The Transfer Effects of Music Learning in the Light of Recent Research

Kelemen, Judit

Recently released news in the media called the fact miracle that in one English primary school pupils perform better and are present at school more often due to music learning, the Kodály-concept and the increased number of art classes. After hearing the news, Hungarian music pedagogues looked at each other knowingly: we have been familiar with the idea since the 70's…!

In spite of this, to art education in Hungarian schools poor destiny has been given for decades. The present study focuses on music education only but representatives of other artistic fields are of the same opinion. The present situation of music education has been criticised by many studies, while nationally and internationally known music pedagogues search for the answers for the new challenges – as if the thoughts of Kodály from 1961 would have been written today: 'From the ancient Greeks to Comenius the prevailing concept was that music is vitally necessary for the development of man, an essential part of education and not some kind of a dispensable luxury item, mere fun.' (Kodály, 1961, 334.) Here is the time to turn the experts' attention to the blessed 'side effects' of music.

In relation to studies on the personality forming power of music learning, a great number of examples could be mentioned from the documents of ancient cultures especially valuable for us to today's programmes with a model value and international recognition. It is a common feature of the reform pedagogical trends of the 20th century that arts are given a prominent role as forming the personality of children, their self-expression and the development of their various general abilities can all be related to the cultivation of the various branches of art. Recent education policy efforts, such as promoting day-to-day art activities – especially singing and singing in a choir – have drawn attention to its well-known, obvious benefits although professionals have rather controversial views on the methods and the expected results of their implementation.

Referring to Hungarian music education, it is inevitable to mention the name of Zoltán Kodály: on December 2, 2016 the preservation of folk music according to the 'Kodály-concept' (erroneously named 'method') was selected by UNESCO on its Register of Good Safeguarding Practices of folk music heritage, and 21 March, 2017 is was added to the list of Hungaricums.

Owing to the power of music to form the character and its many beneficial effects on personality, Kodály urged music education to be made available to everyone, i.e. to introduce music education into public education. 'The purpose of music is not to give judgment on it, but to be nourished with it. Music is mental food and cannot be replaced by anything else. Anyone who does not live with it lives in spiritual anaemia until death. There is no sound spiritual life without music. There are regions of the human soul into which only music lights.' (Kodály, 1944, 156.)

Besides forming the personality, Kodály was, however, also aware of the effects of music learning on enhancing the general level of aspiration as well as its transfer effects – after the spread of the so called primary schools with special classes of extended music education providing a music lesson every day, it has been confirmed by many scientific investigations and studies (Bácskai, Manchin, Sági, Vitányi, 1972; Barkóczi, Pléh, 1978.) I will give an account of the results of recent research in the second part of this study. It is formulated by Kodály like this: '[…] a little music every day, which is as important for a child as to eat every day. We cannot nourish a child properly, either by giving him/her to eat only once a week. Music should be consumed in a similar way: a little every day.' (Kodály, 1966, 193.) Concerning the educational advancement of children in classes with extended music education, Kodály says: 'they are better in every subject than those of schools providing children only two music lessons a week […]. It is undeniable that daily music and singing spiritually refresh children, who then become more receptive to other subjects as well.' (Kodály, 1965, 588-589.)

Referring to the three years' research carried out by Ilona Barkóczi and Csaba Pléh in some primary schools of Kecskemét, Zoltán Laczó summarised the most important relationships between music learning and children's performances in the subjects of general knowledge as well as the favourable experience in the development of social relationships at a conference on music education organised in 2002 as follows: 'Research findings justified that children in classes with extended music education showed a better adaptation to tasks requiring thinking, more advanced creativity, greater emotional sensitivity in relation to creativity, deeper experience processing and greater internal control. The students' performances attending the classes with extended music education seemed to break with their social background more and more. The socio-metric studies have clearly shown that in classes with extended music education there are fewer children 'on the periphery', who get away from the community. (Laczó, 2002, 88.) The urge that there should be singing or arts education every day coincides with the above-mentioned ideas by Kodály as well as the results of the impact assessments justifying them.

The same presentation refers to an earlier unpublished comparative study by László Mérei (Laczó, 90) in which a socio-metric survey was carried out in classes with extended music education and in those with a normal curriculum. Although according to Mérei the number of classes participating in the investigation was below the quantity needed to establish generalizable relationships, the trend in the two types of classes can be very well traced with respect to social relationships: 'The standard classes are divided into several smaller groups, there can be sharp borderlines between them, there are no mutual choices between them; the groups are each others' rivals. In contrast, the classes with extended music education are so called 'soft' communities, within the class community, two, maximum three groups could be separated on the basis of the survey. The groups rivalled among themselves for noble purposes. They were characterised by a supportive attitude and a high level of cooperativeness. Their choices were based on objective criteria that referred to the democratic leadership of the classes. All these characteristics can be evaluated as a high level of socialization effect of intensive musical activity, collective music making (attention required by singing solo or singing in parts in a chamber choir, the musical value-creating inner urge to support each other and musical quality).'(Laczó, 90)

Nowadays the number of socially disadvantaged children is growing alarmingly and continuously, their provision and/or (adult) employment is a huge challenge for the labour market, and thus for society as well. The unfavourable social phenomena and processes have an impact on unfavourable changes in the circumstances of families (unemployment, impoverishment, disruption of families, children drifting and leaving school early), as a consequence of which the mental injuries of children and young people and their development in the broadest sense being threatened mean problems for all of us. Reducing the exclusion of increasingly marginalized groups is a growing challenge for society both from an economic and a social point of view.

As a kind of answer to these social challenges, Lord Yehudi Menuhin (1916-1999) the world famous violinist launched an international project Music in Europe (MUS-E®) in 1993, the central idea of which was to teach about tolerance through the tools of arts. And although the programme was launched 25 years ago, it has lost none of its relevance.

The programme was connected to a UNESCO project called 'World Decade for Cultural Development' with a subtitle 'Music as the Source of Balance and Tolerance'. This is how Menuhin summarized its main points in his own words: 'to run against the mainstream of descending civilization.'

The MUS-E project was based on the Kodály method and a completed experiment titled 'Music at School' – carried out in 50 schools in Switzerland.' (Kismartony, 2011, 53.) This art education project focuses on '[…] helping children to begin the long road to personal fulfilment through the arts - music, dance, singing, drama and visual arts […] The project promotes social integration, and aims to reduce levels of violence, racism and social exclusion amongst the young.' (Kelemen, 2014, 86.)

The idea is that by using arts at schools in a new way (instead of teachers artists deal with children), such abilities of children are developing which not only broaden their world view, but they give them the tool to greatly enhance their creativity, to spend their leisure time meaningfully, to participate actively in community life and to improve their quality of life. Menuhin recommended his method to schools which deal with disadvantaged children, possibly to be introduced in the first class. The programme clearly has a social purpose, for which it makes use of the power of arts to form the character.

By extending the basic ideas by Kodály, Menuhin emphasized the unity of body, soul and spirit, and thus besides music, arts and martial arts became part of education. Instead of developing musical skills, the programme aims to develop imagination and fantasy, as it considers them to be a potential tool for managing everyday conflict situations. The primary task of the artist dealing with children is to liberate the imagination of the child. In musical terms – similarly to Kodály - singing together is also central to this, in addition, rhythm games, getting acquainted with musical instruments also play an essential role, with making instruments as a new element. So far 13 countries have participated in the MUS-E® project of the International Yehudi Menuhin Foundation (YMF website, 2017) – Hungary joined it in 1994, and provided opportunity for the programme to be realised for four years.

Éva Csébfalvi reports on the details of the programme's implementation in Hungary as well as the results of the impact assessment involving control classes, (Csébfalvi, 2009) while another study published in 2011 (Kismartony) examines the results of the experimental phase from the point of view of the contributors involved in the experiment. The author of this study, Dr. Katalin Kismartony participated in the Budapest programme herself, and her own experiences, her changed world view encouraged her to formulate her questions. According to the teachers participating in the programme, the most important results related to the children's attitude to school/learning and to their behaviour are as follows: the enhancement of children's self-confidence and self-esteem, the awakening of their creativity, the enrichment of their emotional life, the strengthening of their socialization, the reduction of disciplinary problems, in-

creasing tolerance for each other, the strengthening of taking care of each and group consciousness, the development of their concentration abilities, their efforts to become more accurate and strong development in general knowledge subjects.

Examining the neurological background of various musical activities (playing a musical instrument, singing and practising) performed regularly, the development of brain processes required for making music as well as the impact of music learning on emotional, social and cognitive abilities have become fruitful topics for brain researchers in recent decades. (e.g. Johnson, 2010; Norton, Winner, Cronin, Overy, Lee és Schlaug, 2005.)

However, it is also commonly known to laymen that the right and left hemisphere of the human brain work with different 'division of labour', and in this context, knowledge of the transfer effects of music learning may be of particular interest, i.e. the beneficial effects of a an activity typically linked to the right hemisphere on the activities linked to the left hemisphere.

However, with respect to intensive music education more and more people are calling attention to the fact that musical abilities are related to several areas of the right and left hemisphere. Asztalos says: 'Which areas are activated depends on two factors, the characteristics of the acoustic stimulus and the individual's characteristics. Brain activity is greatly influenced by the individual's learning experience. As skilled musicians have a more conscious relationship to music, they often have the left hemisphere performing tasks that are performed in the right hemisphere of amateurs.' (Asztalos, 2012, 79.) The same idea is reinforced by Gombás, too: 'Owing to the better communication between the hemispheres and the unusual asymmetry at the speech centre, their right hemisphere is likely to be more active than in ordinary people although left-hemispheric dominance among musicians is also more common. In general, it is explained by this particular asymmetry that musicians surpass non-musicians in linguistic memory, verbal fluency, and verbal expression of emotions.' (Gombás, 2014, 239.) Concerning the transfer effects of music learning, Gombás writes as a general summary: '[…] there is no separate 'musical brain' in the nervous system that is exclusively responsible for musical abilities. The processing and creation of music is performed by several other areas of the brain specialized primarily for performing other tasks. Stimulating these areas with music, developing and strengthening the relationships between them through music can have a beneficial effect on many other skills through the transfer effect. Which are these skills that music activity develops from early childhood through transfer effects? […] there is a strong link in the short term between musical activity and motivation level, emotional status, and movement

activity as well as the degree of social activity. There is a strong relationship between long-term music training and more advanced language skills. But there is also a positive correlation between music education and empathy, creativity, the ability of logical thinking, self-esteem, and spatial orientation.' (Gombás, 241-242.) At the same place, in connection with the relationship between memory and music learning, the author also refers to a study in which the short and long-term verbal memory of trained musicians and non-musicians was examined in reading and listening comprehension exercises. In connection with the outstanding verbal memory of musicians practising for many years on a daily basis, the author also seems to find a connection with the musicians' rehearsal methods as they need to reproduce the desired performance on the basis of several written and oral instructions at the same time.

Next I will provide a brief overview of the studies on music learning and performances in various subjects.

The correlations in reading, language and mathematics also show the beneficial effects of music learning. In her dissertation Gévayné (2010, 77.) points out that 'when reading i.e. decoding a written text (saying the visual code of the symbols), as well as when reading music we can observe many similarities and we can experience the presence of parallel skills.'

'[…] In the case of language and music, we can consider orthographic awareness as a parallel skill as well. The basis of this skill is our knowledge that letters and musical symbols, respectively, represent language, and musical language. It means that we understand that letters and other symbols are used as elements of a writing system.' (Gévayné, 77-78.)

The ability to perceive pitch and rhythm is indispensable for tracking musical processes. However, the role of these abilities in learning reading is less known, in connection of which by summarizing the results of a study carried out with children with dyslexia, Gombás notes that a disadvantage of children with reading disabilities can be detected with respect to tonal discrimination and rhythm production. 'The results of children with dyslexia were far behind those of the control group in their musical abilities tested in all seven periods of time.' (Gévayné, 74.) According to the results of a longitudinal study conducted over a period of five years '[…] rhythm was significantly correlated with phonological awareness and reading. […] based on the regression analysis, the contribution of the rhythm ability to the reading ability was significant during all five years; however, in the case of phonological awareness, rhythm was a significant predictor only in the fifth year.' (Gévayné, 83.)

It is generally accepted that memory and the ability to imitate / recall the specific intonation of the target language, colloquially called the right and prop-

er pronunciation, play a key role in learning foreign languages. The beneficial effects of music learning on learning foreign languages are also often mentioned. Let us cite Gombás again, who summarised the results of a study in which the performances of English native speakers and those of students learning Spanish as a foreign language were examined. 'It was found that those who had previously learned music exceeded their peers both in working memory (short-term memory) tests and in pitch recognition and in Spanish pronunciation as well. On the basis of the result, it might be worth integrating music training more consciously into the methodology of foreign language teaching.' (Gombás, 241.)

The relationship between music learning and mathematical abilities and the possibility of developing mathematical abilities in a musical environment are also well known to researchers. Referring to the results of cognitive neurosciences, as for the three skills (counting, approximate size of numbers, geometric properties and relationships) considered to be the basis of mathematical thinking, Gévayné states that 'researchers assume that music training can activate and improve the processes of processing that link these systems. According to Spelke's findings based on these assumptions, intensive music education is associated with a more efficient use of the mathematical system (the core system) that represents abstract geometrical relationships. The performance of children with intense music training has exceeded the results of children who didn't learn music and who were taught little music in the process of identifying the geometric properties of visual forms, during which the Euclidean distance was aligned with numerical data. […] certain mathematical and scientific concepts that are known to be difficult to teach can be well trained by the methods of spatial-temporal (ST) reasoning, especially in early ages. The positive effect of music learning on spatial-temporal skills seems to be proven due to the research carried out in the last decade.' (Gévayné, 91.) Judit Gombás and László Stachó, who carried out examinations among children aged 10 to 14 years, also seem to have justified the relationship between mathematical and musical abilities. 'According to our findings mathematical and musical abilities were significantly correlated with each other, and we found a particularly high correlation between the score of problem solving tasks and that of the rhythm identification ones. There was also a significant positive correlation between the number of years of music education and the mathematical score. Based on our results, we assume that music learning by itself is beneficial for mathematical performance, but the musical ability independent of training also correlates positively with mathematical abilities.' (Gombás, Stachó, 2006.)

As a summary, it can be stated that according to studies on the transfer effects of music learning music education has a beneficial impact on both community and individual competences:

- social relationships (the responsibility of individual and community, empathy, acceptance, helping one another, community cohesion, social activity);
- the enhancement of general aspiration;
- national identity awareness;
- physiological effects (motion coordination, lung capacity);
- cognitive functions;
- creativity;
- logical thinking, mathematics;
- speech (vocabulary enrichment, linguistic memory and verbal fluency);
- reading (preparation and development);
- foreign language learning.

On the basis of the above, it can be concluded that further emphasis should be put on the creation of a set of conditions for both the individual and the community to have access to singing and music learning. At the same time, the flattening of the once world famous Hungarian music education, the distortion of the system, the original intention and the fading of the once splendid results can be well perceived in the practice of everyday life. Only about one fifth of the once active schools with extended music education are operating nationwide, and only the children's and youth choirs, which grew out of them and are of the highest quality according to international standards, recall the golden age of Hungarian music education.

For these reasons, we recommend considering that the effective and successful foreign 'good practices' in international terms should be studied carefully, taken over cautiously and integrated into the practice of Hungarian music education in such a way that the values that are considered a Hungaricum will be given sufficient emphasis and preserved in the future as well.

References

(extended version of the lecture of 'Art and Education – Education of the Art', 2nd Conference of Music Pedagogy, Debrecen, 2018. 03. 02.)

Bibliography:

Asztalos K.: A zenei képességek és a zenei műveltség kutatása. *Iskolakultúra,* 2012./10. 78-92. p. http://epa.oszk.hu/00000/00011/00169/pdf/EPA00011_Iskolakultura_2012-10_076-092.pdf (2017. 04. 11.)

Barkóczi, I., Pléh, Cs. (1978.): *Kodály zenei nevelési módszerének pszichológiai hatásvizsgálata.* Kodály Zoltán Zenepedagógiai Intézet – Bács megyei Lapkiadó Vállalat.

Bácskai, E., Manchin, R., Sági, M., Vitányi I (1972.): Ének-zenei iskolába jártak… Budapest, Zeneműkiadó.

Csébfalvi É. (2009): *A Music-Europe (MUS-E) multikulturális mintaprogram magyar módszere*. http://ofi.hu/music-europe-mus-e-multikulturalis-mintaprogram-magyar-modszere (2017. 04. 07.)

Gévayné, J. M.: *A zenei hallásképességek fejlődése és összefüggése néhány alapkészséggel 4-8 éves kor között. PhD értekezés.* Szegedi Tudományegyetem, Bölcsészettudományi Kar Neveléstudományi Doktori Iskola, Szeged, 2010.

Gombás J.: A zenei tevékenységek pszichológiai hatásai. In J. Torgyik (ed): Sokszínű *pedagógiai kultúra.* 239- 243. p. Retrieved from http://www.irisro.org/pedagogia2014januar/0312GombasJudit.pdf (2017. 04. 07.)

Gombás J., Stachó L.: *Matematikai és zenei képességek vizsgálata 10-14 éves gyerekeknél.* Retrieved from http://elib.kkf.hu/okt_publ/tek_2006_35.pdf (2017. 04. 13.)

International Yehudi Menuhin Foundation, website – http://www.menuhin-foundation.com/ (2017. 04. 09.)

Johnson, M. H.: *Developmental cognitive neuroscience* 3. kiadás, Blackwell, Malden, MA. 2010.

Kelemen, J.: Introducing Intercultural Elements into Lower Primary Music and Art Education. In J. Kádár, B. Szép, K. Nagy, R. Zsámba (ed.), *International Strategies in Higher Education: Conference proceedings*. Eger, 83-90. 2014.06.03-2014. 06.05. 83-90, ISBN:978-615-5297-24-3,

Kismartony, K.: Tizenkét évvel a MUS-E program budapesti kísérleti szakaszának befejezése után – Milyen eredményeket hozott a "tanítóknak, a tanároknak" a program? In J. Döbrössy (ed.): *Az Eötvös Loránd Tudományegyetem Tanító- és Óvóképző Karának Tudományos Közleményei. XXXIII. Ének-zene-nevelés.* 2011. 51-71. ISSN 1587-4249 ISSN 2063-0794.

Kodály, Z. (1944): Mire való a zenei önképzőkör? In F. Bónis (ed.): *Visszatekintés I. Kodály Zoltán összegyűjtött írásai.* Budapest, Zeneműkiadó Vállalat, 1982. 154-157.

Kodály, Z. (1961): Még néhány szó a tantervről. In F. Bónis (ed.): *Visszatekintés I. Kodály Zoltán összegyűjtött írásai.* Budapest, Zeneműkiadó Vállalat, 1982. 334-335.
Kodály, Z. (1965): Önarckép. In F. Bónis (ed.): *Visszatekintés III. Kodály Zoltán összegyűjtött írásai.* Budapest, Zeneműkiadó Vállalat, 1989. 584-589.
Kodály, Z. (1966): A zenei nevelők Santa-Barbara-i konferenciája előtt – nyilatkozat. In F. Bónis (ed.): *Visszatekintés III. Kodály Zoltán összegyűjtött írásai.* Budapest, Zeneműkiadó Vállalat, 1989. 192-196.
Laczó Z.: Zenepedagógia és társadalom. In M. Székely: *Hang és lélek. Új utak a zene és társadalom kapcsolatában.* Budapest, Magyar Zenei Tanács, 2002. 83-94.
Norton, A., Winner, E., Cronin, K., Overy, K. Lee, D. J., Schlaug, G.: Are there pre-existing neural, cognitive, or motoric makers for musical ebility? In *Brain Cognition*, 59, 2. sz. 124 – 134.
Published in 'Art and Education – Education of the Art', 2nd Conference of Music Pedagogy, Debrecen, 2018. 03. 02.
https://music.unideb.hu/sites/default/files/upload_documents/absztraktkotet_2018_vegleges.pdf

Dr. Kelemen Judit, főigazgató, egyetemi docens
Eszterházy Károly Egyetem Sárospataki Campus Humántudományok Intézete