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Ars inter Culturas nr 3, 117-135

2014

Artykuł został opracowany do udostępnienia w internecie przez Muzeum Historii Polski w ramach prac podejmowanych na rzecz zapewnienia otwartego, powszechnego i trwałego dostępu do polskiego dorobku naukowego i kulturalnego. Artykuł jest umieszczony w kolekcji cyfrowej bazhum.muzhp.pl, gromadzącej zawartość polskich czasopism humanistycznych i społecznych.

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MUSIC AS MEANS TO SUPPORT ACADEMIC PERFORMANCE AND BEHAVIOUR OF PREADOLESCENTS

Słowa kluczowe: *academic performance, behaviour, background music, music activities, music intervention, quasi-experimental research*

Introduction

Purpose of the Research

The primary concern of this research is to examine whether music activities integrated in English Language Lessons and background music utilized in Arts and Crafts Lessons, can improve academic performance and behaviour of 10-11 year old middle school pupils. The secondary concern of the study is to review the scholarly literature on the potency of music activities and background music to improve academic performance and behaviour.

The research results provide probabilistic assessment of the impact of half-year music intervention on improvement of academic results and behaviour of pupils from experimental group. The paper summarises the results of rating scale which measures teacher's professional judgment of pupils' academic performance and behaviour.

Design and Organisation of the Research

I use quasi-experimental design with the experimental and control group and pre-measures to compensate because in education true experiments cannot be conducted with random selection and assignment. The experimental study addresses the effectiveness of music intervention programme compared to a more traditional approach by using a control group. **The main research question** was: “**Can music intervention improve academic achievement and behaviour of prepubescent middle school pupils?**” Pretest-posttest design of a quasi-experiment was used. I measured two groups of participants, control and experimental, on the dependent variable both before and after the manipulation of the independent variable.

In the beginning of the research I planned to use background music during Physical Education (PE) Lessons, as I consider this subject the most popular with children. However, I was not allowed to do so, because the class was divided in two groups during the PE lessons. The headmaster allowed me to integrate music activities in English Language Lessons and background music in Arts and Crafts Lessons of an experimental class. I did not intervene in the education process of a control class. However, the teachers of both groups (control and experimental) used modern techniques and methods during classes.

I consider poor academic performance and problematic behaviour which accompany preadolescent middle school pupils to be a dependent variable which I aimed to stimulate. Thus I examine the relationship between independent variable (the integration of music activities and background music in educational process in the 5th class) and dependent variable (to support in a positive way academic performance and behaviour of pupils).

The research was carried out in the school year 2009/2010 at a big urban elementary school in Central Slovakia. Music activities: vocal, music and movement, theatrical, perception of music, and performance of instrumental activities were integrated in English Language Lessons thrice a week, and background music was used in Arts and Crafts Lessons twice a week. I started the action research in September 2009 as an English Language and Music Education Teacher. Simultaneously I informed the headmaster about the aim and brief layout of the research. After she approved it, she obtained the permission from parents of control and experimental class pupils to carry out the research. I was allowed to use specific methods during lessons with the goal to decrease negative emotions of pupils during the period of preadolescence and to evaluate the potency of music to support their academic performance and improve behaviour. I could play and utilise the piano during English Lessons in experimental class. Pupils learned by heart twenty-one English songs, out of which nine were created by the author of the paper and the rest were popular English and American songs. In the lessons there were also utilised sayings and proverbs, dance, rhythmic exercises during text works, music and movement learning activities, film music aimed at listening comprehension, creative sentence writing and vocabulary. In the beginning of each lesson its aim and content were introduced to the pupils.

The sound recordings library which I selected and used during Arts and Crafts Lessons consisted of widely stratified range of so called classical music and pop classic, instrumental and vocal-instrumental compositions and their arrangements (pop, rock, folk, folklore, Celtic music, country), and finally of movie soundtracks (from animated cartoons and fairy tales, musicals for children). I did not utilise exclusively vocal music and esoteric music. Excitant music was used only during two themes (4 school-classes). Emphasis was put on the aesthetic and artistic quality of music selection. We did not observe any difficulties or inconveniences within educational process concerning background music.

During playback reproduction the decibel level (sound pressure level, DB SPL) was set of maximum 50 DB SPL which did not disturb mutual communication between pupils and pupils with teacher and was suitable for conversation. From compositional and music-theoretical aspect I chose the compositions with easier structural form, and based on the research of Strenáčiková, the dynamic level was without sudden and rapid

changes¹. The intervention was not a pure music therapy, because there was not present a music therapist and background music was used only as an acoustic stimulation, *coulisse*.

The input data was obtained before the realisation of quasi-experiment. After it was finished, the referees (teachers) made their professional judgement about pupils which they filled in the critical rating scale sheets. The rating scale sheets were constructed and submitted to the teachers by the author of the paper, who was also a teacher of English Language and Music Education.

Prepubescence and Period of Changes – Recent Developmental Research

Despite the development of cognitive competence, the prepubescence is the period of changes in the content, progress, duration and way of experiencing and outward exhibition of emotions. With no formal rite of passage into adulthood, the stages of prepubescence and puberty can be seen as the formative struggle from childhood to adulthood. Cromwell² believes that with the exception of the first 18 months of their life, pupils experience more changes between the ages of 10 and 14 than at any other time in their lives. The preadolescent is often portrayed as impulsive, out of control, confused, self-centred, rebellious, or reserved³. This quite a negative portrayal of the early preadolescent causes that school teachers and educators might have lower expectations of pupils or they magnify the negative aspect of them and thus behave in a particular negative way toward them.

In spite of the fact that the period of preadolescence doesn't belong to the most rapid and stormy, preadolescents can also confront serious problems, especially when the other people around them (especially adults) underestimate them. The onset of puberty with its new biological, social changes and stress can induce various neurotic symptoms to children. Therapy lies in reduction of negative potency of environment and also in strengthening children's inner resistance. Excessive workload can be demonstrated by functional problems such as disorders of concentration, sleep disorders, vigilance (the ability to maintain attention and alertness over prolonged periods of time), fatigue and also psychosomatic problems such as gastric problems⁴.

The onset of puberty in the context of education is not only "transfer", even if it includes both. It is a change and shift in the identity and competences how the individual advances in educational process and reaches educational goals. The changes involve relationships in the classroom, teacher alternation and exchange, and their teaching style,

¹ M. Strenáčiková, *Vplyv reprodukovanej hudby na vnímanie sociálnej klímy triedy v 3. ročníku základnej školy (Impact of background music on perception of class social climate in 3rd grade of elementary school)*, [in:] *Zborník Hudba Integrácie Interpretácie II. Mediálne a komunikačné aspekty hudby*, ed. J. Vereš, Nitra 2008, p. 287-301.

² In P. Akos, J.A. Queen, C. Lineberry, *Promoting a Successful Transition to Middle School*, New York 2005.

³ Z. Stránska, I. Poledňová, *Problémy sociální adaptace žáků základních škol (Problems of social adaptation of elementary school pupils)*, [in:] *Současné metodologické přístupy a strategie pedagogického výzkumu*, Plzeň 2006, p. 23-30.

⁴ *Ibidem*.

expansion of the space, decreasing time for movement in specialised classrooms, new sounds, new subjects, meeting new pupils. All these can create the potential for emergence of fear, disorder and discomfort of pupils and these specific problems relate to transitions. Change is also situational: new place, new authorities, new environment, in our case also new school politics.

Physical Development

This period has little pattern or structure, because it does not follow a constant schedule, or plan. As the rate of physical maturity varies, it can be quite a difficult period of development from this point of view. No two students will experience the same degree of growth or development. Pupils, especially girls, are often in the middle of physical and hormonal change and this fact makes an interesting challenge for school staff. From this point of view prepubescence can be advantageous for boys as they often participate in sports and seek social recognition. On the other hand, it can be problematic especially for the girls as they experience menstruation, some of them gain body fat and confront heightened careful observation from their schoolmates. They might also experience depressive symptoms and lower evaluating of body mental image which might bring them specific behavioural and educational problems. Some pupils feel pressure to gain acceptance through their appearance, which can sometimes result in mood swings, bullying and frequent changes in opinions.

These opinions have demonstrated that the timing of prepubescence rather than its status is associated with depression for early-maturing girls. Thus school staff needs to be sensitive to physical development and its potential implications during the transition to middle school.

Identity Development

Prepubescent pupils may begin the process of self-awareness, and they use the knowledge to establish a sense of identity. Parents and educators can sometimes witness fast changes in appearance, opinions and moods in preadolescents as they try to form their identities.

A German-born American psychoanalyst Erik Erikson (1902-1994) emphasised these turbulent years, where struggles concentrate on the psychological aspects of the child's life and especially the examination of independence and the concept of self. He saw early adolescence (ages 7-11) as a time of exploration and identification of talents and capabilities. Struggling with increased peer competition, youth fear being left behind or judged as substandard. Pupils who lack success at this developmental stage can activate negative feelings toward school, teachers, and friends, as well as low self-esteem.

According to Erikson the social environment is a prime determinant of overall well-being. Relative to move into adolescence, Erikson explained the "identity vs. role confusion" psychosocial stage as a powerful and influential period of human development in the terms of self-discovery. As pupils try to answer the question "Who am I?" the

new environment around them provides an endless flow of experiences, influences and motives. This can lead to great deal of confusion and anxiety for preadolescents.

The process of discovering “who I am” may be quite disorganised by the transition to middle school. A pupil might find it quite difficult to examine or feel good about his or her competences when negotiating a new environment. Similarly, peer comparisons enlarge exponentially, and inferiority and failure might be an unavoidable aspect of growth.

The Growth of Abstract Thought

Swiss developmental psychologist and philosopher Jean Piaget (1896-1980) characterised preadolescence by a shift from concrete to formal operational thought. Concrete thinkers (ages 7-11) begin by applying logical operations and principles to explain their experiences and use objective and rational thought more than intuition.

Within the social environment (a school class) it is easy to see the differences that exist between early adolescent pupils in relation to relationships. Concrete thinkers tend to group their peers as friends or enemies. Many middle school pupils shift these groupings hourly, daily, or weekly as to whether they consider someone a best friend or an enemy. Gradually, after they develop more formal thought, they tend to view their classmates on a continuum coexisting with varying levels of relationships. It means variation exists in when and how consistently preadolescents use formal operational thought.

At the same time, middle school pupils tend to question and look for alternatives to new main concepts introduced through school, society and family, and with formal thought they tend to consider risk taking activities. According to Piaget, early adolescents also think about future possibilities, exploring alternatives and choices more thoroughly than those which deal only with “here and now” perspective. It may be useful for schools to engage students in more formal operational thought by including participatory activities in orientation programming or team building.

Self-Esteem and Emotional Well-being

Learning is dependent on the child’s emotional state. Children need to feel secure and happy in order to deploy all their faculties fully to meet the challenges presented to them through the school curriculum. They also “need to feel emotionally ready for middle school in order to meet new challenges with confidence”⁵.

Self-esteem is a significant factor in becoming a successful learner and will affect the way in which children perceive their level of success. Gajdošíková-Zeleiová⁶ believes that if there is a lack of well-being, the child’s development is likely to be threatened. Some children are “at risk” of not coping well with changes and as a result

⁵ D. Goleman, *Emotional Intelligence: Why it Can Matter More Than IQ*, Bloomsbury 1996.

⁶ J. Gajdošíková Zeleiová, *Psychodynamické aspekty muzikoterapie. Hudobnopedagogické a hudobno-terapeutické súvislosti (Psychodynamic Aspects of Music Therapy. Connections of Music Pedagogy and Music Therapy)*, Trnava 2012.

problems caused by the stress of not settling into school develop. If they cannot cope with the change of circumstances then they are unlikely to engage fully in the life of the class, might under-perform academically and perhaps express frustration by demonstrating poor behaviour. Children should be supported from the very beginning to overcome these anxieties and develop resilience.

Acquiring skills such as being able to anticipate changes, adapt their own learning styles, and develop conceptions of them as learners in the school setting, these all represent the expression of getting accustomed to school. The children who are successful have developed social competence, resiliency and agency that will enable them to “read” the teacher, make meaning of the nature of school and to deal with new situations. In another words, they are able to function at school and have expectations of learning.

Academic Performance and Behaviour during Preadolescence

Slovak preadolescent pupils experience the transition to puberty concurrently with the changes connected with the transition from elementary to middle school. Bridges⁷ claims, that transition to something new is the psychological process of how the individual adapts to it. Change is outward and transition is inward psychological redirection of an individual to a new situation. Even if the change itself is considered a problem, it is important to realize that the transition lasts for a longer period of time during which individuals go through three difficult phases.

In the first phase ‘Ending and Losses’, it is important for the individuals not to continue in the activities they were successful in the past. New school situation demands of pupils to give up their previous experience with the sense of identity, or reality. The second phase ‘Neutral Zone’ (terrain exploration) is full of confusion and insecurity. Thus many pupils try to escape to the past, or they run fast onward through this phase. However, successful transition requires presistence of school staff, parents and pupils in this phase, because there, in the situation where the change happens, the energy of transition is hidden. Finally, the third phase ‘New Beginning’ is also difficult for children, because they start to behave, think and do in a new way. This may cause them inner imbalance during which the most uncomfortable ones are followed with punishments, or low academic performance, which can cause that some individuals observe how the others “go through” this phase, however, at the same time they consider the phase too risky to cope with it.

On the other hand certain styles of teacher behaviour have been found to be related to increased pupil learning. Therefore the teacher’s attitude toward pupils plays an important part to a new classroom setting and in establishing routines and classroom ethos. “The schools that ‘really trust’ their students, that value, respect, and know them, are the schools that foster the resiliency of students”⁸.

How can children be helped to make a successful transition? Let’s start with the

⁷ W. Bridges, *Managing Transitions: Making the Most of Change*, 2nd ed., Cambridge 2003.

⁸ M.L. Krovetz, *Fostering Resiliency. Expecting All Students to Use Their Minds Well*, Thousand Oaks 1999, p. 144.

conception of a school success. According to Ladd⁹ a child can be seen as successful in school when she or he develops positive attitudes and feelings to school and learning; establishes supportive social ties with teachers and classmates, feels comfortable and relatively happy in classroom rather than anxious, lonely or upset, is interested and motivated to learn and is engaged in classroom activities, and finally improves his or her academic performance, has better marks.

Music and its potency to promote academic achievement and behaviour

There is a correlation in the research which explores the relationship between general achievement and engagement with music. Research of Morrison¹⁰ informs on better general achievement of students who participate in music education. The data refers to students from the National Centre for Educational Statistic who participated in music and achieved better grades in English, Math, History and Science than the control group who did not participate. The newer research revealed a relationship between elementary school pupils' academic performance and the participation in music programmes¹¹.

However, there also exists the research which says that attending musical lessons does not affect academic performance of pupils¹². These researchers believe that participating in music activities is related to other factors which have also a strong impact on academic achievement, such as parents and home environment. Among other factors which have impact on academic achievement there is regular music activity of pupils which might contribute to enhanced self-esteem and increased motivation of pupils. The positive effect of participation in music on general achievement was proved in the experimental study of Barr et al.¹³. Another important factor is motivation which is crucial in how well pupils perform at school. According to Hallam¹⁴, frequent music activity is linked to self-perceptions of ability, self-efficacy, and aspirations. If engagement with music enhances positive self-perception, this can increase motivation to persist.

The research of Broh¹⁵ indicates that music can have positive effects on personal and social development of children, which is reflected in their behaviour. She says that pupils who are engaged in music activities talked and co-operated more with their par-

⁹ G.W. Ladd, *School transitions/school readiness: An outcome of early childhood Development*, [in:] *Encyclopedia on Early Childhood Development*, eds. R.E. Tremblay, R.G. Barr, R. DeV. Peters, Montreal, Quebec 2003, p. 1-9, www.child-encyclopedia.com/documents/LaddANGxp-Original.pdf (5.10.2008).

¹⁰ S.J. Morrison, *Music students and academic growth*, "Music Educators Journal" 1994, vol. 81(2), p. 33-36.

¹¹ C.M. Johnson, J.E. Memmott, *Examination of relationships between music programmes of differing quality and standardised test results*, "Journal of Research in Music Education" 2006, vol. 54(4), p. 293-307.

¹² D.A. Hodges, D.S. O'Connell, *The impact of music education on academic achievement*, [in:] *Sounds of Learning Report: NAMM Foundation Sounds of Learning*, 2007.

¹³ L. Barr et al., *Enhancing student achievement through the improvement of listening skills*, [in:] *ERIC document Reproduction Service No ED465999*, 2002.

¹⁴ S. Hallam, *Enhancing learning and motivation through the life span*, London 2005.

¹⁵ B.A. Broh, *Linking extracurricular programming to academic achievement: who benefits and why?*, "Sociology of Education" 2002, vol. 75, p. 69-95.

ents and teachers. She deduced that their social benefits probably led to higher self-esteem in the pupils which in turn led to increase in motivation and self-efficacy. There is a high correlation between positive self-perception, self-esteem, good relationships and active music performance. Success in music seems to enhance general feelings of confidence and self-esteem which increases motivation for study. Similarly Pitts¹⁶ found out that being involved in music activities can facilitate the development of friendships, contributes to a better social climate in classroom, pupils' confidence and sense of belonging which has impact on other activities.

Integration of music activities to English lessons

Music activities adequately integrated in educational process of English Language Lessons can support mental processes of a child within the system of creative-humanistic education. In this sense music activities have the potency to develop and cultivate individuality of a child within the scope of non-cognitive and cognitive functions and processes of his or her personality¹⁷. But then, it is important to choose particular music activities which have the potency to affect the development of certain target functions and processes of a child's personality. Music is the resource that enables people to express feelings, communicate and react. For example songs can help an individual to get deep inside him or her and to communicate with his or her emotions directly. If someone feels depressed, music has the potency to encourage him emotionally and make him feel a little better. If the music has positive lyrics, it can make the individual feel good and encourage his or her personal growth. Some examples are Joe Cocker's *You Are So Beautiful*, Bob Marley's *Three Little Birds*, Carole King's *You've Got a Friend*, *We are the Champions* by Queen, Sheryl Crow's *Strong Enough* or Bobby McFerrin's *Don't Worry, Be Happy*.

One of the main goals in education is to provide an easier approach and flexible learning opportunities and skills development. Thus it is important to use music activities which provide students with a resemblance of the real world, give them immediate feedback and sense of reality. Integration can be defined as "incorporating the curriculum of single subjects or cognitively related educational fields in one entity with the emphasis on comprehensiveness, where cross-curricular approach to teaching and learning is used"¹⁸. Our intention was to use both music and English to enhance, and be enhanced mutually, by making effective cross-curricular links, so as a child could acquire and master enough stimulation for self-realization with the help of teacher who facilitates the whole process.

The existing methodology of foreign language learning inclines to the acceptance of the ways of subconscious language acquisition which are similar to mother tongue acquisition. Music, rhythm and movement form the connection between processing of music in

¹⁶ S.E. Pitts, *Anything goes: A case study of extra-curricular musical participation in an English secondary school*, "Music Education Research" 2007, vol. 9(1), p. 145-165.

¹⁷ J. Gajdošíková Zeleiová, *Psychodynamické aspekty muzikoterapie...*

¹⁸ L. Podroužek, *Integrovaná výuka na základní škole (Integrated education at elementary school)*, Plzeň 2002, p. 11.

the right hemisphere and between processing of verbal information in the left hemisphere. During the processing of music inputs, both hemispheres work simultaneously¹⁹. Beats of majority of songs correspond with the alternation of accented and unstressed speech syllables and that helps individuals to remember not only vocabulary, but also phrases²⁰. Through music activities pupils can be actively involved in reproduction, production and perception of music. This way they can also cognize and experience music, and it may affect cognitive and also emotional aspect of pupil's personality. Due to this fact pupils can expand their intellectual, emotional and creative potency which stimulates them to their own initiative, change and leads them to their self-presentation.

Example of Music Activities Integrated in English Language Lessons

Music activities which were utilised in our English Language Lessons can be characterised as integrated learning, because the pupils solved particular tasks which were aimed at the development of language competences by means of music.

In foreign language education songs are the most often used activities. That is why in this subchapter I start up with the example from this field. Vocal and intonational lessons belong to the key activities in Music Education, but they are not the key activities during language acquisition. In our English Language Lessons the main objectives were to practise songs with simulatative method, to acquaint pupils with a song from practical point of view, and to introduce elementary components of of a song (rhythm, melody, beat, tempo, dynamics and form) to them. The pupils were allowed to accompany songs and texts with elementary music instruments. We paid attention to the natural expression of pupils' outputs, pupils were asked not to shout.

During English Language Lessons we used simple English and American songs such as *Good morning to you*, *The Alphabet Song*, *My Bonnie*, *Head, Shoulders, Knees and Toes* (Ex. 1), *Old Mac Donald had a farm*, *If you're happy and you know it*. These songs were the pleasant shift from prevailing sedentary activities. Internet was also the source of challenging materials such as: "We are Busy Beavers"²¹, or "DJC Kids Media"²², and it offers songs as for example *Seven Continents Song* based on the melody of the old song *Frère Jacques*, or *I like Baby Animals* based on the melody of old English song from 1744, *London Bridge*, Brahms' *s Lullaby* with the text by Fritz Simrock from 1868²³. The other sources which we used in the lessons were Slovak folk

¹⁹ J.W. Stansell, *The Use Of Music For Learning Languages: A Review Of Literature*, 2005, mste.illinois.edu/courses/ci407su02/students/stansell/Jon_Stansell_The_Use_of_Music_in_Learning_Languages.pdf (4.03.2008).

²⁰ Ibidem.

²¹ www.wearebusybeavers.com – English songs and videos for children and English language users. Web site includes working sheets for children and games. It is great tool for English language teachers. The songs are catchy and are accompanied with interesting videos.

²² DJCKidsMedia.com – "English Songs" DVD Videos on the "English Songs" DVD – short videos with simple songs aimed at vocabulary acquisition (the alphabet, numbers, prepositions, animals, shapes, pronouns, countries and so on.).

²³ *Old Favorites for All Ages. Songs for Learners of American English*, ed. A.M. Malkoc, Washington 1992.

Example 1: Traditional Song for Children *Head, shoulders, knees and toes*
 Source: Kiboomu Music 2010

songs translated in English language, songs created by pupils on popular melodies (with the teacher’s help). The other possibility was to bring to the classroom popular songs from fairy tales, for example *Hallelujah* from Shrek with the melody by Leonard Cohen, or *Prayer* by David Foster and Carole Bayer Sager. We practiced them in the computer room and sometimes we used You Tube. The lyrical text of *Hallelujah* offered us many possibilities to vary the interpretation in different moods: melancholic, fragile, elevating, or joyful. Finally, a few creations of some pupils’ were in the rhythm of valse and in a rock temper.

Background Music in Art Education

By the term background music (BM) we mean music which is heard, not intentionally listened to²⁴. It does not intend to be organised, analytical listening. Thus it is not appropriate to label it with the term BM which is organised listening with successive

²⁴ A. Bendall, *Music Function and Change*, “Innerface International. Psychology, Mind, Consciousness” 1994, vol. 1, no. 6.

analysis. Listening activities at Music Education lessons are defined as an *organised listening* in State educational programme of Slovak Republic²⁵.

Even if there is a little evidence of employing BM as means to improve behaviour or/and academic performance of pupils, the existing research from other scientific disciplines offers sufficient information of its utilisation during preadolescence. For example S. Hallam and J. Price²⁶ examined what impact has BM on elementary school pupils, especially on their behaviour and academic performance. The authors suggest that BM can be utilised to increase or maintain student arousal levels for study purposes. The greater the cognitive challenge and the lesser stimuli are required whereas tasks which need endurance and patience will benefit from higher levels of arousal to increase pupils' motivation.

BM in the hands of erudite teachers can create the atmosphere of contentment and enjoyment, support pupils in fondness of a subject, support memorisation of facts and increase abstract thinking. However, the teachers should follow criterions of variety, adequacy, comprehensibility and aesthetic value of utilised BM. They should also consider pupils' personality, so as they properly used the components of music to reduce stress and to contribute to pupils' well-being. By stress reduction and improving the well-being of pupils, we understand the ability of pupils to manage educational demands, to react adequately to sudden tasks, to have good attitude to "I" (to the self), and to have good relationships with the other people.

Example of Background Music on Arts and Crafts Lessons

a) The lesson's theme "Fantastic portrait of a country" was the part of thematic unit *Paper transformations*. Within the scope of educational output pupils were asked to create the country in which they would like to live. They were asked to examine the possibilities that paper offers and to make combinations with another kinds of paper. Their music education teacher used the songs from DVD *Proměny (Transformations)* by Czech traditional music band Čechomor which plays songs in rock arrangements. She introduced pupils to the atmosphere of lesson's theme by way of songs from the DVD.

b) The teachers of music and arts and crafts checked whether there is adequate lighting and temperature in the classroom. Decibel level of the recordings was set to the level which did not disturb mutual communication between the teachers and pupils. The further attention of the teachers was devoted to the quality of recordings and to the atmosphere during lesson. The teacher selected melodious and positive music which created hospitable atmosphere for pupils to create the paper objects they would like to have in their "dream country".

²⁵ ŠVP 2, State Educational Programme for Middle School (Štátny vzdelávací program pre 2. stupeň základných škôl, ISCED 2), 2008, www.statpedu.sk/files/documents/svp/2stzs/isced2/isced2_spu_uprava.pdf (5.10.2008).

²⁶ S. Hallam, J. Price et al., *The Effects of Background Music on Primary School Pupils' Task Performance*, "Educational Studies" 2002, vol. 28, no. 2, p. 111-122; S. Hallam, J. Price, *Can the use of background music improve the behavior and academic performance of children with emotional and behavioural difficulties?*, "British Journal of Special Education" 25, no. 2, p. 88-91, 1998, www.freewebs.com/laset/documents/Background%20music%20and%20behaviour.pdf (1.10.2009).

c) The arts and crafts teacher familiarised pupils with the goal of the lesson and the music they listened.

d) Before the first music sample was heard, the music teacher asked pupils the following question: “**Do you think that today it is important to preserve folk music? Why?**” I sum up their answers in the following perspectives. The astounding perspective: “Listen to folk music [...] nowadays? I think it’s the music of my grandma!”; the rigorous perspective: “Folk songs [...] No way! I would go mad from so much hooting and whooping”; the optimistic perspective: “I dance in a folk ensemble [...] and [...] it is a great relax for me. I have also several good friends there... we never quarrel. I think folk music is cool”; the expert perspective: “Celtic music is also a kind of folk music. That is what my dad says. And I know the band Čechomor. It is quite a good music. Also the men who play it seem pleasant. I watched a movie with them and Nohavica. Cool one”; the intimate perspective: “My mum likes folk songs and country songs as well. She is quite satisfied when listening to them. She allows them to get under her skin. I don’t mind them too”. The class discussion was closed by a music teacher. She answered her own question by using the words of Karel Holas (the violinist in Čechomor): “Folk music is the part of our history, which is deep inside us. Maybe we know nothing about it, but when we listen to it, it is woken up inside us. Folk culture is our culture, our identity. And the mission of Čechomor is to build the bridge between the tradition and the present world”.

e) Music teacher told pupils interesting things about Čechomor and their CD *Proměny*. She intended them to get acquainted with the band and to tune up to the music performers. The DVD was recorded with chamber orchestra *Collegium of Czech Philharmonic Members*, under the stage management of world-famous composer and singer, Jaz Coleman from English band Killing Joke²⁷.

f) In the end of the lesson pupils created a beautiful country with colourful, aesthetic and witty inventiveness. Arts and crafts teacher was satisfied not only with the final result, she liked also the whole process and the way of how pupils created their “dream country”.

Method

Research Problem

The main research question is: does music intervention have a significant effect on the behaviour and academic achievement of preadolescent pupils?

Two hypotheses were tested:

- (1) Preadolescent pupils will demonstrate significantly better scores in relation to academic performance and behaviour in the school subjects where music was utilised, compared to the control group.

²⁷ CD *Proměny* was released by the corporation Venkow Records in 2001. Jaz is a singer-songwriter, musician, composer, and record producer. CD *Proměny* was also awarded Anděl by the Academy of Pop Music. In 2002 Jaz Coleman featured in Czech movie by Petr Zelenka *Rok Dábla (Year of the Devil)*, which was awarded Czech Lion and Crystal Globe in international film festival, Karlove Vary.

- (2) Preadolescent pupils will demonstrate significantly better scores in relation to academic performance and behaviour in the main school subjects where music was not utilised, compared to the control group.

Participants

Music intervention was utilised in a big urban municipal elementary school in a city of Central Slovakia with the target research group which consisted of forty-four Slovak fifth graders. The school has been designated for the children from the centre of the city, its suburbs and surrounding villages, because it is situated near railway station and bus station. It is important to notice, that in this elementary school there is inclusive system for pupils from socially disadvantaged surroundings and for pupils with learning disabilities, such as dysgraphia, dyslexia, dysphasia, and also with neurobehavioral disorders, such as ADHD. For these pupils teachers develop individual learning plan.

As it was not possible to accidentally assign subjects to groups, we used intentional choice of subjects to the treatment and a control group. The headmaster selected two classes of 5-graders in the beginning of the school year 2009 for the reason of the highest possible homogeneity. Thus since November 2009 twenty-two pupils were ranked in the experimental group (class 5th C) and twenty of them in the control group (class 5th B). The study lasted seven months, from October 2009 to May 2010. The number of pupils in control group decreased till the beginning of November 2009, because two pupils were placed in different schools for the reason of relocation of their families. One pupil was included in experimental class, because she moved to Banska Bystrica from nearby village.

Materials

In the research the intensity of education problems and behavioural problems were investigated by the assessment made by the teachers of the subjects Mathematics, Slovak Language, English Language Lessons and Arts and Crafts Lessons. Then it was put in 4-Point Rating Scale Sheet. They expressed their opinions on pupils whom they taught, based on their own experience and observation during lessons. As we did not have any rating scales at our disposal, the author of the research made the rating scale sheet of her own.

We formulated the rating scale sheet with the following three statements:

- A pupil has education problems.
- A pupil has behavioural problems.
- A pupil has a strong impact on the class.

To measure the teachers' attitude or perception of pupils' academic results, behaviour and expressiveness, we made 4-Point Rating Scale with the following response options:

- 1 – Strongly disagree – it is not characteristic of a pupil;
- 2 – Disagree – it does not characterize the pupils in essence;

3 – Agree – it is characteristic of a pupil to some extent;

4 – Strongly agree – it absolutely characterizes a pupil.

Teachers had two weeks to fill in the sheets, thus the time did not press on them. They had enough time to evaluate their students thoroughly.

We calculated an average, median, standard deviation and determined how many pupils from experimental and control class had education problems, behavioural problems and acted in an expressive way in the beginning and end of our quasi-experiment. We attributed numerical values (coefficients) to the particular location in the rating scale from the number 1 (absolute disagreement) to number 3 (absolute agreement). Particular frequency of a choice (agreement or disagreement) was multiplied with the coefficients as demonstrated in the Table 1.

Table 1
Calculation of the Teachers' Attitudes Choice Frequency (Experimental Group)

5th C class – Mathematics 09-10/2009	4	3	2	1	Σ	Mean x	Median m	SD σ
Education problems	3	6	8	5	22	2.3	2	0.995
(multiple)	12	18	16	5	51			
Behavioural problems	1	4	8	9	22	1.9	2	0.889
(multiple)	4	12	16	9	41			
Acts in an expressive way	7	9	3	8	27	3.1	3	1.082
(multiple)	28	27	6	8	69			

Source: own research

The number of all multiples from the frequency of a choice “s/he has education problems” is 51. To calculate the average we divided the total by the number of respondents (22). The result is average 2.3. Since the median was not affected by extreme values, we specified the calculation of choice frequency from every attitude (location). In this case the scale has the median of 2 which approaches the average (2.3).

Results

Based on the obtained empirical research data within the scope of education problems, behavioural problems and teachers' perception of the expressiveness of pupils in four investigated subjects: Mathematics, Slovak Language, English Language Lessons and Arts and Crafts Lessons, we observed statistical significance in all subjects in experimental group (see Table 3), from one to three categories, and in two subjects (one category) in control group (see Table 2).

Two hypotheses were tested. The first hypothesis was that preadolescent pupils will demonstrate significantly better scores in relation to academic performance and behaviour in the school subjects where music was utilised, compared to the control group.

Table 2

Occurrence of Education Problems and Behavioural Problems in Control Group

Class	5 th B		Control		Group		
Category Designations ↓	Pre-test			Post-test			p-value
	Mean x	Median m	SD σ	Mean x	Median m	SD σ	
			Mathematics	Mathematics			
Education Problems	2.55	3	0.887	1.95	2	0.945	0.023*
Behavioural Problems	1.55	1	0.826	1.6	1	0.886	0.427
Acts in an expressive way	2.2	2	1.152	2.4	2	0.940	0.276
			Slovak Language	Slovak Language			
Education Problems	1.65	1	0.988	1.65	2	0.988	0.5
Behavioural Problems	1.45	1	0.999	1.55	1	0.940	0.314
Acts in an expressive way	3	3.5	1.124	3.05	3	0.999	0.441
			English Language	English Language			
Education Problems	2.2	2	0.952	1.75	2	0.945	0.310
Behavioural Problems	1.75	1.5	0.911	1.75	2	0.945	0.5
Acts in an expressive way	2.1	2	0.852	1.75	2	0.945	0.301
			Arts and Crafts	Arts and Crafts			
Education Problems	2	2	0.973	2.3	3	0.979	0.169
Behavioural Problems	1.95	2	0.999	2.2	2	1.056	0.223
Acts in an expressive way	2.75	3	0.911	2.1	2	0.718	0.008**

Legend Table	p < 0.01 **
	p < 0.05 *

Table 3

Occurrence of Education and Behavioural Problems in Experimental Group

Class	5 th B		Control	Group			
Category Designations ↓	Pre-test			Post-test			p-value
	Mean x	Median m	SD σ	Mean x	Median m	SD σ	
				Mathematics	Mathematics		
Education Problems	2.3	2	0.995	1.95	2	1.053	0.127
Behavioural Problems	1.9	2	0.889	1.4	1.5	0.839	0.0261*
Acts in an expressive way	3.1	3	1.082	3.2	3	1.011	0.123
				Slovak Language	Slovak Language		
Education Problems	1.95	1	1.053	1.8	1.5	1.283	0.449
Behavioural Problems	1.3	1	0.780	1.2	1	0.954	0.247
Acts in an expressive way	2.5	2	1.143398	3.2	3	1.143	0.005**
				English Language	English Language		
Education Problems	2.6	3	1.008	1.9	1	0.935	0.013*
Behavioural Problems	2.3	2	0.827	1.7	1	0.456	0.014*
Acts in an expressive way	2.3	2	0.827	2.95	4	0.839	0.0009**
				Arts and Crafts	Arts and Crafts		
Education Problems	2.4	2	1.098	1.9	2	1.141	0.049*
Behavioural Problems	2.1	2	1.046	1.7	2	1.098	0.128
Acts in an expressive way	2.5	3	1.225	3.2	3	0.950	0.015*

Legend Table	p < 0.01 **
	p < 0.05 *

Results of rating scale showed no significant differences ($p > 0.05$) between both groups in pre-test scores (see Table 2 and 3). There were noted significant differences between both groups, control and experimental, on post-test scores in two subjects English Language and Arts and Crafts. The second hypothesis was that preadolescent pupils will demonstrate significantly better scores in relation to academic performance and behaviour in the main school subjects where music was not utilised, compared to the control group. However, there was not noted a statistically significant difference between the two groups on post-test scores in the subjects Mathematics and Slovak Language.

Table 2 demonstrates the scores in the control group. The potency of music intervention for preadolescents was proven statistically significant in one strategy Education Problems of the subject Mathematics, where we observed improvement below 0.05, $p = 0.023$ and in one strategy Acts in an expressive way of the subject Arts and Crafts below 0.01, $p = 0.008$. We did not observe significant results in the rest of the other subjects nor in their strategies.

Table 3 shows the scores in the experimental group. The most significant results were proven in the subject English Language in all three strategies. In the strategies Education Problems ($p = 0.013$) and Behavioural Problems ($p = 0.014$) we observed improvement below 0.05 and in the strategy Acts in an Expressive Way there was proven improvement below 0.01 ($p = 0.0009$). In the subject Arts and Crafts the scores show significant improvement in two strategies, Education problems ($p = 0.049$) and Acts in an expressive way ($p = 0.015$), both below 0.05. In the subjects Mathematics and Slovak Language there were observed statistically significant results in one strategy. In Mathematics the results in the strategy Behavioural Problems were scored below 0.05 ($p = 0.026$) and in Slovak Language the results in the strategy Acts in an expressive way were scored below 0.01 ($p = 0.005$).

Discussion

The research results of our study correspond to the research which explores the relationship between general achievement and engagement with music²⁸. In our study the pupils from experimental group demonstrate significantly better scores in relation to academic performance compared to the control group in two subjects where music was utilised, English Language Lessons and Arts and Crafts Lessons. However, its potency was not proven more significant in the main subjects, Mathematics and Slovak Language. Regular music activity was not integrated in these subjects which could have been the reason of this finding. Psychologists perceived that regular music activity can have positive effects on personal and social development of children who, as a consequence of it, talked more with their teachers and parents, and their social benefits might lead to their higher self-esteem, increase in motivation and self-efficacy, development of friendships and sense of belonging which has impact on other activities²⁹.

²⁸ For more information see: C.M. Johnson, J.E. Memmott, *Examination of relationships...*, p. 293-307; L. Barr et al., *Enhancing student achievement...*, 2002; S.J. Morrison, *Music students and academic growth...*, p. 33-36.

²⁹ S.E. Pitts, *Anything goes...*, p. 145-165; B.A. Broh, *Linking extracurricular programming...*, p. 69-95.

Conclusions and Recommendations

The obtained research results can not be rigorously declared the representative ones because the target research group consists of forty-four Slovak fifth graders from one middle school. Thus their interpretation is of delimited significance. However, they can be considered relevant in the respect of unequal conditions of the subject Music Education compared to the other subjects, such as Mathematics, foreign languages, Slovak Language in Slovak elementary and middle schools. Since 2008 the subsidy, distribution of Music Education lessons, is one lesson per week for 1st – 5th graders and one lesson per two weeks for 6th – 9th graders. It is only half a lesson per week. A lesson lasts 45 minutes.

The research results authorise us to formularise the following conclusions:

- There was assessed statistical significance in the experimental group in all investigated subjects: English Language (all three strategies); Fine Arts Education in two strategies (Education problems and Acts in an expressive way), Mathematics in the strategy Behavioural Problems; and finally Slovak Language in the strategy Acts in an expressive way.
- By the verification of the two hypotheses we found out that the pupils from experimental group demonstrated better academic performance, behaviour and they acted with more self-confidence in the two subjects English Language and Fine Arts Education, compared to the pupils from control group.
- If a similar research would confirm our findings, we recommend integration of music in other school subjects at elementary schools for their potency to improve academic achievement, behaviour and self-confidence of pupils.
- We recommend conducting qualitative research to examine the potency of music on school achievement and behaviour and building pupils' self-confidence in school.

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