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Melodic and Rhythmic Abilities Development**

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The Effects of Preschool Music Education on the Level of Melodic and Rhythmic Abilities Development

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Abstract

Early music education in Slovenia is carried out in music schools and in kindergartens, where teachers via a systematic music education encourage the children's enjoyment of musical activities, familiarize the children with experiencing musical contents, while influencing the musical development of the preschool children. The main goal of the research was to establish the level of development of melodic and rhythmic abilities in five- and six-year-old children attending the programs: Preschool Music Education (the Slovene model of music education, carried out in public music schools), Edgar Willems' Musical Introduction (the program carried out in private music schools), and Curriculum for Kindergartens in public kindergartens where no special emphasis is given to music education. We were also interested in the influence of the different programs on the development of the elementary music abilities. The developmental stages of melodic and rhythmic abilities were tested with tests: Primary measures of music audiation, Tone recognition in different tone ranges, Repetition of five sung and spoken rhythmical phrases and Tone duration identification. The results of the study showed that additional musical training and teaching of children in the framework of organized musical programs have positive effects on the development of melodic and rhythmic abilities. A higher level of development in both the melodic and the rhythmic ability was achieved with children who attended the program Edgar Willems' introduction to music; this was followed by children who attended the preschool program musical education achieving lesser melodic and rhythmical development, while the children who merely attended kindergarten achieved the least. Individual approaches to early childhood music education thus differently affect the degree of musical abilities of five- to six-year-old children.

Keywords: Preschool music education, musical programmes, melodic abilities, rhythmic abilities

Introduction

A paramount objective of music education in the preschool period is to enable children to feel music, enjoy it, and experience a state of relaxation and aesthetic sensibility, while developing their musical abilities, skills, and knowledge. Hence it is of utmost importance that the processes of planning, execution, and evaluation of music education in the preschool period (should) be systematically treated/ approached.

Slovenia practices several different ways of teaching music to preschool children, namely with the *Preschool Music Education* programme (2012) in public music schools, with a special programme based on the principles of the Edgar Willems' Musical Introduction method (Tomac Calligaris, 2004) in private music schools, and in kindergartens by means of preschool teachers following art and music education objectives and guidelines as defined by the *Curriculum for Kindergartens* (1999). Quite a selection of preschool programmes thus exists with the objective to introduce music to children in all its dimensions in a relaxed and unpressured way.

The Preschool Music Education Programme

The programme is carried out in public music schools. The significance of preschool music education lies in enabling a five-year-old a highly intensive and systematic approach to music education in the early preschool period. Children develop their musical abilities through play. Their relationship with music and art in general, however, is developed through music literature and different musical activities which, due to their complexity, can be beneficial also to fields other than music. Some general objectives pursued by teachers within the programme through activities such as performing, listening, composing/creating and learning about music are the following: students express themselves musically, singing and playing; they develop their basic music abilities (rhythmic and melodic); they experience and gradually develop awareness of the properties of tones; they improve their ability to listen to music attentively and descriptively; they participate in individual and group music-making, develop a taste in music; they create musical and other contents (visual arts, written word, movement-dance) to the best of their abilities; they acquire a basic music vocabulary; they become familiar with musical instruments for children (self-made, improvised, Orff) and others; they get familiar and comfortable with performing in public. Alongside general goals, the curriculum defines also the operative goals with activities such as reproducing, listening to and creating music, and learning about music, recommended music contents, basic standards of knowledge, didactic recommendations and executional standards (forms of testing and assessment, appropriate space and equipment) (Preschool Music Education, 2012).

The Programme Based on Edgar Willems' Special Pedagogical Principles in Music Education

A more recent method of teaching music to preschool children, implemented in several private music schools across Slovenia, is the Edgar Willems' Musical Introduction programme. This three-stage programme is intended for children between three and six or seven years of age, and is based on philosophical and psychological principles each in its own right. A distinguishing feature of this method is the use of the most suitable pedagogical approach which can actively engage the children in the teaching-learning process and enable them to express themselves. The three stages of the musical introduction are very important as they allow for an

intense and systematic approach to music and aesthetic education in early childhood. By means of guided play, children get to gradually develop musical abilities and gain basic musical knowledge. This sets up a solid foundation for their subsequent music education and helps them develop their taste in music and their attitude towards music and art. Each lesson is divided into four sections, namely, auditory perceptual learning, rhythmic training, singing, and natural body movements.

The overall goals pursued by this method include children developing a positive attitude towards music and art; versatility in being active in music; developing rhythmic, melodic and harmonic musical abilities; expressing oneself musically through singing and playing instruments; developing motor skills; developing the ability of descriptive listening to music; participating in the creation of music and interdisciplinary contents; acquiring basic musical concepts; learning basic principles of musical notation through visual arts and music notes; learning about musical instruments along with vocal and instrumental ensembles; getting comfortable with public performance etc. The program also defines the activities and contents of the course with didactic recommendations, basic standards of knowledge, and executional standards and norms (appropriate space and equipment, forms of testing and assessment). Each lesson is divided into four parts: the education of auditory perception, rhythmic education, song singing, and natural body movement. Teachers have at their disposal numerous Willem's didactic aids (musical instruments, books and audio literature) (Tomac Calligaris, 2004).

The Programme for Preschool Children – Curriculum for Kindergartens

The Curriculum for Kindergartens, which has gradually been introduced into Slovenian kindergartens since 1999, is a formal national document. The first part of the curriculum outlines the educational activities of kindergartens with theoretical frameworks, objectives and principles, while the second part introduces general goals and specific goals relating to potential activities in various study fields/disciplines (movement, language, art, social studies, natural studies, mathematics) for the first and second period i.e. age group. As regards art related activities (music, fine arts, dancing, audio-visual arts and drama), the curriculum defines only common general objectives and the objectives with examples of possible activities for children between one and six years of age. The curriculum does not specify art related objectives for individual fields, but it does give examples of activities for children in two age groups: 1- to 3-year-olds and 3- to 6-year-olds. The *Curriculum for Kindergartens* (thus) considers music education a constituent part of the arts discipline. Global/general objectives as well as the objectives defined for the arts in particular are pursued through four types of music activities, namely, musical performance, listening to music, creating in and with music, and musical skills and abilities (*Curriculum for Kindergartens, 1999*). While planning the teaching-learning process and in the course of its realization and evaluation, educators must consider developmental and learning specifics of preschool children and the differences between different age groups. They also have to take into account the findings of scientific disciplines that deal with groups of activities for kindergartens.

We can thus define goals and objectives for each developmental stage based only on understanding the characteristics of a child's development. This is also a prerequisite for selecting appropriate subject-related objectives and musical arts programmes. Understanding the musical development of a child is therefore crucial for the evaluation of one's achievements and

a precondition for further successful planning and implementation of the music education process.

Research Study

The aim of our study was to establish how different programmes of early music education influence the development of one's musical abilities. The survey, which involved children aged between five and six years, was rather extensive, so this paper includes only the results relating to the level of development of melodic and rhythmic abilities.

The objectives of our research survey were as follows:

- To identify and compare the developmental stages of elementary music potential (melodic and rhythmic abilities) of children attending the *Preschool Music Education* programme, those enrolled in the *Edgar Willems' Musical Introduction* programme, and children attending public kindergartens which follow the national *Curriculum for Kindergartens*, and
- To analyse the influence of different organised approaches to preschool music education at the level of melodic and rhythmic musical abilities in children aged between five and six¹.

We addressed the following research questions:

Melodic ability development:

- Do children recognise same or different melodic patterns?
- Do children recognise tones in different tonal ranges?
- Can children repeat melodic phrases correctly?

Rhythmic ability development:

- Do children recognise same or different rhythmic patterns?
- Can children identify tone duration?
- Can children repeat spoken rhythmic phrases correctly?

Method

Sample

Our study involved 34 preschool children aged between five and six, who at the time of the survey attended the following programs:

- *Preschool Music Education* + public kindergarten (n=10);
- *Edgar Willems' Musical Introduction program* + public kindergarten (n=11);
- only public kindergarten following the national *Curriculum for Kindergartens* (n=13).

From the point of view of inferential statistics, the sample of preschool children is regarded as a simple random sample from a hypothetical population.

¹ In Slovenia, children go to Kindergarten when they are 1 to 6 years old. At the age of 6 they begin school.

Data collection process

Data were collected in a music school and a kindergarten over a period of one month. The tests that were used to measure and evaluate the level of melodic and rhythmic abilities development were the following:

Primary measures of music audiation (Edwin Gordon)

The Primary measures of music audiation² is a standardised test by Edwin Gordon (1979) suitable for children aged between five and a half and eight years. It involves tasks designed to measure melodic and rhythmic music abilities. The test questions are recorded on a CD. Children take the test by identifying whether two melodic or two rhythmic patterns are the same or not. They circle two identical faces if they hear two “same” melodic or rhythmic patterns, and two different faces for two “different” melodic or rhythmic patterns. Each question is marked with a drawing of an object children are familiar with. The children first took the melodic (i.e. tonal) test which comprised fifteen sequences and four sample sequences. The next day this was followed by a rhythmic test comprising twelve test sequences and two sample ones. Each correct answer was worth one point.

Tone recognition in different tone ranges

This test, designed for the purpose of this study, involved various assignments for recognising tones in different tone ranges. Children were given two papers with drawers. They were then asked to carefully listen to three tones played on an instrument (piano) in high, mid and low pitch. The tones were then played again. When they heard a tone in high pitch, they had to draw a circle in the top drawer. If, on the other hand, they heard the tone in middle or low range, they were asked to draw a circle in the middle or the bottom drawer, respectively. The tasks involved the following intervals: two octaves, one octave, a fourth or a fifth, and a third in the C–c₃ range. The test comprised ten tasks and three sample tasks. Each correct answer was worth one point.

Repetition of five sung and spoken rhythmical phrases

This test, also designed for the purpose of the present study, involves the repetition of five sung and spoken rhythmical phrases. It comprises five items (i.e. tasks) involving the repetition of sung phrases, five items involving the repetition of spoken phrases and two trial tasks. The main assessment criterion was the ability to correctly repeat the sung and spoken rhythmical phrases. Each correct answer was worth one point.

Tone duration identification

Short and long g1 tones were played on a piano. Children had to mark the duration of the tone with a straight line. This test comprised ten tasks. Each correct answer was worth one point.

The reproduction of melodic and rhythmic sequences was recorded using a dictating machine, which enabled a systematic evaluation of the results.

Data processing

The data was processed using descriptive and inferential statistics. We used frequency distribution (f, f %) and single factor analysis of variance.

² The term *audiation* refers to aural perception that represents the foundation of cognitive music psychology (Gordon, 1984).

Results and Interpretation

The results are presented in two subsections, one dealing with the developmental level of melodic ability and the other with that of rhythmic ability.

Measuring the Developmental Level of Melodic Ability

Table 1. Basic descriptive statistics with the results of melodic ability measurement.

Tests	Score		Arithmetic	Standard	Skewness	Coefficient	Coefficient
	min	max	mean	deviation	coefficient	of kurtosis	of variation
			\bar{x}	s	CS	CK	CV%
Primary measures of music audiation - melodic test	2.00	15.00	9.939	3.269	-.337	-.160	32.9
Tone recognition in different tone ranges	1.00	10.00	5.545	2.048	-.221	-.439	36.9
Repetition of five sung phrases	.50	4.50	2.531	.999	-.169	-.668	39.5
Melodic ability development level - combined	3.00	26.00	17.412	5.088	-1.094	-1.873	29.2

The distribution of the results for all criteria, judging by distribution coefficients (CS, CK), is rather symmetrical and normal. The results slightly deviating from the above mentioned (negative values for CS) indicate a tendency towards higher scores which can be seen particularly in the combined score. One should, however, keep in mind a higher level of variability in all of the criteria ($32.5 \leq CV\% \leq 39.5$) especially in the repetition of the five phrases ($CV\% = 39.5\%$). Considerable/Significant differences exist among children aged between five and six years regarding the development level of their melodic ability. While some of them got the highest possible scores, there were others who only scored half a point or one point.

The following section deals with the differences in children's elementary musical abilities in relation to the programme they attended.

Table 2. *Variance Analysis with Respect to the Correlation between Melodic Ability and Music Education Programme*

Tests	Programmes	Arithmetic mean \bar{x}	Standard deviation s	Test for homogeneity of variance(s)		Test for equality of variance(s)	
				F	P	F	P
Primary Measures of Music Audiation - melodic test	PME ^a	9.3000	3.77271	.559	.578	2.580	.092
	WILLEMS	11.8000	2.57337				
	KINDERGARTEN	9.0000	2.94392				
	COMBINED	9.9394	3.26859				
Tone recognition in different tone ranges	PME	6.1000	1.28668	3.464	.044	4.265 (approx..)	.023
	WILLEMS	6.5000	2.59272				
	KINDERGARTEN	4.3846	1.55662				
	COMBINED	5.5455	2.04773				
Repetition of five sung phrases	PME	2.6111	.60093	.611	.550	12.619	.000
	WILLEMS	3.4000	.80966				
	KINDERGARTEN	1.8077	.80463				
	COMBINED	2.5313	.99950				
Melodic ability development level - combined	PME	17.7500	3.91046	.408	.668	2.636	.088
	WILLEMS	19.7273	6.12929				
	KINDERGARTEN	15.1923	4.25019				
	COMBINED	17.4118	5.08782				

^a Preschool Music Education

The presupposition on the homogeneity of variances in the test for tone recognition in different tone ranges is unjustified (P=0.044), so we refer to the results of approximation (Welch), while other tests fulfil the conditions for the use of general F-test of equality of variances. The results show that there is a statistically significant difference among children attending different music education programmes in terms of their aptitude for recognising tones in different tone ranges (P=0.023) and for repeating five musical phrases (P=0.000). The arithmetic means of the results reveal that children who attend the Edgar Willems' teaching-style-based music schools are the most successful, while the children whose music education was received solely in kindergarten were least successful. The same tendency in differences among children was observed also in the Primary Measures of Music Audiation test (P=0.092) and in the overall level of melodic ability (P=0.088).

We can conclude that children who attend the *Edgar Willems' Musical Introduction* programme have a better developed melodic ability, followed by children enrolled in *Preschool Music Education*, while the least developed melodic ability was identified in children who only attended kindergarten.

Measuring the Developmental Level of Rhythmic Ability

Table 3. Basic descriptive statistics with the results of rhythmic ability measurement

Tests	Score		Arithmetic	Standard	Skewness	Coefficient	Coefficient
	min	max	mean	deviation	coefficient	of kurtosis	of variation
			\bar{x}	s	CS	CK	CV%
Primary Measures of Music Audiation – rhythmic test	2.00	12.00	7.750	2.603	-.199	-.502	33.6
Tone duration identification	.00	10.00	6.065	2.607	-.643	-.209	43.0
Repetition of five spoken rhythmical phrases	.00	5.00	3.121	1.008	-.962	1.608	32.3
Rhythmical ability development level - combined	1.50	25.50	16.333	5.227	-.757	1.010	32.0

As already observed in the melodic ability analysis (Table 1), the distribution of the results in rhythmic ability analysis is skewed slightly left, which means that there were slightly higher scores in all of the rhythmic ability tests. Again we should note that there is a higher level of variability ($32.0 \leq CV\% \leq 43.0$) particularly in the case of distinguishing between short and long tones ($CV\% = 42.0\%$). There are considerable differences among children as to the development level of their melodic as well as rhythmic ability. While some of them did not score a single point, others achieved the highest possible scores.

Table 4. *Variance Analysis Regarding the Correlation between Rhythmic Ability and Music Education Programme*

Tests	Programmes	Arithmetic mean \bar{x}	Standard deviation s	Test for homogeneity of variances		Test for equality of variances	
				F	P	F	P
Primary Measures of Music Audiation - rhythmic test	PME*	7.0000	3.24037	1.331	.280	3.907	.031
	WILLEMS	9.5000	1.71594				
	KINDERGARTEN	6.9231	2.13937				
	COMBINED	7.7500	2.60273				
Tone duration identification	PME	6.3333	2.64575	1.556	.229	4.738	.017
	WILLEMS	7.7778	1.56347				
	KINDERGARTEN	4.6923	2.52932				
	COMBINED	6.0645	2.60686				
Repetition of five spoken rhythmical phrases	PME	3.1500	.97325	2.218	.126	7.764	.002
	WILLEMS	3.9000	.39441				
	KINDERGARTEN	2.5000	.97895				
	COMBINED	3.1212	1.00802				
Rhythmical ability development level - combined	PME	15.1500	6.58724	2.763	.079	5.784	.008
	WILLEMS	20.4000	2.51440				
	KINDERGARTEN	14.1154	3.91128				
	COMBINED	16.3333	5.22713				

* Preschool Music Education

The presupposition on the homogeneity of variance and the general F-test of equality of variances are justified in all cases. The results show that there is a statistically significant difference ($P < 0.05$) in all of the tests that have been used to measure the level of rhythmic ability as well as the combined score. The highest level of rhythmic ability was observed in children attending the Edgar Willems' music education program, followed by children attending Preschool Music Education, while the lowest level was observed in children who receive music education only as part of the kindergarten curriculum.

To summarise, children aged between five and six generally achieved average or above average scores in the tests designed to measure the level of their melodic and rhythmic abilities, although the degree of variability (deviation from the mean) is relatively high. As expected, the results also show that additional music education for children aged between five and six can result in a higher degree of melodic and rhythmic abilities.

Conclusion

Individual approaches to early childhood music education differently affect the degree of musical abilities of five to six year old children. Further systematic music education through

organized programmes undoubtedly has a positive effect on the development of melodic and rhythmic abilities. Musical activities in kindergarten also have a positive impact on the development of children's musical abilities. It should be noted that the Curriculum for Kindergartens, on the other hand, comprises only a general orientation, lacking more concrete musical goals and contents and didactic guidelines for individual fields of activity. If we compare the two programs carried out in music schools, we can observe some similarities in the planning of the general goals, as well as differences in the designed operative goals, activities and contents, and in the defined basic standards of knowledge which are in the Edgar Willems' Musical Introduction program more demanding, especially in the field of development of basic music abilities.

In the conclusion we wish to point out some of the advantages of the Edgar Willems' Musical Introduction program, the one in which children in our study scored the highest results in the tests evaluating their development of melodic and rhythmic abilities in music. In some segments this program is comparable with the program Preschool Musical Education carried out in Slovenian public music schools:

- Edgar Willems's method of teaching music emphasizes features characteristic of the child's personality and his/her experience of life situations. It is based on the active experiencing and emotional perceiving of musical experiences. Children should experience the musical contents before they become conscious of them at an intellectual level (Carlow, 2015, p. 97). The educational program Preschool Musical Education, on the other hand, places teaching of music on the intellectual level, where musical knowledge is gained through instructed learning of playing/recreating, listening to and creating musical contents;
- Edgar Willems's method of teaching music emphasizes the importance of auditory perception, rhythmical education, song singing, improvisation, creation and kinesthetic or bodily movements. In the program Preschool Education these activities are with the exception of song singing represented only to a lesser extent;
- the curriculum in Edgar Willems' music education program defines concrete activities and contents with didactic recommendations aiding the teacher in the planning, execution/realization and evaluation of the teaching process. Each lesson begins with the learning of *auditory perception*, where the activities and goals are defined described in detail. This is followed by *rhythmic education*, also furnished with detailed descriptions of concrete activities, and song singing, which is the central part of each music lesson. Special emphasis is given to learning songs as a basis for the learning of intervals and chords. The texts of simple songs, with which the children have usually already become familiar beforehand, are replaced by solmization syllables. In singing, the melodic line is accompanied by movements of the hand. The end of the lesson is dedicated to *natural bodily movements*, the aim of which is to develop a sense of rhythm in the child. The children get the feel for measure and character of individual musical contents, harmonizing their expression of movement with them. The curriculum Preschool Musical Education does alongside general goals define activities such as *executing, listening to and creating music* as well as *gaining musical knowledge*. These activities also have subject-related goals. However, they do not offer the teacher concrete activities and contents to go by. The didactic guidelines merely include a general framework of

carrying out lessons, in which the teacher plans random musical activities, goals and contents for each lesson separately.

A closer look at the lesson plans (in the different approaches to pre-school music education) shows that individual didactic elements, described in the Edgar Willems' musical introduction program, are clearly presented, enabling the teacher a systematic approach to the development of basic/elementary musical abilities, such as melodic and rhythmic abilities.

The role of the educator in this early childhood period should be focused on encouraging children to live their musical moments, using play-based methods. Play as the basic children's activity should also be considered when planning various musical activities. To make music interesting, we need to experience it with our own ears. Sound and rhythm are rich enough to arouse interest in children with the help of auditory teaching aids (Damaceno, 1990, p. 41). Such an approach should have a positive impact on the musical development of a preschool child, which the results of our study certainly stand to prove.

The empirical findings should encourage musical educators, professionals in practice and the designers of the curriculum in the field of musical and preschool education to follow good practice and to critically approach the planning and execution of the curriculum.

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