

ABSTRACT

Literacy can be defined as autonomous set of skills, and it represents one of the basic requirements of modern society. The running question of improving literacy skills is one of the major concerns for many educators and scholars. The discoveries of contemporary cognitive neurosciences offer us some light in finding new ways of addressing this issue. In recent years, various research showed a strong connection between the development of musical competencies and literacy among young school aged children. Treating music in schools as an embellishment has become a regular practice in Croatian schools, and the aim of this paper is to point out the reasons why music should be treated differently, by listing evidences of benefits music can have on early literacy development. This paper also brings an analysis of the primary schooling system in Croatia, with regard to the vast number of lessons devoted to acquiring literacy skills and the poor representation of music in teaching. The paper suggests an alternative approach to acquiring literacy skills – adding to the music lessons instead of bulking curricula with numerous language lessons. Music activities could be incorporated in everyday teaching in order to help in improving literacy skills, and this is backed with a few concrete examples.

Key words: cognitive neuroscience, music competence, literacy development, speech development, music activities in primary school teaching.

REZIME

Pismenost se može definisati kao autonomni skup vještina i predstavlja jedan od osnovnih zahteva savremenog društva. Tekuće pitanje poboljšanja vještina pismenosti jedna je od glavnih briga mnogih nastavnika i naučnika. Otkrića savremenih kognitivnih neuronauka nude nam malo svetla u pronalaženju novih načina rešavanja ovog problema. Posljednjih godina različita istraživanja pokazala su snažnu vezu između razvoja muzičkih kompetencija i pismenosti kod dece mlađeg školskog uzrasta. Tretiranje muzike u školama kao dekoracije postala je uobičajena praksa u hrvatskim školama, a cilj ovog rada je ukazati na razloge zbog kojih bi se muzika trebala tretirati drugačije, navodeći dokaze o tome kako glazba može pozitivno uticati na razvoj rane pismenosti. Ovaj rad donosi i analizu sistema osnovnog školovanja u Hrvatskoj, s osvrtom na ogroman broj lekcija posvećenih stjecanju vještina pismenosti i slabu zastupljenost muzike u nastavi. U radu se predlaže alternativni pristup sticanju vještina pismenosti - dodavanje časova muzike umesto pretrpavanja nastavnih planova brojnim časovima jezika. Muzičke aktivnosti bi se mogle uključiti u svakodnevnu nastavu kako bi se poboljšala vještina pismenosti, a to je potkrepljeno sa nekoliko konkretnih primera.

Ključne reči: kognitivne neuronauke, muzička kompetencija, razvoj pismenosti, razvoj govora, muzičke aktivnosti u nastavi u osnovnoj školi

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MUSIC AND EARLY LITERACY DEVELOPMENT

A zenei és a korai irodalmi fejlődés

Muzički i rani književni razvoj

2. Introduction

2.1. Literacy in modern society

There has been some dispute in defining and conceptualizing literacy, and today it has many definitions: UNESCO specifies different approaches to literacy: 1. Literacy as an autonomous set of skills, 2. Literacy as applied, practiced and situated, 3. Literacy as a learning process and 4. Literacy as text (UNESCO, 2005: 148). Their official website also offers us a view of shift change: “The concept of literacy has evolved from basic reading, writing and numeracy skills to broader notions such as functional literacy and a foundation for lifelong learning” (<https://en.unesco.org>). Also, they claim that “Literate societies enable the free exchange of text-based information and provide an array of opportunities for lifelong learning” (UNESCO, 2005: 159). Therefore, we can conclude that literacy is a basic requirement of modern society.

In this paper we will address literacy as an autonomous set of skills. This approach divides the set of skills into: 1. Reading, writing and oral skills, 2. Numeracy skills, 3. Skills enabling access to knowledge and information (UNESCO, 2005: 149-150). Described model of multiple literacies doesn't imply that the skills are used separately, but simultaneously, and this has been very well described in Lana Meyers lecture on this subject: *Entertainment Meets education: Fostering Multiple Literacies through Graphic Novels* (Mayer and Živković Zebec, 2017). One cannot help but notice the similarity of multiple literacies defined by UNESCO in 2006 and multiple intelligences defined by

Gardner at the beginning of the 1980-es (Gardner, 2011). Gardner divided intelligences into several fields: logical – mathematical, linguistic, spatial/visual, bodily – kinaesthetic, interpersonal, intrapersonal, musical, naturalist, and existential. According to his theory, every person uses all of the intelligences but not at the same ratio or on the same way.

There are many papers that define numeracy skills, and even more ones that define the skills enabling access to knowledge and information (the subject of media literacy is currently very popular), e.g. Braš Roth et al. (2013) or Zgrabljic Rotar (2005), but in this paper we will consider literacy as reading, writing and oral skills (we can call them basic literacy skills), and examine the positive effects music can have on developing them. The possibilities of incorporating various music activities into day-to-day teaching in first few years of elementary school and in pre-school education to help develop literacy skills will also be explored, and the issue of training teachers and educators for such activities will be addressed.

2.2. Music in school system

Music, as all other art subjects in schools, has always been included in school curricula. Unfortunately, it has been put aside for the last decade, in order to “make room” for “important” subjects. The school curricula that have been in use since 2006 have proscribed just 35 music lessons per year in each of 8 years in elementary school (Vican and Milanović Litre, 2006: 12). During this time, pupils are supposed to “learn the basic components of work of music, basic musical forms and genres, be acquainted to general chronology of music history, the distinction of music instruments (and what are their basic parts), the opuses of most important composers and the like” (Popović, 2017: 335-336). At the same time they are supposed to acquire basic music skills through active listening, singing, musical creativity activities, playing music instruments and learning the basics of music literacy. The time provided for music lessons is barely enough to cover all the teaching contents mentioned above; the teachers are forced to “run through” all the lessons just to cover the theoretical part, and then there is not enough time to practice the music activities. There are extracurricular activities in school (choir is the most common one, but there are also different kinds of orchestra and theatrical groups) but pupils are not particularly inclined to join in. The reason for that might be that music making of any kind has mistakenly been connected to special skills and talents one “has to” have in order to participate. There is a lot of interest in defining, detecting and harnessing musical giftedness in pupils (Brđanović, 2015, Šimunović, 2013, Svalina and Matijejić, 2011), but it is the authors strong opinion that every child should have music education, regardless the talent, because the non-music benefits of musicianship are too important to be omitted. On the other hand, subject of music, alongside arts, crafts and PE education, is considered to be a training, and not educational subject, and therefore pupils are not expected to spend a lot of time studying music, but should just practice it at school. It is a common practice among non-music teachers to consider music an irrelevant subject,

and, for example, insist on having extracurricular activities with some students during the obligatory music lessons. Also, music teachers often find themselves pressured into giving out good grades, both by parents and students, and their colleagues, which leads to further degradation of the subject. Treating music in schools as an embellishment has become a regular practice in Croatian schools, and the aim of this paper is to point out the reasons why music should be treated differently, by listing evidences of benefits music can have on early literacy development.

2.3. Basic literacy in school system

In Croatia, the development of reading, writing and oral skills is mostly addressed in the curricula of the Croatian language subject. This subject is most represented in curricula; for the first 6 years of elementary school, there are as much as 175 Croatian language lessons per year, which makes 5 lessons per week. In the 7th and 8th grade, the number of lessons is slightly reduced: they have 140 lessons per year, and that makes 4 lessons per week. The subject is divided into four components: Croatian language, literature, linguistic expression and media culture (Vican and Milanović Litre, 2006: 25). The process of acquiring reading, writing and oral skills is especially emphasized in the first grade of elementary school: initial reading and writing is a peculiarity of the first grade and is carried out throughout the school year (Vican and Milanović Litre, 2006: 25). It comprises of: preparation for initial reading and writing, mastering voices and letters, initial reading, initial writing of capital letters, initial writing of lowercase letters. The language component of the first grade comprises of these themes: 1. voice, letter, word, 2. pronunciation and writing voices, 3. sentence, 4. punctuation, 5. initial capital letters. The linguistic expression comprises of these themes: 1. listening and speaking, 2. asking questions and giving answers, 3. creating strings of words, 4. compiling a sentence from the default string of words, 5. supplementing the sentences, 6. narration, 7. reading, 8. writing, 9. writing in concordance with spelling norm.

Apart from curricula of the Croatian language, these skills are addressed in the goals of educational activities in the school library: “(the goals are) to develop reading and other students' abilities and skills (communication, information, research)” (Vican and Milanović Litre, 2006: 20).

One would think that after all these lessons, and hours of work on acquiring the reading, writing and oral skills, our students would be efficient in using them. Unfortunately, our educational system is constantly under attack from experts and the public: there are newspaper headlines that claim that students are becoming illiterate, that they can't handle more complex mathematical tasks and that their general culture is at a very low

level¹. The results of PISA testing are in concordance of this: they show a very low level of literacy skills of our students². The logical conclusion is that the number of lessons provided for acquiring the basic literacy skills is not the problem, but the approach. The discoveries of contemporary cognitive neurosciences offer us some light in finding solutions to this problem.

3. Neuroscience and neurodidactics

As Velički and Topolovčan pointed out: “In last thirty years or so, the findings in the field of (cognitive) neurosciences provide us with new optimal explanations of human development, behaviour, learning, health, and the like. Accordingly, the significance of the findings in neurosciences for education sciences has been recognized” (Velički and Topolovčan, 2017: 77-78). OECD also reacted by publishing two important monographs on the subject: *Understanding the Brain: Towards a New Learning Science* (OECD, 2002), and *Understanding the Brain: The Birth of a Learning Science* (OECD, 2007). This new learning science was named *brain-based learning*, *brain-compatible learning* or *Neurodidactics*. In his very useful manual *Teaching with the Brain in Mind* (Jensen, 2005), Jensen explains the main shift neurosciences have brought to education. He says that teachers that insist on unified approach and “correct” answers are ignoring the one thing that kept our species alive throughout the centuries, and argues that humanity has survived for thousands of years trying out something new, and not by choosing the one “correct” answer every time (Jensen, 2005: 21).

New diagnostic devices such as positron-emission tomography (PET) and magnetic resonance imaging (MRI) scanners have greatly aided the development of neurosciences. As Velički and Topolovčanin point out: “Until PET and MRI scanners were developed, the researches were conducted only on deceased humans and animals, which produced extorted data and incorrect and premature conclusions” (Velički and Topolovčan, 2017: 80). The new findings of the neurosciences led to breaking of so called “neuromyths”. Velički and Topolovčan name a few of them: the first three years of a child’s life are important but not irreplaceable, it is not true that a person uses only 10% of the brain, it

¹ There are many newspaper articles that can be cited, and some of them are: “Shameful answers of high school students of Split on questionnaire about general culture” (<http://www.slobodnadalmacija.hr/novosti/hrvatska/clanak/id/47135/sramotni-odgovori-splitskih-srednjoskolaca-na-pitanja-iz-opce-kulture-vladogotovac-je-simonin-djever>), “Our students mathematically and linguistically illiterate!” (<https://www.tportal.hr/vijesti/clanak/nasi-ucenici-matematicki-i-jezicno-nepismeni-20140408/print>), “Perhaps it sounds rough and embarrassing, but a third of our students are functional mathematical illiterates” (<https://www.vecernji.hr/auti/mozda-zvuci-grubo-i-neugodno-ali-trecina-nasih-ucenika-je-funkcionalno-matematicki-nepismena-1159817>), “Why are the fifteen-year-olds of Croatia so illiterate?” (<https://www.jutarnji.hr/vijesti/hrvatska/zasto-su-hrvatski-15-godisnjaci-toliko-nepismeni-ne-znaju-pronaci-ni-knjige-u-knjiznici/925943/>), “The world of seemingly literate” (<https://www.skolskiportal.hr/kolumne/kako-motivirati-ucenike/svijet-prividno-pismenih/>), “Croatian students below the average in all areas, every fourth 15-year-old illiterate in science” (http://www.novolist.hr/Vijesti/Hrvatska/Hrvatski-ucenici-ispod-prosjeka-u-svim-podrucjima-svaki-cetvrti-15-godisnjak-prirodoslovno-nepismeni?meta_refresh=true)

² Read more about PISA testing: <http://pisa.hr/>.

is incorrect that one hemisphere controls the behaviour of the individual. They claim that just the opposite has been proven: “the brain holistically, simultaneously and at multiple levels, processes and treats pieces of information” (Velički and Topolovčan, 2017: 84).

Velički and Topolovčan are surprised to find that neurosciences have actually confirmed Gardners multiple intelligences theory, and also some of the thesis of the great reform pedagogues of the last century, e. g. Dewey, Montessori, Steiner, Piaget, Vygotsky (Velički and Topolovčan, 2017: 78-79). Neuroscience confirms the active learning and enriched environment thesis of Maria Montessori, the importance of meaningful acts, bodily intelligence, body movements and eurythmic, handicrafts, drawing of forms, artistic education, epoch teaching, relaxed and friendly teaching, outdoor teaching and other ideas of Rudolf Steiner, and project and collaborative learning that was promoted by Rousseau, Pestalozzi, Dewey and Kilpatrick (Velički and Topolovčan, 2017: 85-88).

4. Basic literacy and language and music in neurosciences

4.1. Brain and basic literacy and language

Neuroscientists have frequently explored the brain activity during reading, writing and speaking. Those activities are considered to be one of the most complex skills that are, in both medical and psychological view, inherently exclusive to man (Velički and Topolovčan, 2017: 79). The link between literacy and language is particularly sensitive, as Miller and Tallal said:

Like other complex tasks, reading is not an innate skill that develops spontaneously. Rather, it must be taught, practiced and learned. But before children can learn to read proficiently, they must first be able to understand and produce spoken language in the same language they are learning to read. It's not that you can't learn to read if you are not sufficiently proficient in the language you are trying to learn to read, but it's very difficult. This language-to-literacy link compels us to explore the components of spoken language, the organization of these components in the brain and the links between them and reading so we can understand how the brain learns to read. Language is comprised of five basic components: phonology, morphology, semantics, syntax and pragmatics. The first four are essential components of the reading process as well. (Miller and Tallal, 2006)

Petersson, Ingvar and Reis explain how we use our brain while reading, writing and speaking, explaining just how complex this process is (Petersson, Ingvar and Reis, 2009: 160). Katzir and Pare-Blagojev propose a model for integrating research in the cognitive neurosciences with educational psychology. Their interest is mainly in providing data relevant to the field of dyslexia, and early diagnosis of it:

A review of converging lines of research on dyslexia supports cautious optimism regarding the bridge from neuroscience to education collaborations. Presuming a reciprocal research collaboration among the various fields of neuroscience, cognitive science, and education, at least, we anticipate that interdisciplinary, multilevel brain and

behavioural research will likely have first successes in the area of clinical and diagnostic improvements, and eventually for curriculum development and evaluation“ (Katzir and Pare-Blagoev, 2006: 72).

Jensen is majorly concerned with how reading and writing can help children’s learning skills, and also how it can help in learning foreign languages (Jensen, 2005: 42-43).

We can conclude that the whole brain is involved in complex process of reading, writing and speech, and that neuroscience can help in developing systems of education that consider brain activities in development of literacy.

4.2. Brain and music

The brain activity while performing musical activities has also been thoroughly examined. There are many studies that prove that music activates the entire brain: Jensen pointed out that music can be a useful means of education in three different ways: for excitation, as a word transducer, as a preparation method for the brain (Jensen, 2005: 46). Popović said that “there is evidence that indicates that even relatively short periods of music education lead to profound consequences on the anatomical and functional organization of the brain in children, adults, and even in animals” (Popović, 2015: 585). It has been proven that music enhances brain plasticity (Moreno et al., 2009). Musicologists and philosophers of the last centuries have been observing various influences music can have on humans, and many of them can be confirmed with neurosciences. Dobrota claimed that: “since the infant can detect changes in melodic contour, time structuring, pitch and colour in music of any culture, we may assume that the rudiments of music perception are a gift of nature, not a product of culture” (Dobrota, 2012: 163). White-Schwoch et al. claim that music training can prevent diseases like Alzheimers and Parkinsons, as it binds the motoric and cognitive functions of the brain (White-Schwoch et al., 2013). The most famous effect music can have on the brain is so-called *Mozart effect*. This phenomena can be described as instant improvement of brains functions after being exposed to classical music, mainly Mozarts (Demarin, 2006). There are many authors that deal with influence of music on the brain (Hallam, 2010). *This is Your Brain on Music* is a popular-scientific book that compiles all those findings and introduces the ways we can use the benefits of music on our brains (Levitin, 2006).

4.3. The benefits of early music education on basic literacy skills

During the last few centuries, a lot has been written on the topic of whether music can be considered a language, and the scholars have mostly agreed upon a conclusion that music is a language, but of a special kind (Jauk, 1995). With the development of cognitive neurosciences, this thesis is confirmed:

„Musicians had earlier and larger brainstem responses than nonmusician controls to both speech and music stimuli presented in auditory and audio visual conditions, evident

as early as 10 ms after acoustic onset. Phase-locking to stimulus periodicity, which likely underlies perception of pitch, was enhanced in musicians and strongly correlated with length of musical practice“(Musacchia et al., 2007).

The bi-directionality of brain activity between the domains of language and music has also been proven by Bidelman et al. (2013). Moreno et al. claim that “there are, nonetheless, a few studies that have strongly implicated the role of music training in the observed differences in the anatomo-functional organisation of the brain” (Moreno et al., 2011: 165) while examining effect of music training on promoting preliteracy skills. Cogo-Moreira et al. also conducted a study on effectiveness of music education for the improvement of reading skills (Cogo-Moreira et al., 2013). The positive effects of music training on children with dyslexia has also been thoroughly addressed: either as a learning aid (e.g. Overy, 2000, Bilhartz et al., 1999), or as a diagnostics tool (e.g. Rauschenberger et al., 2017, Huss et al., 2011). Moreno addresses few more studies on the subject in his review paper *Can music Influence Language and Cognition?* (Moreno, 2009). In this paper he underlines the special bond of music and language on neural level.

5. Basic literacy and language and music in school curricula

Afore mentioned studies on music as a learning aid are mostly concerned with special programs for children within the music therapy domain, and not in everyday teaching. Much like in the case of general pedagogy, revisiting some of the progressive music pedagogy schools from the past century from the neurodidactics point of view has been fruitful: e.g. Dalcroze Eurhythmics (Kivijärvi et al. 2017) or Willems method (Cozzutti et al., 2014). Body percussion has also been proven to have positive effects on cognitive functions and also on reading skills. This activity has also emerged from traditional percussion games, and now it is proven to have various positive effects (Ahokas, 2015, Romero-Naranjo et al., 2014, Romero-Naranjo, 2013). There are also some manuals that suggest the course of the activity, e.g. Dahmen (1997).

However, as Collins said: “While these models shed light on how the brain functions, they have yet to make an impact on the field of music education where skills in music processing are a central concern” (Collins, 2013: 217). But, there is enough evidence so far that stress out the importance of music education for nonmusicians, and some aspects of incorporating music education in everyday teaching practice should be addressed, especially for promoting basic literacy skills. As we have previously mentioned, there is a very limited number of music lessons in elementary school, but we strongly believe that various music activities can and should be conducted by class teachers and subject teachers during nonmusic lessons as well. Teaching music in elementary school is trusted to the class teachers for the first three (and sometimes four) years. Therefore we could conclude that their training curricula would prepare them for teaching music. But there are studies that show that the students’ preparedness for this activity is somewhat insufficient (Šulentić Begić and Begić, 2017, Šulentić Begić et al., 2016a). This is also

confirmed by university music teachers: they find the competencies of the students quite low, and suggest more music training courses (Šulentić Begić et al., 2016b). This matter should be seriously addressed, especially in the light of benefits music is now proven to have on cognitive development. Because of the insecurities class teachers have in their competencies, teaching music is often taught at a minimal level, and not included in other lessons.

However, there are some tendencies to include music activities in other school subjects, e. g. in religious education lessons (Horvat, 2010) or even nature science courses (Popović et al., 2017). Musical activities are also argued to have positive effects socialization and self-awareness of students (Šulentić Begić et al., 2016), but the national curriculum doesn't proscribe such activities – except in music curricula, musical activities are mentioned only on one place, in general description of foreign languages curricula, and they specified the use of songs in foreign languages as a method of learning, and there are evidences that this kind of activities are being conducted (Šulentić Begić and Dudjak, 2015), but foreign language lessons are taught by subject, and not by class teachers. This strict division of subjects and lessons is not in concordance with modern teaching tendencies, where integration and correlation of contents is recommended (Letina, 2015, Posavec, 2010, Jensen, 2005). The possibilities of integration and correlation of subject of music with other subjects has been investigated by Šulentić Begić and Begić (2013), but they considered music as a school subject and therefore addressed the possibilities of integrating the content, and not the methods of music teaching. It is our strong belief that music can be used as a teaching tool in non-musical subjects. As Brđanović said: “Music is close to young people and attracts their attention so it shows that with the help of music - developing music competencies, integrating music into non-music lessons or using music as auxiliary in teaching - it is possible to reach a large number of students, stimulate their interest in school and back up learning and development of a number of other, non-musical competencies” (Brđanović, 2017: 443).

We expect that these matters will be explored further in the near future, but for now, we would like to mention few music activities that can be used daily, don't require a lot of foreknowledge, and can specifically be used in classes to improve basic literacy skills.

5.1. Rhymes, Theme songs, Body percussion and cooperation among subject teachers

Rhymes are often mentioned as a useful tool in helping children acquire basic language and preliteracy skills (Bryant et al., 2009, Maclean et al., 1987). Rhymes themselves can be spoken or sung; when added this extra music component they become more interesting, and more complex to reproduce. Sung rhymes are not very difficult to learn, as they comprise of just few tones, and are usually rhythmically very simple, but they stimulate auditory cortex of the brain. When added clapping or snapping fingers, they also become a motor skills exercise. Learning traditional rhymes also helps in preserving our national legacy (Bačlija Sušić and Fišer, 2016). Rhymes are also helpful in rehabilitation of speech,

listening and language skills, not just with children, but also with adult patients (Klarić Bonacci and Tomić, 2013). Some experts consider rhymes to have a powerful impact on acquiring musical competencies, thus making them a tool for music education (Juričić and Sam Palmić, 2002).

As rhymes, theme songs can help in memorising the content of language classes, making learning a game, consequently improving its results. A lot has been written on the importance of games and play in learning process, e.g. Velički and Topolovčan, 2017, Petrović – Sočo and Višnjić Jevtić, 2013, Pejić Papak, 2008, Matijević, 1993. Theme songs for learning specific contents have a very long tradition, and they are not something new, but their worth should be emphasized. There are generations of children that learned their ABC's with the help of The ABC Song. Today, one can find theme songs about various topics, and there are specialized web sites and YouTube channels that offer an array of choice. The most famous in English speaking area is A.J. Jenkins (<http://kidstv123.com/>). His website offers theme songs on letters, words, animals, plants and even planets. These theme songs can be used in everyday teaching, and since they are available online, with added tutorials, teachers won't have technical issues in performing them in everyday practice.

Body percussion is somewhat more complex than theme songs or rhymes, but the result is worth the trouble. Body percussion has been used for therapy purposes for some time now, as there are evidences that it can help with a lot of acute and chronicle conditions (Ahokas, 2015). It entails physical, cognitive and mental concentration, and therefore is a perfect activity for everyday teaching. The rhythmical patterns that are being used, help in forming complex sentence structures (Crespo Colomino and Romero-Naranjo, 2014), and the motor skills and audio-visual communication that are developed, help with acquiring reading and writing skills (Romero Naranjo et al., 2014, Romero Naranjo, 2013). Body percussion activities can be used as concentration exercise at the beginning of the class, for relaxing at the end of the class, in various forms of integrated teaching or specifically for some lessons. As with theme songs, various tutorials are widely accessible (<https://www.bodypercussionclassroom.com>), and teachers shouldn't have problems with acquiring skills necessary for performing these activities in classroom.

When discussing teaching, we often forget that class teachers are usually not alone in school, but have colleagues, with music teachers among them. The cooperation of the teachers is expected, but mostly it is conducted just in special one-time integrated school day projects (Šlentić Begić and Begić, 2013). Constant cooperation with music teacher would be of great help, both to class teacher, who would have an expert helping him with playing music or singing, and the music teacher, who would have the access to children from an earlier age, and would be able to detect the gifted ones, and to stir up love for music in children's formative years. Children would also benefit from this because, unlike class teachers who have questionable skills in music, music teachers are well equipped with them, and would be able to teach children at an appropriate level.

6. Conclusions

Literacy is a basic requirement of modern society. While there are many definitions of literacy, we have been discussing it as an autonomous set of skills, defining basic literacy as reading, writing and oral skills. In the first few years of elementary school a lot of time is devoted to acquiring these skills with mixed results. Music is somewhat neglected in elementary school curricula, although it has proven to have positive effects on all aspects of learning and development as a whole. Neuroscience and neurodidactics have proven the bi-directionality of brain activity between the domains of language and music. Therefore, music should be included in everyday school curricula in order to help with acquiring basic literacy skills. There are few music activities that can easily be incorporated into everyday classes by class teachers, e.g. sung rhymes, theme songs or body percussion.

7. References

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