, and the neurons may fire at the wrong time, or not at all. Often external music, movement, or images help bring the "neurological music" back in tune.

Music mysteriously reaches the depths of our brain and body that call many unconscious systems into expression. Thus, parents and educators alike must seriously consider the importance of music education in the development of the child's brain.

### **Music's Influence on Academics**

As music helps the brain develop optimally, the natural beneficial outcomes are evident in the area of academics. Many studies reveal the correlation of music to test scores, grades, and academic achievements. Research suggests that music should assume a place in the regular school curriculum as it shows its effects on academic achievement and contributes to students' education (Kelstrom, 1998). Evidence for the benefits of music education is found in standardized test scores, academic recognition, and high grades.

Researchers have found that music instruction has a positive effect on standardized tests. A study was done in which 5,154 fifth graders took the Comprehensive Test of Basic Skills (CTBS) in 1979. In 1980, another 5,299 fifth graders were tested. Nearly one-fourth of all participants of both groups were enrolled in the instrumental music program during both years. Music students scored higher on the CTBS in all areas when compared to the total group. The research also indicated that the longer students were in the music program, the higher their achievement was in comparison to non-music students. This study, when replicated in 1986, showed similar results (Kelstrom, 1998).

The benefits of music proceed into higher education. In 1996, the College Entrance Examination Board in the United States reported that students with experience in musical performance scored fifty-one points higher on the verbal section of the SAT and thirty-nine points higher on the mathematics section than the national average (Campbell, 1997). Edward J. Kvet, director of the School of Music at Central Michigan University, concludes "Study in music and the other arts generally seems to have a cumulative effect and is undeniably correlated with improvement over time in students' standardized test scores" (Kvet as cited in Campbell, 1997, p.177). Thus, it is clear that music has a profound influence upon the academic life of the students and deserves an equal status as a core subject. The world can learn from the three top-ranked countries in the world in student scientific achievement-- Hungary, Japan, and Holland, which have music education at the heart of their educational systems. "It would appear that the Hungarians, Japanese, and the Dutch understand something others have yet to fully grasp--that music and the arts are vital to the development and expanse of the human intellect, which in turn results in superior academic and career performance" (Oddleifson as cited in Kelstrom, 1998, p. 38). The benefits of music education within academics are repeatedly and significantly found in the development of mathematics and language arts.

### **Music's Influence on Mathematics**

Research indicates that there is a meaningful connection between artistic abilities and academic abilities, especially in the relationship between musical and mathematical/scientific abilities (Brewer & Campbell, 1991). It is believed that music makes it possible to master difficult abstract concepts faster and with greater retention. In 1993, a study of college students at the

University of California at Irvine, was launched to determine the effects of music on spatial intelligence and the ability to form mental images of physical objects. It was found that the students in the study who listened to music by Mozart for ten minutes were found to have higher spatial scores than those who did not listen to any music. The students scored eight to nine points higher on the spatial IQ reasoning subtest of the Stanford-Binet Intelligence test (Rauscher cited in Kelstrom, 1998). Additionally, researchers found that laboratory rats exposed to music by Mozart were able to complete a maze faster and with more accuracy than those exposed to minimalist music, white noise, or silence over the same period ("Music does boost learning skills, latest research shows," 1998).

Another study reveals that preschool children who received piano keyboard lessons for six months improved their performance dramatically on a spatial-temporal reasoning task, with the residual effect lasting for days. It is suggested that certain math and science concepts thought to be difficult to teach can be learned using spatial-temporal reasoning methods. Music can enhance the "hardware" for spatial-temporal reasoning in the brain (Grandin et al., 1999).

### **The link between Music and Mathematics.**

There is a deep connection between music and mathematics. It is more than a coincidence that both fields are noted for their child prodigies as well as crossover talents evidenced in both fields. For example, Einstein played the violin and Saint-Saens dabbled in mathematics. The musical scale is similar to a neat logarithmic progression of frequencies. There are also similar connections between patterns of notes and patterns of numbers, e.g., found in Godel, Escher, and Bach (Marsh, 1999). While music is viewed as a separate intelligence, there is a high correlation between mathematics and music. Music involves ratios, regularity, and patterns, all of which parallel mathematical concepts (Gardner, 1983). Other studies reiterate that music instruction increases achievement in mathematical skills (Milley et al., as cited in Kelstrom, 1998). It is believed that studying music enables students to learn multiplication tables and math formulas more easily (Mickela as cited in Kelstrom, 1998). Experience in the study of music facilitates the ability to solve problems that are necessary for some branches of mathematics. Musical instruction techniques that have been used for teaching mathematics experienced great success (Dryden as cited in Kelstrom, 1998). In addition, when a child learns to play the piano, he or she is developing architecture in the brain in the same area used for reading and mathematical skills (Kosk, 1999). Music instruction increases perception and critical thinking skills, and these skills, in turn, correspond with logical skills. A person may use the ability for logical thinking that was developed in the music class to solve problems quite unrelated to music (Kelstrom, 1998).

### **Mathematical Skills Taught Through Music.**

A New York City program called LEAP (Learning through an Expanded Arts Program) uses art and music to teach basic skills. The program has found great success, especially in reaching economically disadvantaged minority children and children with short attention spans (Dean, 1992). Successful mathematical concepts are taught and reinforced through music inspired lessons. Simple mathematical concepts are integrated throughout the musically enriched lessons. For instance, as the students develop the rhythms for their songs, they might begin to think in multiples of four. They realize that if they have sixteen beats of music, they then have four sets of four beats. Students also grasp the concept of odd and even as the groups are subdivided into smaller units for particular steps or musical rounds (Dean, 1992).

Musical math, another concept successfully learned through music, can be demonstrated through learning about fractions. This LEAP project also helps students with counting, addition, multiplication, and sets. Students are first familiarized with basic counting and rhythms using a

drum or other percussion instrument. At first, the students count evenly with each beat and then they move to count in sets, e.g., "one, two; one, two; one, two." After experimenting with different stresses and accents in each set, the sets are then combined. This provides the opportunity to reinforce addition and multiplication as students try to figure out the number of beats in the combined sets. For example, the students count out five sets of two and two sets of three to create a line of sixteen beats (Dean, 1992).

Musical math also reduces students' anxieties about addition and multiplication. An added benefit is the growth of students' self-confidence and sense of mathematical accomplishment. This teaching idea is especially helpful with students having difficulty with basic mathematical concepts. "Music helps teach the precognitive skills. It gives students the capacity to trust themselves by providing internal discipline through a highly repetitive structure" (Bard cited in Dean, 1992). After students are comfortable with combining sets of beats, students learn about fractions using musical concepts. Using four-four times, two vertical lines are drawn on the board to create a measure. It is explained to the students that a measure in four-four times has four beats. Above the measure, a pie is drawn explaining that a whole note is like the whole pie. It has all the pieces or beats and is held for four counts. This point is cemented visually and aurally by using a gong. A single strike of a gong will sound long enough for the students to count up to four (Dean, 1992). After the whole-note example is repeated several times, the process is repeated using half, quarter, eighth, and sixteenth notes. Drawing the notes on the board in both musical and mathematical notation, it is explained how many of each type of note is required to fill a measure. This activity provides a plethora of opportunities for comparing and adding fractions (Dean, 1992). Now the students are ready to create their own more complicated rhythms by adding different notes together. A few simple arrangements are introduced such as quarter, quarter, and a half. Then the students create their rhythms, expressing them both in musical notation and mathematical equations. Finally, students create larger musical pieces by combining and playing their compositions together. Another benefit gained from this experience is the strengthening of their ability to focus and to concentrate as they play their rhythm while others are playing something different (Dean, 1992).

Maths and physics teacher Khangelani Sibiya was nominated for Global Education Awards for excellence in teaching. His method, using music to help children remember mathematic rules. Affectionately known as BabesWeMaths, 36-year-old Sibiya from Richards Bay in KwaZulu-Natal (South Africa) says he realised that using music was a very good way to help children remember mathematical rules.

It is, therefore, clear that studying music can offer many opportunities for the development of mathematical skills. There seems to be an inherent connection between music and mathematics. In addition, music can teach and reinforce basic mathematical concepts that are otherwise difficult to grasp for some students.

### **Music's Influence on Literacy**

Music is a language with powerful appeal in and of itself. Children are captivated by the music in their environment. They respond spontaneously to a variety of tempos, from gentle swaying to drum beating and naturally memorizing lyrics of popular songs and jingles. The enthusiasm displayed by the children allows music to be a powerful medium through which literacy skills are taught and reinforced. Music serves as an ideal tool for assisting children with the interwoven facets of language: listening, speaking, reading, and writing (Kolb, 1996). "Language is defined broadly to include not only words but also . . . the arts" (Boyer as cited in "Carnegie School Model Ties Arts To Literacy," 1995).

Children experience the wholeness of language through music. They interact with the ideas and emotions presented in meaningful context through the melody and the lyrics. Also, the emotive quality and the structure of musical composition engage children in creating personal meanings (Harp as cited in Kolb, 1996). Music and reading are complimentary, for singing is a celebration of language. Children's language has rhythm and melody. Children bring this natural "music" language when they are learning to read. Therefore singing is drawing upon what the children already know and building upon that foundation (Harp as cited in Kolb, 1996). By teaching music in classrooms, children are learning to make the connections between their world and the world of print. They are experiencing opportunities to activate their senses, imaginations, emotions, and their life experiences while interacting with text (Bussis, 1982).

### **The link between Music and Literacy.**

Music learning develops the perceptual skill necessary in reading. Studying a musical instrument develops auditory discrimination that has a positive influence on the development of phonetic skills. Eye-hand coordination and motor skills developed by playing a musical instrument effectively transfer to writing skills (Mickela as cited in Kelstrom, 1998). Also, music improves the development of reading readiness skills in at-risk learners (Dryden as cited in Kelstrom, 1998). The skill children gain in listening to music will provide a solid framework for successfully attending to language in print. The singing-reading connection fosters a love for reading while learning how to read (Kolb, 1996). Successful Reading Programs. Some schools and programs have successfully improved their reading scores as a result of incorporating a fine arts program.

Children enjoy humming, singing, and listening to music as they work. In many parts of Africa, humming is a necessary means of learning. Many literacy activities proceed after sharing books about musical enjoyment. Children can write lyrics to their lullabies or folk songs and put them to music. They can collect or write jump rope rhymes and create musical accompaniments for them. They can make up songs to sing while they are working or doing their chores. Many books can be read with appropriate musical backgrounds.

### **Music and Dance.**

Dance is one of the most powerful forms of communication. It is a language that communicates just as verbal language, the only difference is that it communicates through body movement, and like the verbal language it brings to fore the communities' values, norms, and philosophy. It is also a very natural form of self-expression. To sample an African dance is to sample beliefs, values, norms, worldviews, philosophy, and cultural practices of an African community to which the dance belongs.

Children enjoy improvising movements to music and stories through choreographing short dances and creating props to enhance the effects of a story. The musical aspect is found in the rhythm of the language in the story.

### **Music's Influence in the Development of Practical Life Skills**

Music not only has a positive influence on brain development and academics but offers many beneficial and practical life skills as well. Certain life skills are necessary and make it possible for the child to succeed not only at school but also in his personal life. Many practical life skills are effectively learned through music training and are naturally transferred to other areas of the child's life. Through music, children are learning skills that will help them achieve their goals and endeavours throughout their academic and personal lives. Discipline, ability to manage stress,

cooperation, appreciation of their culture and the cultures of others, and learning to express their feelings are valuable and necessary skills in achieving a balanced and healthy life.

Discipline and Perseverance. Life involves tasks, ranging from doing homework to working full time. Children need to learn the value of discipline and hard work to accomplish their daily tasks and/or their bigger goals in life. Students need to learn not to give up when things become difficult and persevere to achieve their goals. Our society is based on instant gratification and through media and other influences, students often have the illusion that they can achieve their needs and wants without much effort involved. Through music, students learn the value of discipline, perseverance, and the rewards of hard work. Through music, students learn the value of hard and concentrated work. "Practice is essential to learning music--and anything else, for that matter. I like to say that the time spent practicing is the true sign of virtue in a musician. When you practice, it means you are willing to sacrifice to sound good" (Wynton, 1996, p. 38). Learning to play a musical instrument demands technical mastery through the discipline of regular practice over years. "To repeat, learning insists on the discipline of practice, practice, and more practice" (Brademas, 1995, p. 804). As students experience the positive outcome as the result of their discipline, they will experience the connection of hard work to the success of their accomplishment. Students will be intrinsically as well as extrinsically motivated to continue to exercise discipline to achieve internal and external rewards.

### **Clinical Music Therapy and Stress Management**

According to Heidersheit (2015), music therapy is the use of music to address the physical, emotional, cognitive, and social needs of a group or individual. It employs a variety of activities, such as listening to melodies, playing an instrument, drumming, writing songs and guided imagery. Music therapy is appropriate for people of all ages, whether they are virtuoso or tone-deaf, struggling with illness or healthy.

Music therapy has proven to decrease symptoms of children with autism and could even facilitate motivation and social interaction. Even autistic children, who rarely or never speak, can respond to music; sometimes they even sing along. Music therapy provides a tool that can link the gap between a non-communicative child and one who can (Onyiuke Y.S. 2019).

Life involves stress. Life involves changes and growing events, which bring stress to one's body, mind, and emotions. Stress is a normal part of life; however, how one manages his stress level can help or harm him. Thus, the ability to manage stress is crucial to help cope with the changing life has to offer. Music not only helps one manage our stress level but also enhances alertness and creativity.

There is clear evidence that music affects brain waves and physiological states. In Japan, a study was conducted to see the influence of music on the stress levels of patients. One group of anaesthetized surgery patients listened to music on headphones while another group did not. The "music" group had lower stress levels in the blood (Jensen, 1996). Music can slow down and equalize brain waves. Brain waves can be modified by both music and self-generated sounds. Ordinary consciousness consists of beta waves vibrating from 14 to 20 hertz. These waves occur when the focus is on daily activities in the external world, as well as when strong negative emotions are experienced. Heightened awareness and calm are characterized by alpha waves cycling from 8 to 13 hertz. Periods of peak creativity, meditation and sleep are characterized by theta waves ranging from four to seven hertz. Deep sleep, deep meditation and unconsciousness produce delta waves, ranging from .5 to three hertz. Thus, the slower the brain waves, the more

relaxed, contented, and peaceful one feels (Three Reasons to Listen While You Work, 1998). In Africa, humming while working is a natural remedy used to relieve stress at work.

Like meditation, yoga, biofeedback, and other practices that help to unify mind and body, music with a pulse of about 60 beats per minute, such as certain Baroque, New Age and ambient selections, can shift consciousness from the beta toward the alpha range, enhancing alertness and general well-being. Playing music at school and elsewhere can help create a dynamic balance between the brain's more logical left and the more intuitive right hemisphere--an interplay thought to be the basis of creativity (Three Reasons to Listen While You Work, 1998).

One's heart rate tends to synchronize with the beat of the music. The faster the music, the faster is the pulse. The effects of music on the mind and body are best summarized in these eight areas: (Jensen, 1996, p. 223).

### **Cooperation and Teamwork**

Our world is becoming more and more interdependent, and our economic survival depends on the skill of cooperating with others. Many businesses are in search of employees with positive people skills who are "team players". Many jobs and tasks involve the ability to receive and give help and collaborate with other individuals. Through music, children learn the value of cooperation and healthy interdependence. Of all the disciplines in the curriculum of the schools, music has the greatest experience with cooperative learning. While practising a musical instrument is often done alone, most musical performances take place in cooperative settings, such as choirs, marching bands, orchestras, musicals or operas. The success of these kinds of performances depends on the cooperation of a group of individuals and sometimes very large groups (Miller & Coen, 1994) playing in a group magnifies the individual effort into a collective whole. The students learn that other players, instruments, and parts must be accommodated to create a cooperative and successful performance (Brademas, 1995).

Thus, along with learning the basics education has to offer, students need to acquire the fundamental skill of learning to cooperate. This basic skill will help them in their personal as well as professional lives. Through music learning, students become more cooperative and collaborative individuals helping their world become a little more peaceful and harmonic place to live.

### **Transference of Culture and Values**

The dream of any nation is the upbringing of balanced individuals who can contribute meaningfully to the development of the nation. The child is a treasure of the nation and so must be handled with care if these noble objectives must be achieved (Onyiuke, Y.S., 2006).

The media is filled with examples of deteriorating morals worldwide. Crimes and violence are on the increase and the criminals are getting younger and younger. In Africa, it is a sad reminder that we are compromising our character and losing our cultural values. Many children are no longer growing up with morals to sustain their judgment and conduct.

Music can assist in reaffirming cultural norms and values. Horace Mann, the founder of the American school system, believed that music was essential to the education of the young for the development of aesthetic appreciation, citizenship, and thinking (Miller & Coen, 1997). Today, music as a subject of study is just as important as it was in Mann's day. Tragically, the study of music is not considered to be one of the basics of education. Few students in Africa have access to

institutional or private music instruction involving a balanced and sequential curriculum. These conditions have a serious impact on our culture. Music is valued more as entertainment than for the development of our culture.

The primary purpose to include music in the school curriculum is to disperse its message throughout the culture. Through music, students learn the rich dimensions of their cultural heritage. In addition, they discover the musical heritage of other cultures which help them find common grounds minimizing national boundaries and language difference (Miller & Coen, 1994). "Music is a powerful manifestation of cultural heritage. It occurs in a wide variety of styles and types in cultures around the world. Studying music helps students learn about the traditions and modes of thought of their native cultures as well as those of other cultures" (Visual and Performing Arts Framework, pp. 52-53).

A student's education is not complete if it does not also touch his soul. Music can be the key to reaching a student's innermost being. The best teachers have always insisted that music and other arts maintain a central place in the curriculum because all civilizations throughout history have been nourished by the arts. The basic nature of people can be found through their expression of songs, dances, images, and stories (Miller & Coen, 1994).

A teacher's job is not complete if they don't teach their students to have morals and values. Music can guide the students to know the difference between good and bad. "If music means, it is an artistic medium with moral force. If it is of moral force, we then owe our children to teach them to recognize greatness from dross, the spiritual from the dispirited, the transcendent from the momentary sensual gratification of the ear" (Delattre, 1995, p. 25).

The Igbo of south-eastern Nigeria strongly believes that initiating the child into active involvement in musical activities and performance right from infancy places him or her in better stead to develop fully in mind, body and soul. Consequently, soon after birth, the Igbo child is gradually deliberately introduced to music activities. He receives his first instructions in music by learning and singing folk songs. Through this process, he imbibes noble ideals and vices as well as gains from inherent entertainment values (Agu, D.C.C, 2011).

Music in Africa is a natural phenomenon. It is an essential expression of life beginning with gentle lullabies heard in infancy and continuing with games of childhood and songs and dances associated with adult responsibility. Music accompanies and celebrates every rite of passage, birth, initiation into adulthood, and finally death and mourning (Onwuekwe, A.I, 2005)

### **Expression of Emotions**

Today's youth face difficult situations in which they need positive ways to deal with difficult emotions. Unfortunately, they are expressing their feelings through unhealthy and destructive outlets to both themselves and others. National Institute of Drug Abuse (NIDA) reports in the USA shows that drug use among teens is at a critical stage. The rate of murder among those 14- to 17-year-olds has more than doubled since 1986; and on average six teens die violently in the U.S. each day. "During the past six years, there has been a significant increase in juvenile crime in the most serious categories: murder, rape, robbery, and aggravated assault; homicide arrests of kids ages ten through 14 rose from 194 to 301 between 1988 and 1992" (Gibbs as cited in Suren, 1995, p. 14). Today's youth need guidance in healthfully expressing their feelings. Music is one powerful means to achieve that goal. Music offers a natural and instinctual path to expressing strong feelings and emotions.

The brutal, eleven-year long civil war in Sierra Leone has been understood by many scholarly observers as “a crisis of youth”. The national election of 2007 was notable for an explosion of popular music by young people directly addressing some central issues of the elections: corruption of the ruling party and lack of opportunities for youth advancement. Though produced locally by the youth and known locally as youth music, the sounds were inescapable in public transport, markets and parties.

### **Music's Influence in Identification of Feelings.**

Music puts feelings into words. It helps children to identify their feelings and become aware of the nature of their behaviours. Music supplies us with the "knowledge of what we ought to feel-- when to feel joy and exultation, towering fury, indignation, contempt, awe, humility, indifference, gratitude, love, pity, shame, compassion, admiration, resentment, fear, confidence" (Delattre, 1995, p.23). Through music, children have the safety to feel their feelings and thus are empowered to make healthful choices in expressing them.

### **Music's Influence in the Expression of Feelings.**

Music is a communicative and expressive discipline. Music can greatly assist in the emotional development of the child. Music may allow children to express their feelings and cope with them (Tarnowski, 1999). "Music talks to us, and we talk back. The grimaces and contortions made by performers and listeners alike are direct responses to music that moves us, a way for the subconscious mind to respond to music's message" (Pellegrino, 1999). Thus, music can be used as a powerful tool to delicately probe at and positively influence the child's emotional state.

### **Making Personal Connections Through Music.**

Music's influence lies in the ability to conjure up different interpretations for different people. "Music begins in the mind of its creator and ends in the daydreams of the listener. Its power lies in the ability of a single musical piece to be different things to different people--to become ours, to connect directly to our innermost dreams and desires" (Pellegrino, 1999, p. 5). Many songs produce endorphin highs and relate to listeners' emotional lives. People create strong and long-lasting associations between those songs and other events and people in their lives. The songs become anchors triggering a flood of emotions and images. These images can produce very powerful changes in emotional states. In a world that is becoming more impersonal, there is a rising unmet need for people to connect and personally have moving emotional experiences. Music provides an avenue to meet those needs in a temporary way (Pellegrino, 1999).

Thus, people internalize the music and are transformed by them. "In 25 years of working with the brain, I still cannot affect a person's state of mind the way that one simple song can" (Pellegrino, 1999, p. 6). Educators can use this powerful tool to help transform students by providing a detour from the destructive path they are on. Music is a powerful signal carrier. It activates emotions and long-term memory and fully engages the brain's receptive states. Powerful emotional reactions are experienced by some listeners. "In other words, motivation and emotion can be triggered with no relationship to the instantaneous state of the environment and the actual response of the organism to it" (Roederer as cited in Jensen, 1996, p. 224). Thus, one must also be cautious and responsible in using music to achieve positive results.

Music's Influence in Helping people to cope with difficult situations.

Nigerian hip hop and afrobeat music has over the past few years taken a lead in the country and has become one of the country's biggest exports. In a period when the country is going through excruciating hardship and humanitarian crisis caused by insecurity, the Nigerian populace both

young and old keep their music alive and find solace in the lyrics and beats all day long.

### **A case study of our personal experience with our four children**

“From the perspective of a mother of four, with a personal development background. I didn't understand the immense value of introducing my kids to the piano until I began the lifelong search of personal development for my self-development and in my quest to become a coach. For me, the benefits of learning a musical instrument at an early age were tied only to academic development.

With my research into the field of neuroscience, I have come to appreciate the importance of early childhood music experiences and the impact it has on the growing brain and while genes play quite a major role, “positive social interactions and stimulating experiences are really important” (Harris, M 2009). This is where learning a musical instrument comes to play. With a wide range of senses involved, sense of touch, sound, sight (when you read the musical pieces) it contributes to the growth and development of motor, emotional, behavioural, cognitive, and social functioning. This kind of exposure helps the child develop more neural pathways which then enhances brain function and development.

Exposing my daughter who is now two-plus has been a most valuable and enriching experience for us because of the impact introducing her to sounds and lullabies has had on her. She is very adept at recognizing sounds and rhythms. And it's indeed contributing to the development of right-brain activities such as creativity, artistic expression, and musical intelligence. Exposure to music is also essential to developing lifelong thinking skills that lead to the enhanced natural development of communication, expression, and cognition. (Weinberger, 1998).

My son who is currently eight years old is also reaping the benefits of being exposed to music. He began a little late because he struggled with his concentration early on. However, the reinforcement from his grandmother was a key factor that helped reverse his problem of concentration. I would say that he has improved tremendously in his concentration, memorization and fine motor skills.

Mathematics is my ten-year-old son's favourite subject. I would say he plays the piano as if he was born for it. He learns the pieces quicker than all his siblings. I believe that exposure to the piano has enhanced his reasoning skills necessary for Mathematics. Rauscher and Shaw (1998) emphasized the causal relationship between early music training and the development of the part of the brain that governs special intelligence. The studies indicate that exposure to music training specifically playing the piano generates the neural connections used for abstract reasoning including those necessary for Mathematical concepts.

My fourteen-year-old, as a result of his exposure to music, has developed analytical thinking skills especially when he encounters challenges with solutions that are not immediately obvious in his areas of interest. His level of intelligence is at a much higher level than most of his peers and we encourage him even more to utilize it. Rauscher who researched the link between early music training and the development of the part of the brain which governs spatial intelligence confirmed the development of higher brain functions in children that took music lessons.

I would say one of the most beneficial skills that my kids have learned playing the piano is learning to be patient and persistent more than the average human being's threshold. With every piece, they are challenged to do a little better and to push harder. With deliberate practice, they can push themselves further and improve.”

## Conclusion

Music instruction is a powerful educational resource and deserves an equal status as a core subject in our schools. Music optimally assists in brain development. It has biological roots, helps the two halves of the brain integrate, and play significant roles in the stages of neurological development. Music also helps children achieve academically. Research reveals music's beneficial link to mathematics, language, and the teaching of values. Children who study music perform better in academic subjects than those who do not study music. In addition, music fosters practical life skills children need to live balanced and rewarding lives. Through music, children acquire discipline, the ability to manage stress, cooperation, knowledge about their culture and the culture of others, and ways to healthfully express their emotions. Brademas declares:

Study of and exposure to the arts [music] are unique in deepening the resources of the intellect and expanding the horizons of imagination. Creativity, adaptability, sensitivity, cooperation, risk-taking, critical thinking, self-motivation, the ability to communicate, dedication to excellence - - all these competencies are indispensable if the American genius for innovation is to flourish in the economy of the 21<sup>st</sup> century. As it happens, these are the very competencies that are enhanced by the study of and practice in the arts [music]. (1995, p. 805).

The same will apply to the continent of Africa and the whole world indeed.

We can no longer deprive our youth of the vast benefits of music education. It is time to stand up for our students and do what we know is crucial and best for them. We must bring back, defend, and endorse music and music education in our classrooms!

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