Musical Literacy in Primary Education

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Abstract: Musical literacy is a complex of abilities, skills and knowledge that can be used in practical aspects of life. The abilities are of paramount importance in this context. That is why research in the field of music education already focused on them in the past. The authors aimed to ascertain what the level of music literacy is at present, and they therefore focused on research into musical abilities, too. The research results indicate that the musical abilities are developed adequately and proportionately. They also point out the need to monitor both the development of musicality and knowledge.

Key words: musical abilities, musical skills, knowledge, musical literacy, diagnostics of musical abilities

Introduction

Literacy is a term used especially where the emphasis is placed on the practical use of knowledge, skills and attitudes in various, life-related contexts. The understanding of literacy in the context of music education, which results from the past monitoring of educational practices at various levels of education, refers to the developed musical abilities and knowledge of students. In the context of music education, however, literacy has not been studied that comprehensively yet - though the previous research studies focused on the development of singing, instrumental and auditory activities, which constitute important components of literacy. The definition of musical literacy nevertheless offers space for a deeper understanding of music. That may be significantly intensified by the body of knowledge and experience with music, while the specific musical work provides a solid basis for many activities of the music-educational process. If we reflect on the role of a musical work within the framework of music education, it is quite clear what the musical literacy is to embrace in order to be functional in its entirety.

Starting Points for Musical Literacy Development within the Framework Educational Programme

For the systematic development of musical literacy at various educational levels, it is important to know the educational goals, the student developmental specifics and the acquired key competences. In this respect, the question arises as to whether the *Framework Educational Programme* (FEP) embraces all the attributes of musical literacy. Even though the expected outcomes are formulated only roughly, we can perceive their certain hierarchy reflecting the natural musical development of a child. The extent to which the educational outcomes are fulfilled and the students' musical literacy is developed depends on the specific school. When the children conclude their compulsory schooling, we take it for granted that they have embraced a certain degree of literacy in mathematics, reading and other subjects that we consider necessary for their future lives. It is nevertheless worth reflecting on whether they leave the educational system with musical literacy too. Therefore, we can deservedly ask the following questions. *What level are their musical abilities at now? How have they embraced musical knowledge and skills? How can they apply those in practice, and therefore in different life situations?*

The concept of musical literacy thus clearly combines abilities, skills and knowledge. It definitely is not just a matter of talent. In order for a student to be able to use musical knowledge and skills appropriately, he or she must have learned those. There are various ways how to do this. One of the options is a traditional approach consisting in the explanation of concepts and subsequent verification of the acquired skills and knowledge through music activities. This is a fast path, though substantially obsolete today. It usually does not result in a permanent interiorization or commitment. The approach where the first step on the path towards the acquiring of knowledge is an experience is much more effective. Musical experiences evoke emotions. If we choose the right music, the emotion can be quite strong and may provoke the question, what it was actually triggered by. In other words, we start to look for the cause and we want to figure out how the music "works" if it can have such an effect. This is where the opportunity for clarification, embracing of concepts and comprehension of contexts occurs. The Framework Educational Programme does not set forth this approach specifically, but offers scope for its inclusion. All this all the more so, as there is a wide range of links between various disciplines and that the teacher can choose the music they know well, they listen to or they even perform and have teaching experience with.

The subject of *music education* is present in the primary education (together with *art* and *drama education*) in the thematic area of *Art and Culture*. At the lower-primary school, pupils become acquainted with the means of musical expression and learn how to use them in a creative way. The higher-primary school offers space for studying the broader historical and social context. Searching for links between different types of art encourages interdisciplinary cooperation. We can therefore understand the individual outputs of the FEP as indicators of musical literacy (Framework Educational Programme for Basic Education, 2005).

Development of Literacy from the Perspective of the Czech School Inspectorate

In terms of the musical literacy development, it is necessary to bear in mind what we take for granted in the case of other subjects, namely the teacher's qualification. If *educational strategies for the development of students' literacy* are to be fully exploited, if we are to focus on the practical aspect of teaching, on the students' ability to process information and to solve problem-oriented tasks, then we also need to realize that students can acquire key competences only if their teachers also have those competences embraced. The intentional education (whether of pupils or teachers) is nevertheless not the only aspect to play a role in here. There are other influences too. This is why the *Czech School Inspectorate* (CSI) points out that in defining any specialized literacy it is necessary to take into account other social contexts: the influence of technology and mass media, the impact of non-artificial music, e-learning tools outside classes, etc. These are so-called *non-quantifiable factors of musical literacy*. Neither must we forget that the degree of musical literacy is also shaped by the family environment.

The literacy in various subjects, which is currently considered a priority, resonates with specific artistic disciplines and can be used as a support to the musical literacy. For example, within the development of reading literacy, it is possible to include reading of musical compositions' lyrics. The metro-rhythmic structure of music notations is in turn linked to mathematical literacy. As far as the widely discussed digital literacy is concerned, we can mention tasks such as working with notation programs within the scope of music education. Certain parallels occur even in the area of physical literacy, namely in the music and movement education.

At present, the CSI monitors data on the achieved degree of pupils' literacy in six areas: reading, mathematics, language, natural science, social competence and computer science. The CSI determi-

nes the level of literacy in the individual areas based on various sources, such as observation (CSI, 2018/2019). Additional information was provided by interviews with pupils and teachers as direct actors in the educational process. Last but not least, testing of students' knowledge is an appropriate tool to investigate any literacy. In the case of musical literacy, the tests have so far focused on musical abilities and skills.

Diagnostics of Musical Abilities and Skills

Helfert (one of the pioneers in the study of musicality in the Czech Republic) defines the following features of musicality: musical ear, musical imagination, rhythm perception, musical memory, reproductive and productive musical abilities (Helfert, 1956). Helfert emphasizes the need to address not only the activities but also the receptive aspects of musicality. According to him, music classes should emphasize development in the area of comprehension to music. Equally important, according to Helfert, is the effect of music on the human psyche. He also points out that the older school age is a key period in the development of human musicality. Musicality has been often associated with the mere ability to sing or play a musical instrument. According to Helfert, being an active recipient, listener and perceiver is much more important.

Poledňák draws attention to three basic concepts of musicality. The first concept understands musicality as a set of talents and abilities available to an individual that serve the development of musical activities. The second concept of musicality regards it as the degree to which a person's musical abilities, skills and talent for music production are developed. The third concept defines musicality as a positive attitude of a person to music. In the latter case, musicality is admitted to all individuals and is not associated exclusively with practical musical abilities and skills (Poledňák, 1980). Every student has their own boundary of music literacy and the individual concepts of music blend into each other. The authorities set a minimum expected literacy in the field of music education through the official FEP. It sets an imaginary boundary that students should reach in the field of musical literacy.

Musical Literacy Research

The research is based on the diagnosis of the students' musicality carried out by the author Vachudová (Vachudová, 2012). In her work, Vachudová surveys systematic studies of musical abilities, intelligence and talents carried out since the 1920s by both Czech and foreign authors, such as Sedlák, Poledňák, Holas, Seashore, Kwalwasser, Wing, Bentley, Révész, Holmström, Horbulewicz, Mat-

suyama, Peretz, etc. Her diagnostic tool compares auditory and audiovisual versions of the musicality tests. She points out to the higher success rates of tests using aptly selected images or video to outline the emotional content of music demonstrations.

Since our research of musical literacy did not focus on the issue of music visualization, we chose the auditory version of testing. The first area of testing focused on auditory-perceptual abilities. The second area of interest consisted in the sensation of tones; the third subtest was intended to examine the sensation of harmony. The fourth area of testing investigated the emotional response of students to music. The last, fifth area, examined the students' musical memory through the memorizing of either the rhythmic or the melodic component of a music piece. The author designed the tests of musicality for 35–40 minutes, in order to make them easily feasible under normal conditions at primary schools. The logical breakdown of the test into the subtests allowed the teacher to concentrate on an area posing the biggest problems to students.

The wide range of tests contributes to a comprehensive picture of the current level of music literacy of primary school pupils. Selection of the 6th year pupils for the research was deliberate, because in this age, the turning point in the development of musicality occurs and the children become mentally capable of understanding the tests contents. Vachudová mentions that this is a school year that is "*(...) more intellectually advanced and approaches testing in a disciplined and responsible way*" (Vachudová, 2012). According to Holas, people in this age come to have good understanding of the musical space. They can already comprehend the semantic layer of musical expressions. They can perceive the musically tectonic structures of musical works. As far as musical education is concerned, this age group is the most demanding (rapid growth of the larynx and lengthening of the vocal cords are associated with changes in the voice qualities). The students also become capable of abstract reasoning, which allows working with musical expressions on various levels. Adolescents often express their inner experiences through their own creative work (Holas, 1994).

The research sample included 6th year pupils aged 11–12 who represent a turning point between the younger and older school ages. Schools with extensive music education and primary art schools were intentionally excluded from the research sample. Focusing on these types of schools offers the opportunity to further compare the tests results in the future. The research was carried out at the *Brdičkova Primary School in Prague 13*, which works closely with the *Faculty of Education of Charles University* within the framework of continuous teaching practice program. A total of 68 pupils were

tested: 21 pupils of 6. C class, 21 pupils of 6. D class and 26 pupils of 6. A class. The testing was performed with the help of the class teachers Kolandová and Levé.

Diagnostic Test of Students' Musical Literacy

Vachudová's tests are focused on the investigation of five musical abilities, which are specified in more detail hereinafter (Vachudová, 2012):

I. Auditory-Perceptual Abilities

1) Determination of the direction of the melody's progression and identification of the number of changes in the progression of the melody.
2) Comparison of the pitch of two tones (lower – identical – or higher than the first tone, while the differences include halftones and tones outside the vocal range of the students).
3) Determination of an instrument timbre: identification of an instrument playing a solo in an orchestral piece according to its timbre (selection among 7 instruments).
4) Determination of a voice timbre: distinguishing between the men's, women's, children's and mixed choir.

II. Sensation of Tones

1) Assessment of melody completeness (after setting a tonic triad): completeness at the 1st scale degree, incompleteness at the 4th and 6th scale degrees, with both major and minor key music fragments being demonstrated.
2) Identification of a false note (after setting a tonic triad) and specification of the false note in a well-known children's song (*Kočka leze dírou*).

III. Sensation of Harmony

Identification of the agreement or difference in the second voice part through analysis of a polyphonic melody - recognition of a change in the second voice part of a well-known song.

IV. Emotional Response to Music

Expression of emotions evoked by listening to different types of music: a waltz – a folk song in a minor key – a funeral march – a military march – bipolar seven-point scale.

V. Musical Memory

A) Memory for rhythm

1) Recognition of the concordance and/or difference between 2 rhythmic fragments: the second fragment is identical or different in the extent of 2 bars.
2) Identification of errors in the rhythmic plan of a song: determination of whether a tapped rhythm corresponds to the beginning of a song or whether a rhythmic error has occurred.

Table 1. The test results in all five subtests (expressed in points and as a percentage)

Musical Abilities Subtests (I.–V.)	I. Auditory-Perceptual Abilities	II. Sensation of Tones	III. Sensation of Harmony	IV. Emotional Response to Music	V. Musical Memory	
					A) Rhythm	B) Melody
Maximum score (points)	1088	544	272	272	544	544
Correct answers (in points)	1021	520	258	244	464	494
Correct answers (in %)	94	98	95	90	85	91

B) Memory for melody

1) Recognition of the concordance and/or difference between melodic fragments (within the range of five tones, both major and minor tunes): the second fragment is identical or different.
2) Identification of a song by its melody: distinguishing of a song in major or minor key according to its middle or ending section.

Interpretation of Diagnostic Tests Results

The method of collective testing was chosen for the research, the results of which were recorded in a consolidated report. The results were evaluated in a scoring system, with one point being given for each correct answer. Every student could get a total of 48 points at maximum. The advantage of the diagnostic instrument is the possibility of its division into several subtests providing us with an overview of each area of musical ability separately. At the same time, it is possible to quickly find out the degree of musicality for each pupil, which can be useful, for instance, in the identification of pupils with special educational needs.

For the purposes of this study, the results in the consolidated report were evaluated vertically - ie by individual areas of musical abilities. The results of all subtests are considerably balanced, with the success rates ranging from 72 to 98 % (Table 1).

The number and percentage of correct answers fell the most in the 5th sub-

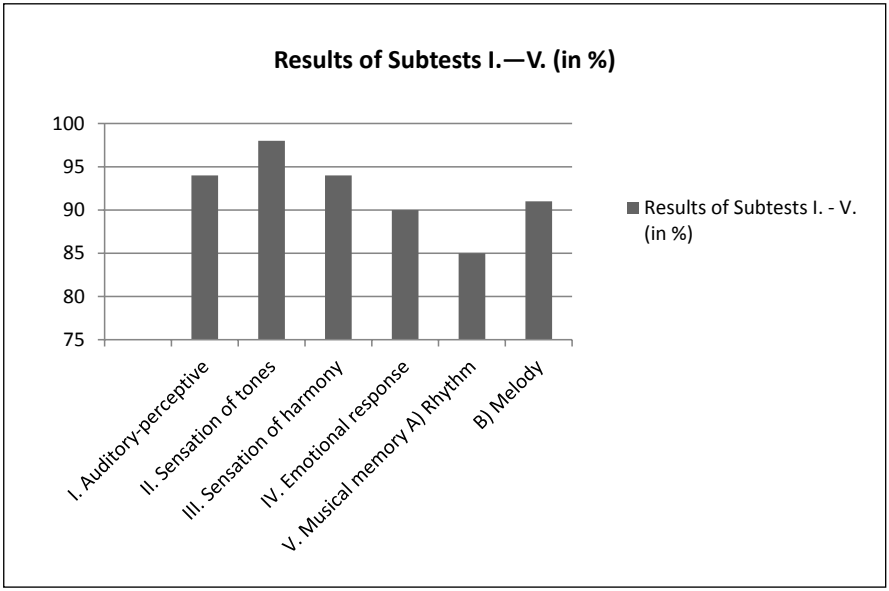

Figure 1. Graphical representation of the results of individual subtests

test, which was examining the musical memory of the students. In part A, which focused on the ability to identify errors in the rhythm of a music fragment, 85 % of the tested children answered correctly (Figure 1). The test subjects also reported greater hesitation in solving of the 4th subtest tasks. In this area focused on the emotional response to music, the success rate nevertheless reached 90 %. According to Vachudová, a much higher success rate can be assumed in this subtest if visualization tools are applied. In spite of that, the pupils scored excellently on the emotional scale.

The overall result of the diagnostic testing can also be evaluated horizontally, ie according to the scores reached by all 68 pupils. The maximum score that the test subjects could reach was 3264 points. The pupils achieved a 92% success rate of answers, which indicates a high level of musical abilities and skills (Table 2).

The tests comprise tasks that characterize in more detail the individual musical abilities. Within the first area – **the auditory-perceptual abilities** (Table 3 and Figure 2), students identified the number of changes in the progression

Table 2. Overall result of 68 test subjects expressed in points and as percentage

Overall success rate of test subjects	
max. score (points)	3264
points reached	3010
points reached in %	92

Table 3. Results in the area of auditory-perceptual abilities

I. Auditory-Perceptual Abilities	correct answers		wrong answers	
	score	%	score	%
1. Identification of number of changes in melody progression	250	92	22	8
2. Comparison of two tone pitches	248	91	24	9
3. Determination of instrumental tone timber	253	93	19	7
4. Determination of vocal tone timber	270	99	2	1

of a melody, compared the pitches of two tones and determined the timbre of instrumental or vocal tones. Many of the students' answers were correct. In some cases, a misidentification of the number of changes in the progression of the melody within the task no. 1 occurred, mostly where the melody does not rise in steps, but in the form of a decomposed major triad. The progression of the melody in the second interval steps is therefore clearer for the pupils in terms of identifying the number of changes in the melody.

The students were highly successful in determining the timbre of vocal tones (task no. 4). Only 1 % of students gave the wrong answer when identifying a musical demonstration of a mixed choir. They were also relatively certain in determining the timbre of instrumental tones (task no. 3). The most common mistake occurred in the identification of the clarinet (often mistaken for a cello or violin). Errors also occurred in determination of the harpsichord, which some of the students confused with the violin. In retrospect, the students commented that they had not been completely familiar with the harpsichord, which is why they could not recognize its timbre and therefore selected the answer by a simple process of elimination.

The second area of the musicality

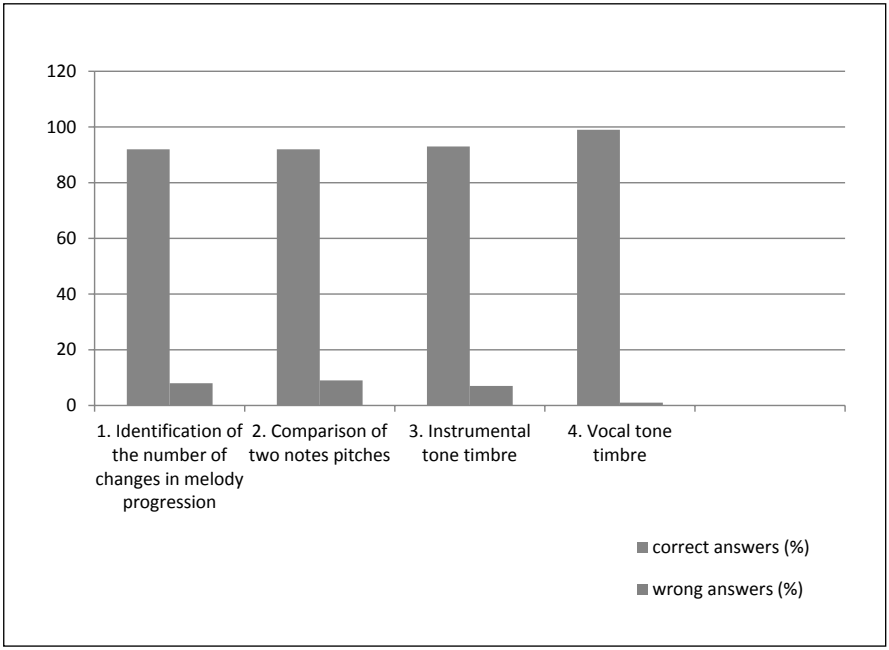

Figure 2. Graphical representation of the results of the subtest no. 1

diagnostics deals with **sensation of tones** (Table 4, Figure 3). In the task no. 5, students were identifying a completed or uncompleted melody. Surprisingly, in several cases where the melody ended on the 1st scale degree, the students answered incorrectly. On the contrary, when a leading-tone (7th scale degree) sounded before the last key tone, the test subjects marked the melody as completed without hesitation.

In the task no. 6, the students were identifying the position of the tone, which did not belong to the well-known song *Kočka leze dírou* (in C major). There was a 7% misidentification: in the case of the identification of the 2nd false note (D flat) and the false 3rd note E flat). In particular, the 3rd flat scale degree evoked minor character of the tune and the students were uncertain – they did not perceive it as a false note.

The third area focused on the **sensation of harmony** and featured the task of identifying the concordance or difference of a melody in a simultaneously

Table 4. Results in the area of the sensation of tones

II. Sensation of Tones	correct answers		wrong answers	
	score	%	score	%
5. Assessment of melody completeness	267	98	5	2
6. Identification of false note	253	93	19	7

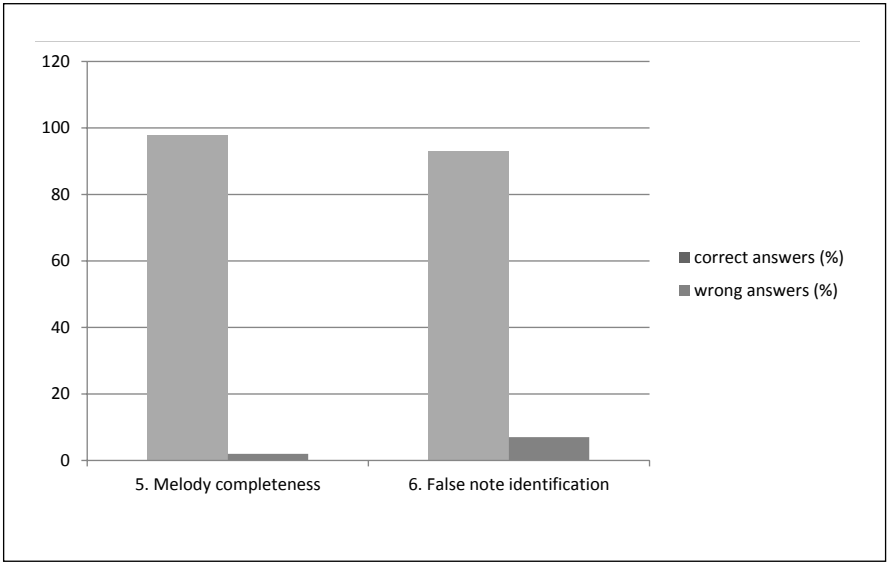

Figure 3. Graphical representation of the results of the subtest no. 2

sounding second voice part. The author of the diagnostic tool deliberately chose one verse of the well-known song *Jsou mlynáři, chlapi, chlapi*, which is at first performed in the third intervals, and then the second voice part either changes or remains unchanged. The students' success rate of correct answers was 95 % (Table 5, Figure 4); the students responded in a positive way when they heard a well-known folk song. Despite the fact that many of the students faced such a task for the first time (were not used to working with polyphony), they could

Table 5. Results of subtest no. 3

III. Sensation of Harmony	correct answers		wrong answers	
	score	**%**	**score**	**%**
7. Identification of concordance and difference in melody of the second voice part	258	95	14	5

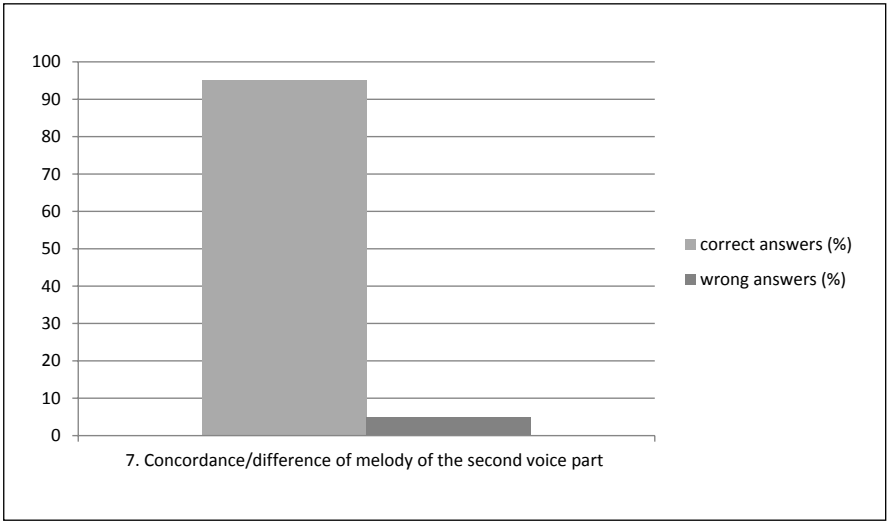

Figure 4. Chart depicting identification of concordance/difference of the second voice part

identify the concordance or difference in the resounding second voice part quite successfully. The success rate achieved in this task was certainly influenced by the fact that the folk song was generally known to the students.

The fourth area of testing – the **emotional response to music** featured a higher percentage of errors. The students were asked to tick the expression of a scale that best expressed their feelings when listening to short music pieces. The test author chose demonstrations from the compositions: *Sen lásky (The Dream of Love)* concert waltz by Vačkář, *Dobrú noc (Good Night)* folk song, the *Funeral*

Table 6. Results of subtest no. 4

IV. Emotional Response to Music	correct answers		wrong answers	
	score	%	score	%
8. Expression of emotions evoked by music	244	90	28	10

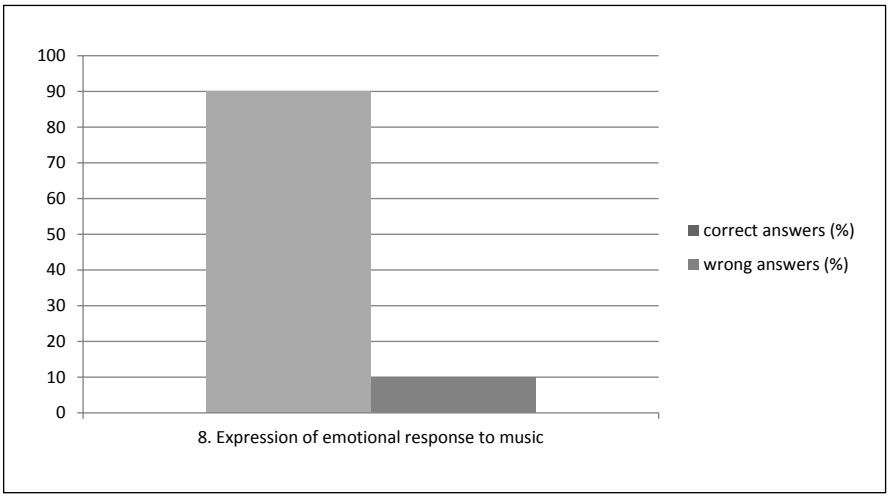

Figure 5. Chart depicting the results in emotional response to music

March of the Russian Revolutionaries and the military march *Kolíne, Kolíne (Kolín, Kolín)* by Kmoch.

The most frequent mistakes occurred where the students were choosing the expression of their response to Vačkář's concert waltz. They were guessing in the range of answers from *very ponderous* to *very animated*. The selected audio sample could have been misleading too. This result indicates the need for the students' deeper involvement in the musical work and for better mastering of the means of musical expression.

The last area of the research is focused on musical memory, distinguishing between the memory for rhythm and the memory for melody Most errors (21 %) occurred in the identification of errors in a rhythmic audio demonstration (Ta-

Table 7. Diagnostic results in the area of musical memory

	V. Musical Memory	correct answers		wrong answers	
		score	%	score	%
A) Rhythm	9. Identification of concordance and difference in rhythm	250	92	22	8
	10. Identification of errors in a rhythmic audio demonstration	214	79	58	21
B) Melody	11. Identification of concordance and difference in melody	257	94	15	6
	12. Identification of errors in a melodic audio demonstration	237	87	35	13

ble 7, Figure 6). Even though the well-known songs' beginnings were selected, the students could not convincingly determine whether the tapped rhythm corresponded to the rhythm of the songs or not. The most distinct were the errors in identification of a rhythmic passage of the song *Pásla ovečky*. Students frequently reasoned their wrong answer by unfamiliarity with the song. Besides that, tapping of rhythms was a rather uncommon activity that they did not regularly pursue in music classes.

Conclusion

The diagnostics of musicality is a key pedagogical measure and the starting point for the diagnosis of students' musical abilities and skills. It constitutes an effective tool for the examining of students' music literacy. The above test results suggest that students have musical abilities in various fields: the auditory-perceptual area, tonal area and the area of the sensation of harmony. Certain shortages were detected in the area of the memory for rhythm. The uncertainty in identifying errors in the rhythmic pattern of a well-known song suggests that more space should be dedicated to rhythmic activities, on a regular basis.

From the tested students' reactions, we may also deduce that they are willing to understand music more deeply. When diagnosing their emotional response to music, students often asked questions about how to choose the right expression within the test scale. They were asking how to recognize whether a music piece was "ponderous", "bright", or "animated". This suggests that it would be advisable to concentrate more on the means of musical expression that the composer used to achieve a certain emotional ef-

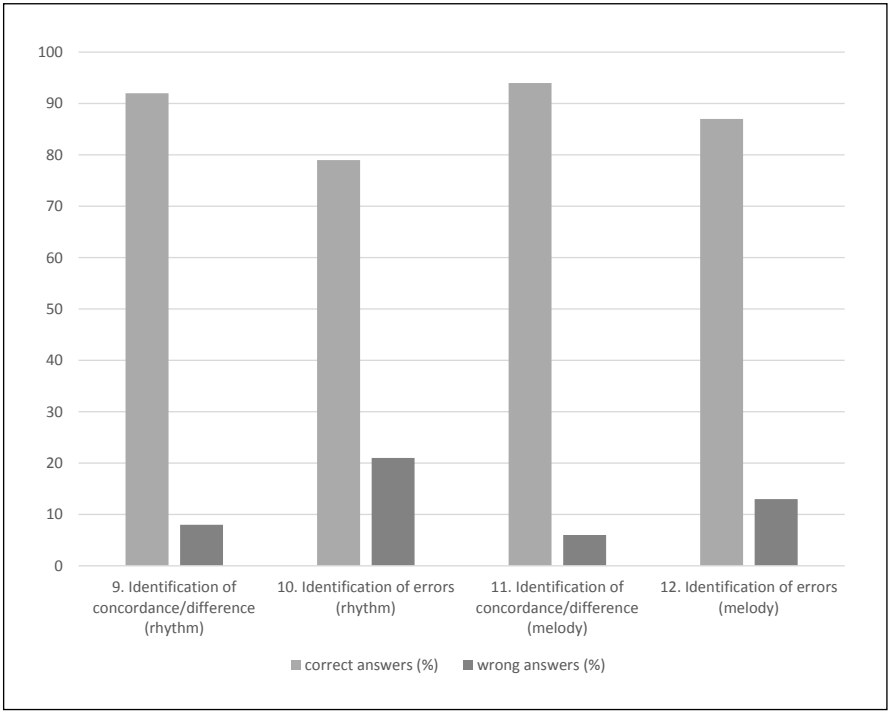

Figure 6. Graphical representation of the results of the subtest no. 5

fect on the listener. And there certainly is room to work more intensely with terminology or vocabulary. The test results also imply the need for more frequent analysis of the timbre of various musical instruments within listening activities.

The finding that the students were keen to participate in the research is a great pro. The merits should be credited to the teachers here. If teachers manage to present the test as sort of a game – as opposed to an exam – the students are looking forward to fulfilling the tasks and are not as stressed as if passing a regular knowledge-based testing. The students largely appreciated information on the test results. This was because they learned that their abilities and skills in the field of music education were at a relatively high level. They now dispose of a tool allowing them to get down to further creative music activities.

The teachers learned from the achieved results that the development of music literacy is conditioned by retreating from transmissive teaching and from a focus on topics out of a broader context. The test also indicates the pupils' musicality and represents a good starting point for determining the further direction of teaching. During the testing we also found out that attention needs to be paid not only to skills development but also to knowledge. Therefore, in order to get the full picture of the level of musical literacy, if similar tests are carried out in future they should focus on the knowledge of students, naturally combined with the examination of their musicality.

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References

Czech School Inspectorate: *Úroveň gramotností žáků na ZŠ a SŠ ve školním roce 2018/2019 (Degree of Literacies of Primary and Secondary School Students in 2018/2019 Academic Year).* [online]. [quot. 2020-19-03]. Available at: <https://static.cream.sk/rizeniskoly.cz/webroots/online/content/mediagallery/aprs_system/file/article/file/4510.pdf>

Helfert V. (1956). *Základy hudební výchovy na nehudebních školách (Introduction to Music Education for Non-Music Schools)*. Prague: SPN.

Holas M. (1994). *Hudební nadání (Musical Talent). Hudební nadání, aneb Otázky hudebně psychologické diagnostiky (Musical Talent, or Issues of Music-Psychology Diagnostics)*. Prague: Music Faculty of the Academy of Performing Arts in Prague. ISBN 80-85883-00-7.

Poledňák, I. (1980). Testování jako jedna z metod hudební diagnostiky (Testing as one of the Musical Diagnostics Techniques). In: *Estetická výchova (Aesthetic Education)*, *21*(2), 35–37. ISSN 1210–3691.

Rámcový vzdělávací program pro základní vzdělávání (Framework Educational Programme for Primary Schools) [online]. Prague: MŠMT, 2005 [quot. 2020-03-03].
Available at <http://www.nuv.cz/uploads/RVP_ZV_2017.pdf>

Vachudová E. (2012). *Jak na to?: diagnostika hudebních schopností v současné škole (How to Do It?: Diagnostics of Musical Abilities at Contemporary Schools)*. Prague: Charles University - Faculty of Education, 2015. 80 pages. ISBN 978-80-7290-869-1. ISBN 98-80-7290-586-7.

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