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The Significant Role of Music in the Educational System through the Various Scientific Disciplines

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Abstract

Around the world in many, music is studied within the compulsory education system through the subject of music education. It has been recognized as serving a variety of human needs. Some of these needs can be met only through the music. That's through the kinds of meanings and satisfactions that only musical sounds, defined and structured according to cultural expectations, traditions and identity traits, can provide. In this regard, numerous studies have been conducted whose results confirm the benefits of musical activities in young people's educational process. General findings are that musical education contributes to improved outcomes in all areas such as reading and literacy skills, spatial-temporal reasoning, mathematical abilities and emotional intelligence. In the last decades with the technical-technological achievements, appeared scientific approaches that penetrate deeper into the study of the importance of music and its positive influence on human activities. Some focus on the areas of the human brain "neural and cognitive", that are activated during the perception and processing of music. This music cognition is an interdisciplinary approach to understanding the mental processes that support musical behaviors, including perception, comprehension, memory, attention and performance.

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The intentions to demonstrate on the scientific level, the benefits of music further emphasize its major role in the formation of young people during schooling. Therefore music should have an important role in the education system through functional music education that will stimulate musical activities, performing and listening to music, and will empower mentioned positive effects in all areas of the education.

Keywords: Classical music; musical education; scientific approaches.

1. Introduction

Around the world in many, music is studied within the compulsory education system through the subject of music education. It has been recognized as serving a variety of human needs. Some of these needs can be met only through the music. That's through the kinds of meanings and satisfactions that only musical sounds, defined and structured according to cultural expectations, traditions and identity traits, can provide [1]. In this regard, numerous studies have been conducted whose results confirm the benefits of musical activities in young people's educational process. General findings are that musical education contributes to improved outcomes in all areas such as reading and literacy skills, spatial-temporal reasoning, mathematical abilities and emotional intelligence.

In the recent decades, with the technological advancements, there are scientific approaches that penetrate deeper into the study of the importance of classical music and the positive influence of music activities on human being. Some focus on the areas of the human brain that are activated during the perception and processing of music, as well as neural and cognitive processes of musical treatment. Their findings are that music represents an ideal domain for studying the physiology of the brain's interconnection parts that are activated during music perception. Neural mechanisms activated by music, play an important role in human intelligence. Therefore these studies of music and neurology may lead to new medical, rehabilitation and palliative care programs.

In-order to highlight the role of music within the educational system, in this research, we have considered some interdisciplinary scientific findings that deeply confirm the benefits of music. Given the fact that music is constantly subject to interest. Huge body of research works are undergoing based on qualitative and quantitative analysis. We have focused our interest on those which are within the cognitive musicology.

2. Some Interdisciplinary Approaches

In the 70's, music cognition was studied in science mainly for its acoustic and perceptual features, in what were music psychology and psychophysics. Most of these discussions about the psychology of music typically include lengthy discussions on acoustics and psychophysics. Without showing how these issues can be related to the quality of music experience [2].

The cognitive revolution encourages the researches that extend the level of sensation and perception of music. In that way we have obtained more sophisticated information about the impact of music on cognition. It has increased the awareness of music's role in a social and cultural context [3,4,5].

Music cognition requires an interdisciplinary approach to understanding the mental processes. It support musical behavior including perception, understanding, memory, attention and performances. Originally, the musical cognitive theories arise in the field of psychoacoustics and sensation, and then expand covering neurology, computer science, psychology, philosophy, linguistics, etc. New areas in the musicology arise too, such as cognitive musicology which explores “the musical habits” of the brain and focuses the interest on process rather than content. This scientific branch tends to the mental representation of music and exploring the cognitive regions of musical possibilities where the creative artists still haven’t reached [6,7].

The findings related to music and its impact on the cognition initiate scientists to explore music and its effects more and more in terms of different scientific disciplines [8]. So, in the 90’s, music is also observed in terms of biology, when Nils L. Wallin introduces the term bio-musicology [9]. In the book "The Origins of Music” is covered the problem of the evolution of music and man with the three major branches such as evolutionary musicology, neuro musicology and comparative musicology. Especially with the development of technology, researches about music are getting new dimensions and open new perspectives which further promote the beneficial sides of music. For this purpose is even used scanning of the neurons with functional magnetic resonance thus identifying the key aspects of musical performances that cause brain activity that is associated with emotions, and for the first time it is shown how these performances allow variation of the brain operation [10].

3. About some Benefits from Musical Activities

As a result of scientific advances in the mentioned areas and the new scientific disciplines in the recent years, there has been an increasing interest in encouraging and practical application of musical benefits within the educational system. In particular, the study of the relationship between the musical activities and the achievements in other subjects, or spatial-temporal reasoning, has received a great deal of publicity.

The ability of music is, it reach deeply into the emotions of humans very easily. In recent decades music making an inevitable tool in the interdisciplinary connections in the scientific areas of different nature. Of course, this is due to the fact that music is non-invasive, safe and motivating tool experienced through simultaneous activation of a certain number of regions in the brain. When a musical input enters our central nervous system via the auditory nerve, most of the input goes to the brain for processing. But some of it heads straight to motor nerves in our spinal cord. Our brain is primed early on to respond to and process music. Researches have shown that day-old infants are able to detect differences in rhythmic patterns. From an evolutionary standpoint, music precedes language.

The reason for the superiority of classical music to the brain attention is the way it influences our brain’s organization and abilities by its rhythm. It helps to increase the production of serotonin level in the brain and thus enhance our critical thinking. Classical music has a steady predictable rhythm, organized phrases and structured form. Also, the sound waves of a tone or a whole chord are organized in mathematical ratios that the brain easily accepts. In that sense, classical music is known to have great power to improve brain function, especially the reading and writing skills, spatial-temporal reasoning, math skills and emotional intelligence.

Moreover, classical music helps in increasing attention and focusing, by affecting the amplitude and frequency of brain waves. In addition, music stimulates brain function to concentrate more easily and to assimilate more information in less time.

Many researchers found that the classical music affected not only the emotional response and the kinds of emotional language used, but also affected the topics participants chose to disclose, promoted greater expression and actually caused an increase in the pleasure participants got from listening to classical music [11].

In the Emory News Center, Kerry Ludlam reports on a study showing that compared to other leisure activities, learning to play a musical instrument has long-term cognitive benefits. Children who participate in music lessons tend to suffer fewer declines in memory as they age. The report also mentions that it is never too late to start; taking music lessons at any age increases overall memory skills [12].

In favor of this are a number of studies including information from the University of Kent and Montreal that reveal that perceiving music is a multitask performance (rhythm, melody and tempo) that initiates organization, skills and ability of the brain to handle more information at once. In this context is the fact that the rhythm of classical music helps students in learning mathematics through stimulation of brain centers for thinking, analyzing and planning, thus improving organizational skills.

The study of music's relationship to spatial-temporal reasoning, most commonly labeled "the Mozart Effect" has received much attention because of the power of music for effective learning, developing creativity and improving health. In fact, the author of this book states that music rightly has a central place in society not only as a form of beautiful artistic performance, but also as a prime mover in mental development, stress release and emotional expression. The survey of Shaw and Rauscher at the University of California indicates the influence of Mozart's music, after listening to Mozart's piano sonata in D Major (K 488), individuals "gained a distinct advantage in terms of spatial task performance ... " [13]. Later studies focusing on long term musical instruction, such as piano, found similar enhancements in spatial-temporal reasoning.

Some Interdisciplinary Scientific Approaches about the Importance of Music in the Function of Musical Education are conducted by Dr. Gordon Shaw of the University of California-Irvine. In his study, he found that infants who listened to Mozart and then studied piano as children scored higher than other children in math.

When children's brainwaves were monitored by an electroencephalogram (EEG), Russian scientists found a significant difference between those who listened to music and those who didn't. The study, published in Human Physiology in 1996, demonstrated that the group of children who listened to classical music for one hour a day over a six-month period exhibited changes in the alpha rhythm frequency band. And greater coherence among different regions of the cerebral cortex, both indicating greater levels of relaxation. More striking, perhaps, is that these changes in the brain and brainwaves occurred in a passive listening setting where children were not required to pay attention to the music.

Today in modern life is particularly important the role of music in reducing the stress. It is known that stress is associated with many diseases, including several mental diseases that occur only in people with too high levels

of stress.

While listening to the classical music, our heart beat and pulse rate will relax with the beat of the music. As the body becomes relaxed, our minds are able to concentrate more effectively. Frequent listening of classical music also helps in reducing the risk of stroke and other health problems.

In the recent decades, when the virtual world and alienation develop fast and make people more and more alienated, music and musical activities are promoted as a means of socialization of personality and a sense of belonging.

4. Conclusion

The elaborated subject matter is a drop from the sea of scientific findings that confirm the important role of music in society. Therefore, it is a continuous subject of research in many scientific areas that opens the way for the establishment of new scientific disciplines, such as bio-musicology, cognitive musicology, that explore more deeply the effects of the influence of music on humans. Especially it emphasized the benefits of classical music as very useful in the developing period of the child's personality. Therefore, in the educational systems of developed countries music education is accepted as an important and integral subject within the curriculums. A variety of projects are implemented that encourage greater integration of young people in music activities with the aim to provide "high quality music education for all". This tendency of music becoming a significant area, in which an interdisciplinary connection contributes to more effective results within the educational system, is expected over time to be positioned in most cultural environments in the world. All this derives from determined a systematic educational policy for implementing curriculum and program in music education, and thus a clear strategy of educating and shaping young people.

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