Using Musical Activities in Primary School Subjects

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ABSTRACT

Aim. The study aims to determine the opinions of primary school teachers about the use of musical activities in the subjects taught in grades 1-3 of primary education.

Methods. The study used a quantitative research design and involved 151 (N=151) primary school teachers who completed a questionnaire at five different time points. The study addressed three research questions: RQ1: What types of musical activity could primary school teachers use in other subjects? RQ2: In which subjects could primary school teachers use musical activities? RQ3: At what level can primary school teachers use musical activities in each of the subjects taught in grades 1-3 of primary school? SPSS version 22 was used for statistical data analysis to group the data, observe trends, and establish relationships between variables.

Results. The study revealed that primary school teachers often use musical activities such as listening to music in other subjects but play musical instruments the least. English, sports, and Latvian are the most common subjects where musical activities are used, while design and technology are the least. Although primary school teachers can use musical activities at a high level in several subjects, English is the most highly-rated subject, while the lowest-rated subject is design and technology.

Conclusions. The findings allow us to determine which types of musical activities could be used in grades 1-3 of primary education, in which subjects the teachers most often use musical activities, and at what level primary school teachers evaluate their ability to do that.
Keywords: musical activities, subjects in grades 1-3, primary school teacher, primary education

Introduction

Music is one of the art forms that students learn in primary school. Primary school teachers can teach music alongside other subjects, but they should have been able to do that. Previous research revealed that primary school teachers could not often teach music

due to a lack of confidence (Barrett et al., 2020), self-efficacy (Lowe et al., 2017; Battersby & Cave, 2014), and motivation (Sepp et al., 2023), which resulted from the insufficient preparation of current and prospective primary school teachers in music field (Rosa-Napal, et al., 2021; Suomi et al., 2022; Villarta, 2022).

Primary school teachers believe that music teaching is better left to music teachers (Altun, 2010; Özgül, 2017). However, teachers could use types of musical activities in other primary school subjects. Di Domenico believes that music could be implemented in the classroom to achieve four goals: to change the mood, to teach the subject, to encourage creativity and personal growth, and to unite and lead the class (DiDomenico, 2017). In addition, the use of music in classes could engage every student in the learning process, including students with special needs (Devolli & Avdiu-Kryeziu, 2022), help achieve deeper student involvement in shaping their own experiences (King, 2018), promote self-expression skills in the social environment (Kepule & Strode, 2020), make lessons more engaging and challenging (Hilot & Dioso, 2024), as well as interest and motivate students to learn (Popa, 2018). Music is a tool for effective teaching in primary education (Devolli & Avdiu-Kreieziu, 2022), and combining it with movement promotes physical, cognitive, and emotional development (Del Barrio & Anus, 2024).

Music can be used in the teaching/learning process of languages, maths, social studies, and other subjects. Researchers have found that music promotes reading and writing (Yende, 2023), plays a crucial role in children's phonological awareness and vocabulary expansion (Abella et al., 2023), and helps improve finger motor dexterity and auditory melodic skills (Dabas & D'Souza, 2015). Incorporating music into social studies promotes learning, discussion, and interactivity among the students (Rasimi & Zylfiu, 2023). In addition, using music creates a learning environment where the student feels more comfortable, creative, motivated, and eager to learn (Lalima & Rani, 2022). Primary school students find it easier to remember information when they learn through music (Ezeudo, 2024) because rhythm, melody, and harmony have a semantic nature, which enables children to learn with less effort (Beveridge, 2024). Researchers believe that using musical activities such as singing and playing musical instruments in other subjects could cause difficulties for teachers (Özgül, 2017; Potter, 2022; Stramkale, 2024), and teachers are not sufficiently prepared for the intensive use of music in practice (Carmen, 2020). However, previous research has revealed that teachers can effectively incorporate music in mathematics lessons without extensive musical preparation and musical instrument-playing skills (Hendriks & Cruywagen, 2024).

Implementing music in the classroom could be achieved in a variety of ways. Janice L. Killian and John B. Wayman found that using musical activities may help students remember information, hold their attention, learn concepts, move from one activity to another, and manage the classroom (Killian & Wayman, 2015). Pamela Perger and colleagues also believe music provides an opportunity to develop a deeper understanding of the concepts that should have been learned because it helps students use their knowledge and strengths in one learning area to support learning in another discipline (Perger et al., 2018).

Using music in other subjects has several advantages. Researchers believe that music can contribute to the development of competencies in different subjects (Mateos-Moreno & Bravo-Fuentes, 2023) and increase academic achievement (Gee, 2023; Wang et al., 2024). A study by Guth and colleagues found that higher levels of student engagement in music (instrumental music had a statistically stronger correlation than vocal music) were associated with higher test scores in maths, science, and English (Guhn et al., 2020). On the other hand, Eurika Jansesn van Vuuren thinks that using music appropriately can prevent the negative impact of learning on students, thus ensuring that learning numeracy and reading skills does not cause anxiety (van Vuuren, 2022). In addition, Berta Torras-Vila admits that using music as a tool in foreign language learning can reduce anxiety levels to a minimum (Torras-Vila, 2021).

Using music in other subjects also creates several challenges for primary school teachers. Ardita Devolli and Shqipe Avdiu-Kryeziu's study found that primary school teachers mainly point to the lack of musical instruments and teaching aids (Devolli & Avdiu-Kryeziu, 2022). Moreover, a study that investigated the confidence of prospective primary school teachers in their musicality found a relationship between confidence in musicality and the ability to express oneself in musical activities (Stramkale, 2024).

The teachers, as facilitators of the educational process, need knowledge and training (Del Barrio & Anus, 2024), a deep understanding of the learning content, and active participation in research processes (Morari, 2022) to use music in their professional practice, which requires continuous professional development (Digby, 2020), including the opportunity to participate in professional development programmes (Augustine et al., 2016). Teachers should use creativity and initiative to encourage students to actively participate in the learning process (Hilot & Dioso, 2024), as music has to be experienced in authentic, engaging, and learner-centred ways in any lesson (King, 2018).

The analysis of the theoretical literature concluded that there is enough research on the positive impact of music on the intellectual and emotional development of students. It means that using musical activities is beneficial in any subject, therefore, the teacher must find ways to link the content of other subjects with musical activities, which often requires additional time and cooperation with colleagues. At the same time, primary school teachers should be competent enough to do it and also have the willingness to do it. *The study aims* to determine the opinions of primary school teachers about the use of musical activities in subjects taught in grades 1-3 of primary education.

Methods

Participants

The questionnaire was distributed to 288 primary school teachers from Riga, as well as the regions of Kurzeme, Vidzeme, and Zemgale in Latvia. The questionnaire

was distributed to primary school teachers at five different time points as follows: On September 9, 2024, the questionnaire was sent to 50 teachers, with 23 (N=23) responses received. On September 16, 2024, 88 teachers received the questionnaire, and 52 (N=52) responses were obtained. On September 23, 2024, 66 teachers received the questionnaire, resulting in 28 (N=28) responses. On October 7, 2024, 52 teachers were contacted, and 25 (N=25) responses were obtained. Finally, on December 14, 2024, the questionnaire was sent to 32 teachers, and 23 (N=23) responses were received. A total of 151 (N=151) primary school teachers participated in the study. The response rate is 52,4%. The findings can be generalised to populations or cases that share similar characteristics with the study sample.

Data Collection Instruments

The study used a quantitative research design to determine the opinions of primary school teachers about the possibilities of using musical activities in the subjects they teach in grades 1-3 of primary school. A three-part questionnaire was designed to collect the data. In the first part of the questionnaire, the respondents expressed their opinions on the possibilities of using musical activities in eight subjects. In the second part, the respondents identified the musical activities that could be used in the educational work of a primary school teacher and, if they wished, they could comment on their answers. In the third part, they evaluated their ability to use musical activities in the subjects taught in grades 1-3. The respondents rated each statement in the questionnaire on a six-point Likert scale, where 6 points – fully agree, 5 points – agree, 4 points – tend to agree, 3 points – tend to disagree, 2 points – disagree, and 1 point – fully disagree. Points from 1 to 3 indicated a negative tendency, while points from 4 to 6 indicated a positive tendency.

The study addressed three research questions:

- RQ1: What types of musical activity could primary school teachers use in other subjects?
- RQ2: In which subjects could primary school teachers use musical activities?
- RQ3: At what level can primary school teachers use musical activities in each of the subjects taught in grades 1-3 of primary school?

Three research scales were defined to answer the questions raised in the study: (a) types of musical activities, (b) primary school subjects, and (c) primary school teachers' abilities. The Likert scale was divided into four levels to determine which types of musical activities the primary school teachers could use and in which subjects it is possible to implement, assuming that the points from 1.00 to 2.25 are an insufficient level, from 2.26 to 3.51 are a sufficient level, from 3.52 to 4.77 are good level, and from 4.78 to 6.00 are a high level. In addition, to determine at what level primary school teachers rate their ability to use musical activities in the subjects taught in grades 1-3

of primary school, it is considered that a low level is from 1.00 to 2.66, a medium level from 2.67 to 4.33, and a high level from 4.34 to 6.00.

Data Collection Procedure

The study was conducted between August 2024 and January 2025. In August 2024, a questionnaire was designed on Google Drive and distributed via email. The participants completed the questionnaire at different time points: 103 (N=103) respondents filled it out in September 2024, 25 (N=25) respondents completed it in October 2024, and 23 (N=23) respondents completed it in December 2024. The data obtained in January 2025 was compiled, analysed, and interpreted.

The respondents were informed about the purpose of the questionnaire, the duration of its completion (10-15 minutes), and that the use of the data collected would be in a summary manner. Participation in the study was anonymous and voluntary, and the respondents could withdraw from participation without any explanation.

The study followed four principles of research ethics, which are in line with the European Code of Conduct for Research Integrity (ALLEA, 2023): reliability, which made it possible to ensure the quality of the research at all stages; honesty, which was observed in the planning, conduct, data analysis and interpretation of the research; respect, which was exercised with the participants involved in the study; accountability, which was implemented in the period from the creating of the research idea to publication.

Data Analysis

Cronbach's Alpha was calculated to determine whether each study scale had sufficient reliability. Confidence limits for Cronbach's Alpha coefficient were interpreted based on Darren George and Paul Mallery's (George & Mallery, 2003) views as follows: the internal consistency of scales is excellent if a>.9, good if a>.8, and acceptable if a>.7.

The following measurements were used for each questionnaire statement to describe the data collected: Arithmetic mean (*M*), which represents the average score of all respondents; the standard deviation (*SD*), which determines how much respondents' opinions differ from each other; standard error of the mean (*SE*), which shows how accurate the mean value is; median (*Mdn*), which indicates the average value that is not affected by very large or small values; Skewness (*SKW*), which shows how asymmetric the data distribution is; Kurtosis (*KRT*), which shows the nature of the spread of data, indicating how many extreme values there are in the data set.

Using the Kolmogorov-Smirnov (*K-S*) test ensures that the data is ordinarily distributed and helps to understand which data analysis methods should be applied. The p-value of the Kolmogorov-Smirnov test was less than 0.05 in all cases, which provided

the opportunity to reject the null hypothesis of normal data distribution in the study. The data obtained in the study was analysed for the entire sample. However, because the respondents completed the questionnaire at different times, the non-parametric Kruskal-Wallis test and the Jonckheere-Terpstra test were used to compare the views of respondents and to determine whether statistically significant differences existed between them. Content analysis was used to gather the respondents' comments in the second part of the questionnaire on including musical activities in various subjects.

Results

The study found that the reliability of the research scale measuring the types of musical activities that primary school teachers use in their educational work is good (a=.861), the reliability of the research scale measuring the subjects in which primary school teachers use musical activities is good (a=.865), and the reliability of the research scale measuring primary school teachers' abilities in using musical activities in subjects taught in grades 1-3 is also good (a=.870).

The first research question determined the opinions of primary school teachers about using musical activities in the subjects taught in grades 1-3. Primary school teachers could express their views on six types of musical activity (Table 1), which students learn in music lessons. The respondents highly rated the opportunity to use listening to music (M=5.40, SD=.801, Mdn=6.00; D(151)=.315, p=.000) and improvisation (M=5.25, SD=.905, Mdn=5.00; D(151)=.277, p=.000) in other subjects. The study revealed that listening to music is more popular to be implemented in the classroom among primary school teachers than improvisation. However, the respondents' opinion about using improvisation in primary school subjects was not unambiguous.

Table 1
Using Musical Activities in other Subjects

Types of musical activities	M	SD	SE	Mdn	SKW	KRT
Doing rhythm exercises	5.19	.822	.066	5.00	-1.246	3.420
Chanting	5.00	.945	.076	5.00	-1.200	2.799
Singing	5.16	.934	.076	5.00	-1.382	2.589
Listening to music	5.40	.801	.065	6.00	-1.886	5.866
Playing musical instrument	4.42	1.139	.092	4.00	-.535	.302
Improvisation	5.25	.905	.073	5.00	-1.519	3.298

Source. Own research.

Primary school teachers (N=151) rated their ability to use playing musical instruments in other subjects at the lowest (M=4.42, SD=1.139, Mdn=4.00; D(151)=.176,

p=.000). The relatively low arithmetic mean for playing musical instruments may indicate that respondents have less experience of playing musical instruments than other types of musical activities. There is a significant diversity in primary school teachers' opinions about implementing musical instruments in the subjects. It means that there are teachers who play a musical instrument and would like to use it in teaching other subjects, and there are teachers who do not play musical instruments. Generally, primary school teachers have rated using musical activities in the classroom at a high level, except playing musical instruments, which has been rated at a good level.

The study determined that the opinions of primary school teachers about using musical activities in other subjects differed on the following aspects: doing rhythm exercises ($H(5)=17.492$, $p=.002$; $TJT=4035.00$, $z=-1.339$, $p=.181$), chanting ($H(5)=31.691$, $p=.000$; $TJT=4389.50$, $z=-.064$, $p=.949$), singing ($H(5)=11.608$, $p=.021$; $TJT=4289.00$, $z=-.425$, $p=.671$), listening to music ($H(5)=15.666$, $p=.004$; $TJT=4059.50$, $z=-1.297$, $p=.194$), playing musical instruments ($H(5)=10.446$, $p=.034$; $TJT=4612.50$, $z=.707$, $p=.479$) and improvisation ($H(5)=9.858$, $p=.043$; $TJT=4574.00$, $z=.603$, $p=.547$), however, these differences are not statistically significant in any of the types of musical activity.

The second research question identified the subjects where primary school teachers could use musical activities. Respondents were offered eight subjects taught in grades 1-3 of primary school for evaluation: Latvian, mathematics, English, natural sciences, design and technology, social sciences, visual arts, and sports (Table 2).

Table 2

Subjects in which Teachers Can Use Musical Activities

Subjects	M	SD	SE	Mdn	SKW	KRT
Latvian	5.12	.951	.077	5.00	-1.440	2.529
Mathematics	4.57	1.067	.086	5.00	-.785	1.161
English	5.40	.776	.063	6.00	-1.799	6.034
Natural sciences	4.57	1.073	.087	5.00	-.659	.179
Design and technology	4.09	1.118	.090	4.00	-.169	-.451
Social sciences	4.47	1.130	.091	5.00	-.585	.385
Visual arts	4.92	1.013	.082	5.00	-.864	.506
Sports	5.19	.966	.078	5.00	-1.488	2.722

Source. Own research.

Primary school teachers (N=151) believe that musical activities are most likely to be used in English ($M=5.40$, $SD=.776$, $Mdn=6.00$; $D(151)=.315$, $p=.000$), sports ($M=5.19$, $SD=.966$, $Mdn=5.00$; $D(151)=.260$, $p=.000$) and Latvian ($M=5.12$, $SD=.951$, $Mdn=5.00$; $D(151)=.271$, $p=.000$). The majority of respondents fully agreed that dif-

ferent types of musical activities could be used in these three subjects and at a high level. Respondents acknowledge that:

- Singing in English classes is an effective way to learn the language in an easier way because a fun song will be more memorable than memorising words mechanically;
- Chanting can be used in Latvian language lessons to help children recognise syllables in text;
- Performing physical exercises rhythmically together with singing or listening to a music piece is effective in sports lessons.

Musical activities are the least likely to be used in design and technology classes (M=4.09, SD=1.118, Mdn=4.00; D(151)=.173, p=.000). Also, in the comments, the respondents did not mention any examples describing the use of music in this subject. Respondents believe that using musical activities is at a sufficient but not high level in primary school subjects such as social studies (M=4.47, SD=1.130, Mdn=5.00; D(151)=.184, p=.000), natural sciences (M=4.57, SD=1.073, Mdn=5.00; D(151)=.243, p=.000) and mathematics (M=4.57, SD=1.067, Mdn=5.00; D(151)=.204, p=.000). Those respondents who see the possibilities of using musical activities at good level assume that:

- When learning how to celebrate holidays in social sciences classes, you can learn to sing the relevant holiday song;
- In natural sciences, it is possible to use music to listen to the sounds of nature and sing songs about natural phenomena;
- Make-up and singing songs in mathematics lessons help to remember maths concepts.

None of the respondents considered that the use of musical activities in any of the subjects listed in Table 2 was only at a sufficient or insufficient level.

The study revealed that the primary school teachers differed in their views on using musical activities in natural sciences (H(5)=15.597, p=.004; TJT=4217.00, z=-.662, p=.508), design and technology (H(5)=11.228, p=.024; TJT=4587.00, z=.618, p=.537) social sciences (H(5)=15.374, p=.004; TJT=4762.00, z=1.223, p=.222), however, these differences in opinions were not statistically significant.

The third research question aimed to reveal at what level primary school teachers can use musical activities in the subjects taught in grades 1-3 of primary school. Primary school teachers were asked to rate their abilities to use musical activities in eight subjects (Table 3).

Table 3

Primary School Teachers' Ability to Use Musical Activities

Subjects	M	SD	SE	Mdn	SKW	KRT
Latvian	4.97	1.066	.086	5.00	-1.150	1.700
Mathematics	4.17	1.155	.094	4.00	-.330	-.192
English	5.01	1.110	.090	5.00	-1.431	2.323

Subjects	M	SD	SE	Mdn	SKW	KRT
Natural sciences	4.21	1.241	.101	4.00	-.602	-.059
Design and technology	3.85	1.261	.102	4.00	-.448	-.394
Social sciences	4.08	1.275	.103	4.00	-.476	-.298
Visual arts	4.60	1.119	.091	5.00	-.798	.406
Sports	4.97	1.070	.087	5.00	-1.236	1.459

Source. Own research.

Primary school teachers (N=151) rated at a medium level their ability to use musical activities in design and technology (*M*=3.85, *SD*=1.261, *Mdn*=4.00; *D*(151)=.208, *p*=.000), social sciences (*M*=4.08, *SD*=1.275, *Mdn*=4.00; *D*(151)=.195, *p*=.000), mathematics (*M*=4.17, *SD*=1.155, *Mdn*=4.00; *D*(151)=.193, *p*=.000) and natural sciences (*M*=4.21, *SD*=1.241, *Mdn*=4.00; *D*(151)=.207, *p*=.000). This is related to the ability to see connections between music and other subjects, and how it is possible to create cross-curricular links with music during teaching another subjects.

Primary school teachers rated at a high level their ability to use musical activities in subjects such as English (*M*=5.01, *SD*=1.110, *Mdn*=5.00; *D*(151)=.254, *p*=.000), Latvian (*M*=4.97, *SD*=1.066, *Mdn*=5.00; *D*(151)=.265, *p*=.000), sports (*M*=4.97, *SD*=1.070, *Mdn*=5.00; *D*(151)=.271, *p*=.000) and visual arts (*M*=4.60, *SD*=1.119, *Mdn*=5.00; *D*(151)=.233, *p*=.000).

The study determined that the primary school teachers have different opinions about their ability to use musical activities in Latvian language (*H*(5)=15.597, *p*=.004; *TJT*=4217.00, *z*=-.662, *p*=.508), natural sciences (*H*(5)=15.597, *p*=.004; *TJT*=4217.00, *z*=-.662, *p*=.508), design and technology (*H*(5)=15.597, *p*=.004; *TJT*=4217.00, *z*=-.662, *p*=.508) and social sciences (*H*(5)=15.597, *p*=.004; *TJT*=4217.00, *z*=-.662, *p*=.508), however, these differences are not statistically significant, which allows claiming that the views of primary school teachers who completed the questionnaire at different time points are the same.

Conclusion and Discussion

The results show that primary school teachers believe they can often use musical activities such as listening to music and improvisation in other subjects but consider playing musical instruments the least used in the classroom. Teachers recognise that it is possible to implement all types of musical activity in other subjects taught in grades 1-3 of primary school at a high level, except playing musical instruments, which can be used only at a good level. That is also in line with previous research, which highlighted that teachers have a high level of competence in implementing listening to music in their classes (Svalina & Sukop, 2021), but playing musical instruments is already a problem for students who are studying to become primary school teachers (Begič et al., 2017).

The study determined that primary school teachers believe it is possible to use musical activities at a high level in English as a foreign language, sports, and Latvian as a state language, but at a good level in design and technology, social studies, natural sciences, and mathematics classes. Previous studies have revealed that teachers mainly use music in teaching English as a native and foreign language, mathematics, and sports (Degrave, 2019; King, 2018; O'Keefe, 2015). This study also confirms that languages and sports are the most common subjects in which the implementation of different types of musical activity could be successful. Tarryn S. Lovemore and colleagues determined in their study that linking music and mathematics is a valuable teaching and learning strategy and can be used in teaching fractions (Lovemore et al., 2021). In addition, Nicole Skeen suggests that music could be an effective teaching tool in social studies lessons (Skeen, 2015). However, in this study, the possibility of using music in mathematics and social studies classes was not rated highly by primary school teachers, so it would be necessary to investigate this issue in more depth in future research.

Most primary school teachers assume that they can use musical activities at a high level in several subjects, but English was the most highly rated subject, while design and technology subject was rated the lowest.

The study found a difference in the opinions of the primary school teachers who completed the questionnaire at different time points about implementing musical activities in their classroom, the subjects they use musical activities in, and their ability to use different types of musical activities in subjects taught in grades 1-3, however, this difference was not statistically significant which leads to the conclusion that the data obtained does not depend on the specific workplace where primary school teachers work. The findings provide an opportunity to understand which types of musical activities could be used in grades 1-3 of primary school, as well as in which subjects are most likely to be implemented and at what level primary school teachers evaluated their ability to do so.

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