

From Art and Music Education to STEAM

Ersin Turhal

Mersin University

Art

Art, which was created by the human in the search of fine, is the whole of beauties gradually surrounding him. In the line with requirements, human beings have created a variety of art works throughout the life span. These art works range from even ordinary expressions developed through such concerns as fineness or realism to the its own need for renaissance by replicating itself. The pleasure taken from creating an art urge people to reveal fresh works; as the expression ability of the artists has improved more and more, this development cycle has also flourished throughout the history. Human beings who tried to express themselves at first have developed visual, audial and dramatic arts with this pleasure circle; therefore, artists and works of art can remain alive through mutual interaction.

On the other hand, art is not just for pleasure, it should also prioritise nicety (Plehanov, 1987). At this point, besides its lexical meaning known as manufacturing, craftsmanship, ingenuity and craft, it is suggested that the meaning of the ‘Sanat’ which comes Turkish from Arabic may be originated from ‘artificial’. In addition to this assumption, the similarities between ‘art’ and ‘artificial’ in English; ‘kunst’ and ‘künstlich’ in German corroborate this idea (Turhal, 2019). Thus, the art notion can be described as a presentation of the piece of reality through artificial expression by manipulating skilful actions. In that case, not only reflecting the reality via pleasure but also reflecting with the best possible defining is one of the responsibilities of art. At this point, similar to the assumption that there is no single reality, the notion that there is no single best reflation pattern allows art to offer limitless diversity. When the attempts of the artist to incorporate a part of himself into the work and his effort to survive via art works take into the consideration, an endless diversity came into being.

Honouring of this art works; even further approval of them has pushed artists to product more work. The approval of the idea that artworks have an artistic value just come true with the acceptance of the mass (Barrett, 2015) Admiration has usually motivated the artist, and it has also an inspirational effect to produce and improve new artworks. However, at that point, the dilemma in the notion of art come to the forefront.

The first idea is ‘Art for people’s sake’. In this definition, the relationship between society and acceptance of the art is at the forefront. Art is usually the most efficient means to express the fine and beauty (according to the acceptance of society). The second idea is ‘art for art’s sake’. According to this view, art is the means for the artist (in terms of his

own acceptance) to express something in a most efficient way. This approach enables the artist to be master in his field, and even to move beyond society.

But in this process, it may also lead to a disconnection between the artist and the mass and subsequently a detachment from the society subsequently (Plehanov, 1987). For this reason, certain artists couldn't be understood enough during their period and the deepness in their artworks was recognized afterwards. This deepness also kept artist's influence alive. On the other hand, some artists have never been understood and vanished in the dusty pages of history with their artworks.

This story of the art has lived in ages, in various cultures via different materials and movements. Around these two margins, these movements began for the sake of pursuit of the reality and aesthetics. On the other hand, the idea 'Art not only copies the life, but also tries to explain it' (Plehanov, 1987) has focused on another function of art. According to this aspect, art is regarded as an effort to make life meaningful. In this mission, art attempts to improve the humankind. This effort reveals unbreakable bond between art and education.

Art Education

Such concepts as art education or education through art are dilemmas that always exist in the story of the art. In art education, development process and the period of change have been shaped not only through the interaction between artists (or their works) but also through mentor system. In other words, an environmental education also becomes unavoidable as well as a formal vocational art education. On the other hand, this process embraces such branches as an art education to train an artist and an art education to create a good person. Moreover, it has sometimes handled by getting in touch with one another. In order to train a good artist, vocational art education has been given with a more professional manner in a narrow case while general art education has served more common mass as a basis for the discipline.

We also regard the art concept as a human effort to express himself aesthetically with various ways. This perspective has brought out the role of the art education in general education. In this respect, Reed's ideas such as 'art should be the base of the education... the aim of the education should be to create productive humanity in various expressions' come to the forefront (Keel 1969:47). He argues that art should be a primary element in curriculum. Reed adopted 'art is an education form' idea (Keel, 1969). In other words, art is not an instrument to teach particular subjects. Artistic teaching is a general point of view that can handle many subjects. This idea lays its foundation on a point of view including not only visual arts but also all other branches of the arts ranging from music to drama or literature to architecture.

Reed also suggested an insight that unearths the creativity within the education (Keel, 1969). This insight mentions about a kind of education that helps individuals to discover their own abilities from their childhoods. Without doubt, creativity will make a great contribution to individuals' development and also lay the foundation of some qualities such as 'self-acquaintance' and 'self-development'. Now, we can realise the importance of this aspect with recent global human patterns.

These days, digital world has a variety of forms that can offer limitless production opportunities one hand and that restrict individuals' freedoms and shape aesthetic perception on the other hand. As a result of these forms, the merging 'dedifferentiation' of the aesthetic concepts like same dance movies, music or clothes by the youth from different cultures in from the different parts of the world can be regarded as globalisation. This approach may be considered as a menace for the colourful world culture in terms of standardization of it. On the other hand, digital world facilitates the interaction of the creative piece of works and accelerate the inclination and honouring of them.

The approaches that are condemned to uniformity and lack of creativity prove the importance of the art education and the education handled through creativity again. The most important point here is to generating people taking pleasure in creating on their own without being subject to the manipulation effect of the trend. Thus this existing global aesthetic perceptive penetrates its effects to people so easily and gives rise to standardization.

The aim of the art education is to teach seeing not looking, to teach hearing or even to teach perception to the students (San, 2004). With art education, it is aimed to increase consciousness level and awareness perception of the individual. By this way, individuals with advanced recognition abilities who found out their creative abilities have been brought up.

In the art education processes, one of the common criticism that educators face is the reluctance to product arts, because of a variety of notions like that art requires ability and the ones that are lack of this ability won't be successful in art education process or even 'they have no idea about art'. Before we reply to this criticism, we have to accept that it is crystal-clear fact that art absolutely requires ability and talent. However, this situation doesn't mean a need for classification in the education. Hence, many fields like Language, Mathematics, Science also require abilities (Kırıçoğlu, 2002). In general education at a certain level of success can be achieved in these fields too. In addition art education also aims to achieve success at a certain level.

Another problem that is encountered in art education process is the insufficient weekly course hours of art courses in curriculums (Uysal & Uysal, 2015). The lack of fine equipment for art courses and the difficulties encountered to find appropriate places

can be regarded as other challenges. In fact, art education is a boundless form. For instance, the music created just with our voice and body percussion is quite didactic, remarkable and enjoyable. Similarly, visual arts can also offer lots of fantastic works by using various natural materials. On the other hand, insufficient weekly course hours allocated art courses is a harsh reality that we have to accept. But ideally, education patterns through art should be considered as a part of general education and offer an interdisciplinary approach.

Music and its Effect

Music has a special place in the Fine arts, because music, opening the doors of the acoustic world, is a kind of fine art that effects one's mood in the quickest way. Music consists of fluctuating sounds in harmony with systematic length and height in certain frequencies. This harmony and effect between Literature and Music lead to a solid alliance between them. Human beings have experienced their happiness, gloom or even their worship more efficiently through music over the last centuries. So that, music turns into a natural need and a significant part of the culture.

It is thought that the connection between humanity and music arouse out of a need for communicate and expression. The transformation of speeches into melodic conditions in expression may be evolved in first singing action afterwards. According to this thought, the emotions in expressions are pathfinders of the melodies and this situation leads to the composition of the first songs or piece of musical expressions. The line between Literature and music, like a snowball, has grown stronger and stronger. It is also thought that the first instruments accompany songs were percussion instruments. The use of percussions especially in certain ceremonies improve the effect of the expression. This effect plays an important role in today's military ceremonies, rites or even wedding ceremonies. Wind instruments are thought to have taken second place.

These instruments including small sound sequences at first have developed in the long run. Other instruments have also pursued this trend and come until today. Today instrumental revolution or evolution doesn't end; on the contrary it keeps up with the times. As the material cognisance and technology in instrument manufacturing have grown, the more durable and more loud-voice instruments matching with different tone colours can be manufactured. When the today's electronic instruments are also taken into the consideration, it is not surprising that the manufacturing of instruments will go on in the future and will be one of the field usually used by interdisciplinary studies.

The irresistible effect of the music has manifested itself not only in expressions or performance of the arts but also in the treatment methods by establishing a relationship with medicine. It is alleged that the earliest treatment methods with music were performed by David in BC 1000s. Moreover, it is well-established that Pentatonic scale

by Pythagorean, who has outstanding studies on such disciplines as philosophy and mathematics at the same time, was also used for treatment. Farabi also treated people via music and gave information about scales and their effects. Similar to lots of societies, this tradition grew up and took its root to Turkish society in Anatolia then, with the institutionalization of the 'Darussifas' (same as hospitals), it becomes one of our cultural heritages. Particular themes, affecting various mental illnesses, were determined at these institutions, then treatment process was supported by playing musical titles from these themes to patients.

Treatment methods via music is a popular field even today. A number of seminars have been conducted in many institutions. Further, certification programmes have been offered and various application fields have been created. Unlimited world of the technology has opened novel doors in this field. In the future, it is most probably that the musical treatment will turn into a field serving for different purposes more efficiently thanks to the technology. Theatre and Cinema, parts of the dramatic arts, are the fields in which music is put to use effectively. Today theatre, series and production of game music become a significant industry. Musical works composed mostly through digital ways spark off new sectors like electronic music. This increasingly growing digital production keep pace with the necessities of the time and go on its evaluation in parallel with technological development.

After all these experiences, the effect of the music is also subject to the certain physiological researches. In these researches, musical variance has been tested with a variety of variances such as different patterns, tones, instruments and human voices and in this way, it is tried to understand what kinds of moods stem from these variances (Baydağ, 2019). The results obtained from these studies become a source for various sectors. For instance, jingles have been canalized into the attraction centres of the target group or the musical genres prompting the customers to do more shopping have preferred in malls. So this way, trade blocs have reconstituted the effects of the music for professional purposes.

Music Education

Music like many other branches of fine arts has a significant effect on upbringing of a humankind. The habit of listening to relaxing music beginning from mother's womb goes forward with lullabies that help babies to sleep peacefully. This musical memory of the child, arising from the beginning of mother's womb, spurs him/her towards a potential musical concern in the future. This knowledge, whether it is conscious or unconscious, gives rise to a musical aptitude which approves itself hereafter. Which is why, proper guidance brings about positive outputs. If listening activity goes along with singing, development and interest increase. In the formal education, generally beginning with

preschool education, music is not only a means for other behaviours that are thought but it is also in the centre of the musical development. Listening activities are also in a relationship with development of the technological devices and software technologies.

There are critical periods in the musical development of the children. When they are educated well musically, it contributes to their following musical talents and interests. These periods may differ according to children's own socio-cultural context (Özmenteş & Adıgüzel 2017). When we take a look at today's musical talent tests, it is realized that there is a generally vocalization oriented trend among the students in terms of answering the questions. From this viewpoint, taking music education based on singing a song both in preschool and primary school periods promote skill development. Moreover, giving a rhythm oriented musical education to students and their accompaniment this rhythm or song with certain instruments or gestures in this education process can improve not only their musical development but also their self-acquaintance and self-expression.

One of the pioneer methods on this subject is Dalcroze method and the basic concept of this method is Eurhythmics. According to Jagues-Dalcroze 'We listen to music just with our ears but it resonates in our brains, hearts and eventually in our whole parts.' (İJD 2020). Eurhythmics is performed with an education conception which emerged in the light of an idea that body and music perception merge and turn into a motion (Eren, 2019). A variety of skills like hearing training, solfege and spontaneity are upskilled in this program. The acquisition of these skills with a motion brings about more efficient learning atmospheres (Özmenteş & Bilen 2005).

The Orff method, following the above, prioritises rhythm perception in music education. The method offers an Elemental course from the rhythm in the speech to gestures. This method also suggests to use rhythmic and melodic percussion instruments for basic music education. Furthermore; Carl Orff invented a number of afro-instruments through his own imagination and used them effectively. Orff method has also offered efficient results in musical education approaches (Kalyoncu 2006). The common aspect of both these two approaches and the other contemporary basic music education approaches is to be a game and dance oriented education approach which puts the student into learning environment by prompting him/her. In addition, spontaneity occupies an important position in these approaches.

Musical spontaneity enables students to discover their creative abilities. So their musical self-acquaintance and self-expression skills can improve. Another aspect of these contemporary approaches is to be more successful in terms of adapting to the other disciplines. The most common skill in these interdisciplinary relationships is to convert music into other expression arts. This may be a transformation from a piece of music to a paint, a poem, a story or vice versa.

One of the main dimensions of the music education is instrument training. This process requires to utilize a number of skills together from psychomotor behaviour necessary for instrument to analysis of the musical note by analysing and forming patterns. It is necessary to make progress with systematic experiences so as to gain these skills. In instrumental training process, one should take over his/her own learning responsibilities and carry out the instrumental experiences with conscious studies. Therefore, a number of technical aspects pertaining to instrument can be achieved successfully. In general music education processes, the use of an instrument by students or trainer leads to a positive effect on students (Düzgören & Gerekten 2017). On account of this reason instrument training should be carried out with certain instruments like a block flute, melodica etc. within general education. Selections of the instruments may differ according to the socio-economic conditions of the schools. At this point, the basic factors effecting selection of the instrument can range from the suitability of the instrument for collective playing in terms of playing skills to transfer other instruments or to be affordable.

Today there are digital software supporting to the instrument training processes or even regulating the learning atmosphere that serves as a guide. Further, with the increasing use of technology, these programmes have a big potential to turn into more user-friendly ones.

The contents that are taught in general music education should be analysed meticulously. The songs taught should be chose in accordance with social values (Akıncı, 2019). When the grammar of the songs and the meaning of their lyrics are handled properly, positive acquisitions can be achieved. It is known that successful results are possible when the music is regarded as an effective language and preferred to teach by other disciplines (Dinçer, Ece & Yildizlar, 2010). Besides the music-aid educational studies in different fields, there are also a great number of interdisciplinary studies on the relationship between music and academic success, scientific- verbal education, mathematical ability etc. (Ece & Çesit, 2011). To sum up, music education is an unlimited field applied usually for interdisciplinary studies.

Interdisciplinary

Interdisciplinary concept can be recognized as the relationships established by common networks of different disciplines. In this concept, it is acknowledged the fact that a good number of disciplines, that we regard them as separate disciplines today, were parts of the entirety once upon a time and emerged from this entirety through the disintegrations in time.

Although disciplines separate from each other owing to their discrepancies, they cannot be clarified or born out without each other's assistance. Thus, interdisciplinary study habits are natural processes. While the interdisciplinary interactions are very popular

in education sciences today, it is also understood that some disciplines were in fact not different from each other in the past.

For instance, in ancient Greek education, this interdisciplinary approach existed naturally as the philosophy provided this interdisciplinary link. People known as philosophers had a knowledge level embracing a variety of fields that range from astrology to chemistry, from music to mathematics or from politics to sociology (Aydın&Arslan, 2015).

Similarly, the artists and scientists of the Renaissance revival also performed works with a multidisciplinary principle. Leonardo da Vinci is one of the best models of that period. He had designs like an engineer and he also devised prototypes of some designs. In other respects, with his unique style crowning the painting, he is one of the headstones of art history. On the other hand, it is established that he made a living by playing lavta in the royal palace. This is a good example for his musician side. Da Vinci is also man of the age with his musician, painter, architect, engineer, astronomer, sculpture, botanist and writer aspects which we cannot mention now. In other respects, Mehmed the Conqueror with his conquest which is the starting point of the Renaissance revival, is a remarkable character with his knowledge about a variety of disciplines such as history, politics, religious, engineering and this knowledge informs us about the people of the age. Art education was a significant part of the general education in this era and the interdisciplinary interaction was higher-up.

It is considered that Modern thinking which is brought to agenda in 17th century, has allowed disciplines to move separately and to go into deeper part of their field. In this way, different science and art branches took root in itself and developed. On the other hand, this trend weakened interdisciplinary interactions and supported just too close disciplines. Postmodernism movement, which raises a criticism against Modernism, suggests that facts only bring to light with entire statements instead of a single truth. The notion of searching different statements is only possible with a relationship between different disciplines. Thus, thanks to postmodernism, this disintegration got behind again and interdisciplinary relationships has come to the forefront (Üstüner, 2007).

When we look at the present, thanks to the developments in the industry and technology, the importance of the reframing abilities and creativity has grown day by day. In order to reframe, it is necessary to look at with the eye of different disciplines or to gain fresh views via the various contacts with these disciplines. In line with this requirement, education programmes have been designed as interdisciplinary.

STEAM

In 1950s, it was aimed to design an associational education model which is thought to have been designed first in America and which embraced Science, Technology,

Engineering and Mathematics (STEM) fields. At the dawn of 21st century, the technological developments in Japan and the output growth in China have pushed the USA to make reforms in scientific works (National Research Council, 1996). These reforms shaped also the education and enhanced the interactions especially among the science, technology and engineering fields. In 2000s, these interactive relations were conceptualized as interdisciplinary education concepts and added to educational environments both in the USA and Europe.

Much as these interdisciplinary concepts were designed and used in education with different denotations at first, 'STEM' title became increasingly prevalent then. Innovative education insights, trying to catch the era and to equip the students for the future, have prioritised skill-based learning and struggled to use a teaching model targeting discoveries and creativity. This education platform gives an opportunity to utilize a widespread education environment ranging from preschool periods to doctoral degree.

Then there were some efforts to amend the scope of STEM and it was going to intend to add entrepreneurship and other things related to hardware system to its title, but they were not approved enough. After that, as result of a variety of studies it was well understood that only with art education it is possible to achieve creativity and ability that lie at the heart of all these projects. Therefore, STEM involved 'A' standing for Art and took its final form as STEAM.

Pyramid expression by Yakman (2010) was also effective within this period and STEM notion exerted an influence on education as from South Korea to the USA and European countries. Turkey was not also indifferent this approach and a STEM Education Report was published by the Ministry of National Education in 2016. Furthermore, Trainer Handbook of STEM Education was published in 2018 and another book titled Acquisition Centred STEM Applications was published in 2019 (MEB, 2016, 2018, 2019). Although art field was involved in certain events of this study and so on, applying without 'A' indicated that an understanding that lags behind in the developments on this subject and overlooks acquisitions of the art through interdisciplinary approaches still persists (Madden, et al., 2013).

On the other side, after postmodernism, art approaches also adopted interdisciplinary approaches in itself and took on a good structure via methods like using different materials and via use of the knowledge belongs to other disciplines (Edeer, 2005; Bolat Aydoğın, 2009). In this colourful world, art education enables individuals to gain a variety of acquisitions such as sensitivity, awareness, opening for improvement, creativity and so on (Mercin, 2018, Helvacı&Yılmaz, 2020). Moreover, an individual can improve his/her problem solving ability and gain multiple perspective thanks to the art education (Henriksen, 2014).

Results

Art education adapt to interdisciplinary approaches intrinsically. As we partly mentioned above, musical education processes are also used in various subjects in an interaction with different disciplines. Thus, STEAM education platform opens unlimited and delighted doors through music. Here below, there are certain examples about previous studies on music and STEAM including its subjects. In the one of these studies, music notes were studied in amino acid sequence (Acan&Acan, 2019) and sequence was performed with a common song. In another study web based 3D platform was created in order to form an interaction with virtual music instruments (Kritsis, et al., 2018) and the lesson handled this way. In his informatics musical thinking course, an artist also developed an algorithm that leads to thinking like him and he shared his STEAM experience which he practiced by composing music (Shafer & Skripchuk, 2020). Guy, designed Human Centred Design (HCD) in his study (2013) and suggested that art oriented education constituted in the light of solving problems by discovering and criticizing would reveal creativity and so the programmes formed in this way would provide prudential long term socio-technic benefits. Kim, tested a STEAM based music lesson given 3rd grade elementary school students in his study (2018) and established that STEAM support turned out an advantage in music lesson. With their project known as the iMuSciCA, Andreotti and Frans (2019) offer a curriculum including physics and engineering fields in music education. they set horizontal relationships by making contacts among disciplines via their knowledge. they also deep themselves in these related disciplines vertically.

Welch (2012) criticized English Bachelorhood and alleged that if there were as much support for art and social science including music as technology, school-aged children could be gain substantial learning outcomes. He also emphasized that STEM education platform should replace with STEAM.

All these studies indicate that art education can achieve remarkable learning outcomes through art education and especially with the STEAM applications in music education. It is clear that a great education platform STEAM has flourished more and has widened new horizons thanks to the music field. It is strongly believed that such kinds of interactive learning methods should be utilized effectively today and in the future.

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