

## Music in Non-music Subjects Teaching

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*There are numerous benefits that music can contribute to the teaching process, such as more interesting teaching, motivation, easier acquisition of teaching content, and more successful language learning. As part of this work, research was conducted during the 2022/2023 school year through an anonymous on-line survey questionnaire that included eight general education elementary schools in the Republic of Croatia, of which 216 students from the fifth to the eighth grade participated. The goal of the research was to find out the student's opinions in higher grades of the primary general education school on the use of music in the non-musical subjects teaching, as well as possible differences in their opinions with regard to gender and age. The research results showed that music is often used in teaching foreign languages, Fine arts, and Physical and health education, and that classical and popular music is frequently listened to for relaxation and fun. The majority of students would like music to be used more often in the teaching of non-musical subjects. Still, a statistically significant difference in the student's opinions with regard to age and gender has not been determined. The results point to the need to respect the student's wishes and, therefore, more intensive use of music in teaching various subjects, as well as listening to their wishes when choosing music genres.*

**Keywords:** *music, motivation, non-musical subjects teaching, students.*

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## Introduction\*\*\*\*

Motivation moves an individual to achieve a specific goal with regard to his needs, urges, desires, and motives.<sup>1</sup> Motivation is the driving force that encourages a person to act.<sup>2</sup> Motivation is a complex process involving the teacher and the student in the teaching process. The motives that drive the teacher and the student are reflected in the success and final results of the teaching process.<sup>3</sup> A student's motives can be interests and goals they want to achieve through learning, achievements, experiences in a particular field, and learning characteristics. The most common definition of motivation in psychology is when a person feels compelled to act in a specific way to accomplish a particular goal. High motivation encourages learning and positively affects the amount of learning. Therefore, motivation is essential in teaching because it encourages students to engage in learning activities, and it is the most critical factor that can improve the learning process.<sup>4</sup> Namely, motivated students are attentive, active, and happy; they ask questions and are glad to answer them.<sup>5</sup> Motivation can be intrinsic (internal) or extrinsic (external). In terms of education, both are important for success in school, especially intrinsic motivation. Intrinsic motivation refers to everything that internally leads students to learning activities.<sup>6</sup> For an intrinsically motivated person, just participating in the task gives pleasure; in that case, motivation does not depend on material rewards or other external factors.<sup>7</sup> Intrinsic motivation is a response to the student's internal needs, such as curiosity, a need for knowledge, feelings of competence, and growth and development.<sup>8</sup> Extrinsic motivation affects the student from the outside, such as a high grade or reward. Extrinsically motivated people

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<sup>1</sup> Cf. Josip JAKŠIĆ, *Motivacija. Psihopedagoški pristup* [Motivation. Psycho-pedagogical Approach], *Kateheza*, 25 (2003) 1, 5-16, 5; Sandra GRAHAM, Shari GOLAN, Motivational influences on cognition: Task involvement, ego involvement, and depth of information processing, *Journal of Educational Psychology*, 83 (1991) 2, 187-194, 187.

<sup>2</sup> Cf. Dharmvir M. GURJAR, Motivation: A Psychological Perspective, *International Journal of Advanced Research in Science, Communication and Technology*, 2 (2022) 1, 140-142, 140.

<sup>3</sup> Cf. Honghui ZOU et al., The influence of teachers' intrinsic motivation on students' intrinsic motivation: The mediating role of teachers' motivating style and teacher-student relationships, *Psychology in the Schools*, 61 (2023) 1, 272-286, 274.

<sup>4</sup> Cf. Dale H. SCHUNK, Judith L. MEECE, Paul PINTRICH, *Motivation in education: Theory, research, and applications*, Harlow, Pearson New International Edition, 2014, 5.

<sup>5</sup> Cf. Caro WILLIAMS-PIERCE, Five Key Ingredients for Improving Student Motivation, *Research in Higher Education Journal*, 12 (2011) 104-122, 105.

<sup>6</sup> Cf. Schunk et al., *Motivation in education...*, 3.

<sup>7</sup> *Ibid.*

<sup>8</sup> Cf. Gurjar, *Motivation: A Psychological Perspective...*, 140.

participate in tasks because they believe it leads to positive outcomes or avoids negative consequences if they do not complete the task.<sup>9</sup>

Student motivation is the first fundamental prerequisite for understanding and acquiring new content.<sup>10</sup> For this reason, teaching subject methodologies have developed motivational procedures to initiate student motivation in specific teaching situations.<sup>11</sup> Therefore, the lesson's success depends on the conception of the introductory part of the lesson, which plays a key role in motivating students.<sup>12</sup> The environment in the classroom and the interactions between the students and teachers also have an impact on student motivation. If the teacher continuously encourages students and motivates them to learn with his work, then students will achieve better results, and students and teachers will be more satisfied.<sup>13</sup> At least five types of student motivation can be observed in the class: 1) generally unmotivated students – no form of motivation is successful, nothing succeeds in encouraging them to learn because all goals are outside of school; 2) extrinsic students – they are motivated by the expectation of a reward and are motivated only by external rewards; 3) internalized students – they are sensitive to internalized values that are imposed from the beginning and later accepted, such as knowledge being valuable; 4) generally motivated students – all forms of motivation affect them: external rewards, interesting materials, internalized values; 5) intrinsic students – they are motivated by the interestingness and complexity of the material, enjoy obstacles, and overcoming problems.<sup>14</sup> Therefore, the teacher should include motivational techniques that increase students' interest in work. Crosswords, associations, quizzes, fillers, mental maps, rebuses, riddles, short videos, sketches, mime, pantomime, objects, clothes, balls, dolls, models, and various games (treasure hunt, etc.), drawings, quotes, metaphors, anecdotes, brainstorming, etc. can be used for the above purpose. There are also special motivational techniques that are used when students relax and take a short break, such as relaxation with music, breathing exercises with movement such as getting up, changing the seating arrangement, etc., or meditation, i.e., relaxation with an emphasis on the power of words.<sup>15</sup>

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<sup>9</sup> *Ibid.*

<sup>10</sup> Cf. Jakšić, *Motivacija...*, 11.

<sup>11</sup> Cf. Theresa Ebieri DORGU, Different Teaching Methods: A Panacea for Effective Curriculum Implementation in the Classroom, *International Journal of Secondary Education. Special Issue: Teaching Methods and Learning Styles in Education*, 3 (2015) 6-1, 77-87, 77.

<sup>12</sup> Cf. Analyn D. PULANA, Rexomar D. PEREZ, Motivational Strategies of Teachers in Relation to Learners' Academic Performance, *International Journal of Multidisciplinary Research and Analysis*, 5 (2022) 1, 225-235, 226.

<sup>13</sup> Cf. Vlado ANDRILOVIĆ, Mira ČUDINA-OBRAĐOVIĆ, *Psihologija učenja i nastave: Psihologija odgoja i obrazovanja III [Psychology of Learning and Teaching: Educational Psychology III]*, Zagreb, Školska knjiga, 1985, 134-135.

<sup>14</sup> *Ibid.*, 66-57.

<sup>15</sup> Cf. Danijela TRŠKAN, Motivacijske tehnike u nastavi [Technics of classroom motivation], *Povijest u nastavi*, 4-7 (2006) 1, 19-28, 20.

## 1. *Music as motivation*

Music affects the student's emotions, respiratory system, body posture, heart rate, and mental images.<sup>16</sup> Because of all of the above, it is possible to use music in teaching non-musical subjects for motivation. Due to the use of music in classes, students will be more successful, but they will also feel better.<sup>17</sup> Šulentić Begić and Špoljarić emphasize three reasons for using music in teaching non-music subjects.<sup>18</sup> The first reason would be the occasional abandonment of the subject model because the child does not observe the world around him from the point of view of individual subjects or areas but holistically, i.e., the world affects him as a whole. As another reason, they cite the opinion that music not only develops musical abilities but also helps the development of intellectual (inference, analysis, memory, abstraction, and understanding) and motor (speed, coordination, and precision) abilities. As a third reason, they point out that the presence of music contributes to the interestingness and variety of teaching methods. Also, fun is a reason for using music in teaching because fun learning can improve learning efficiency and interaction between teachers and students.<sup>19</sup> Elida points out that in the teaching process music can be used to 1) organize the »heart condition«, 2) increase the results expected from students, and 3) notice important facts. The »heart condition« influences the achievement of good learning results. The feelings of happiness, comfort, and relaxation allow the children's brains to work more slowly, which enables students to remember information more easily. In this case, listening to music relaxes, heart rate decreases, and muscles relax.<sup>20</sup>

In the teaching of non-musical subjects, music can be used as a background (quiet music can be listened to during the student's presentation), for brainstorming, for creative problem solving, for introducing a new student, for telling stories, for creative writing, and reflection and relaxation.<sup>21</sup> Also, music-rhythm activities can be used, i.e., games with rhythms, so that the teacher starts a rhythmic pattern by clapping his hands, and students, one after the

<sup>16</sup> Cf. Eric JENSEN, *Super-nastava: nastavne strategije za kvalitetnu školu i uspješno učenje* [Super-Teaching: Teaching Strategies for Quality Education and Successful Learning], Zagreb, Educa, 2003, 221.

<sup>17</sup> Cf. Jensen, *Super-nastava...*, 222.

<sup>18</sup> Cf. Jasna ŠULENTIĆ BEGIĆ, Božica ŠPOLJARIĆ, Glazbene aktivnosti u okviru neglazbenih predmeta u prva tri razreda osnovne škole [Musical Activities within Non-Musical Subjects in the First Three Grades of Primary School], *Napredak*, 152 (2011) 3-4, 447-462, 460.

<sup>19</sup> Cf. Gregory J. CROWTHER, Edmund ADJAPONG, Lekelia D. JENKINS, Teaching science with the »universal language« of music: alignment with the Universal Design for Learning framework, *Advances in physiology education*, 47 (2023), 491-498, 493.

<sup>20</sup> Cf. Elida ELIDA, The Influence of Music and Learning Motivation to the Results of Learning the Productive Practice in Vocational High School Tourism Group, *Innovation of Vocational Technology Education*, 14 (2018) 1, 11-16, 14.

<sup>21</sup> Cf. Jensen, *Super-nastava...*, 224-225.

other, continue the sequence passed on to the next student until the rhythmic pattern spreads throughout the class. Games like this are perfect for developing students' memory.<sup>22</sup> Music in non-musical subjects helps to create a special mood for students. Teachers use it most often at the beginning of the lesson and during breaks, mainly as a background sound. However, it can also be used as an aid or addition to relaxation exercises, especially before assessment, as motivation for new teaching content and for repeating familiar content.<sup>23</sup> Music not only provides students with a motivating environment for learning but also serves to focus attention.<sup>24</sup> Music also can positively affect learning motivation. Education enriched with music is connected with motivation to learn.<sup>25</sup> Music in teaching non-music subjects is most often used as a means of motivation, a soundscape, and a means of relaxation.<sup>26</sup>

Regarding the use of music in teaching specific non-musical subjects, music is recognized as a means of learning a foreign language. There are three ways: 1) a song that has content related to the topic of the lesson; 2) singing a song that is used for grammar or vocabulary content; and 3) music as a basis for learning a foreign language. It means that music gives the teacher a sense of effective class management.<sup>27</sup> Also, there is an impact of listening to music on the motivation to learn a foreign language.<sup>28</sup> Mozart's music improves foreign language learning, i.e., students concentrate better and read more successfully with music.<sup>29</sup> Singing songs in a foreign language has multiple benefits in the early learning of a foreign language because it helps to develop the language skills of listening, speaking, reading, writing, and singing.<sup>30</sup> Singing songs positively affects articulation, diction, intonation, clarity of language expression,

<sup>22</sup> Cf. Šulentić Begić, Špoljarić, *Glazbene aktivnosti...*, 452.

<sup>23</sup> Cf. Julia VIGL et al., Melody for the Mind: Enhancing Mood, Motivation, Concentration, and Learning through Music Listening in the Classroom, *Music & Science*, 6 (2023) 1-13, 8.

<sup>24</sup> Cf. Michelle LAZAR, *Interactive Strategies for Using Music in the Academic Curriculum*, <https://www.songsforteaching.com/lazar/interactivestrategies.htm> (23.06.2025).

<sup>25</sup> Cf. Bahar BAYLAROVA-ALAKBAROVA, The Impact of Music on The Education Motivation in Adolescents, *Academia Eğitim Araştırmaları Dergisi*, 7 (2022) 1, 1-6, 1.

<sup>26</sup> Cf. Šulentić Begić, Špoljarić, *Glazbene aktivnosti...*, 451-452.

<sup>27</sup> Cf. Mohammad Saber KHAGHANINEJAD, Rahim FAHANDEJSAADI, *Music and Language Learning*, Shiraz, Shiraz University, 2016, 5

<sup>28</sup> Cf. Francesca TALAMINI et al., Learning a second language: Can music aptitude or music training have a role?, *Learning and Individual Differences*, 64 (2018) 1-7, 5.

<sup>29</sup> Cf. Mohammad Saber KHAGHANINEJAD, Hossein SAADABADI MOTLAGH, Ramin CHAMACHAM, How does Mozart's music affect the reading comprehension of Iranian EFL Learners of both genders? *Journal of Humanities and Cultural Studies*, (2016) Special May, 488-499, 496.

<sup>30</sup> Cf. Jasna ŠULENTIĆ BEGIĆ, Dubravka PAPA, Rano učenje njemačkoga jezika pjevanjem i slušanjem pjesama [Early German Language Teaching by Singing and Listening to Songs], u: Dubravka SMAJIĆ, Valentina MAJDENIĆ (ur.), *Dijete i jezik danas: dijete i mediji: zbornik radova* [Child and Language Today: Child and Media: Conference Proceedings], Osijek, Fakultet za odgojne i obrazovne znanosti Sveučilišta Josipa Jurja Strossmayera u Osijeku, 2015, 229-249, 245.

pronunciation, and fluency. Melody, rhythm, scales, intervals, harmony, and tuning instruments are musical concepts that are related to mathematical concepts related to whole numbers, logarithms, arithmetic operations, and proportions. Therefore, the listed contents can be a link between the teaching of Mathematics and Music.<sup>31</sup> In Fine arts classes, students can use colors, strokes, spots, and surfaces to depict a musical atmosphere. Students can be directed to paint high musical tones with lighter tones, while deep musical tones can be described with darker tones of color. Students can recognize and show rhythm and tempo while listening to music during artistic creation.<sup>32</sup> Regarding the representation of music in the teaching of non-musical subjects, music in the teaching of lower grades of primary school is most represented in the teaching of Nature, followed by Physical and health education and Croatian, then Fine arts, while it is not represented at all in Mathematics classes. The reason for this is the common opinion that mathematics is a »serious« subject. However, given that mathematics is complicated for most students, Šulentić Begić and Špoljarić believe it should be »combined« with musical activities for motivational and recreational reasons.<sup>33</sup> In the teaching of non-musical subjects, the majority of teachers listen to music, sing songs, perform musical games, and dance. In the teaching of Croatian as a mother language, music is used to announce the lesson's topic, motivate conversation and relaxation, and as a sound background. In Physical and health education classes, music serves as motivation at the beginning, for relaxation at the end of the class, and as a sound backdrop during exercise. In the Nature and Society classes, music serves as motivation for working on a new topic, relaxation, and as a sound background, while in the Fine arts classes, music is used as motivation for the topic of the class and as a sound background during the class.<sup>34</sup>

## 2. Research

### 2.1. Research objective, research questions, and hypotheses

The goal of the research was to find out the student's opinions of the higher grades of the primary general education school on the use of music in the teaching of non-musical subjects, as well as possible differences in their opin-

<sup>31</sup> Cf. Song AN, Mary Margaret CAPRARO, Daniel A. TILLMAN, Elementary Teachers Integrate Music Activities into Regular Mathematics Lessons: Effects on Students' Mathematical Abilities, *Journal for Learning through the Arts*, 9 (2013) 1, 1-19, 2.

<sup>32</sup> Cf. Renata SAM, *Glazbeni doživljaj u odgoju djeteta* [Musical Experience in Raising a Child], Rijeka, Glosa, 1998, 12.

<sup>33</sup> Cf. Šulentić Begić, Špoljarić, *Glazbene aktivnosti...*, 459.

<sup>34</sup> *Ibid.*

ions with regard to gender and age. The research was based on the following research questions and hypotheses:

RQ1: According to the student's opinions, in teaching which non-musical subjects and for what purpose is music used?

RQ2: According to the students' opinions, what musical activities and what types of music are used in teaching non-musical subjects?

H1: There is no statistically significant difference in students' opinions on using music in teaching non-musical subjects regarding gender.

H2: There is no statistically significant difference in students' opinions on using music in teaching non-musical subjects regarding age.

## 2.2. Research methodology

### 2.2.1. Sample and data collection procedure

The research was conducted in the 2022/2023 school year and included 216 students from the fifth to the eighth grade of the primary general education school. The sample is described in Table 1. The research was conducted by surveying a convenient sample of eight schools from four counties in Croatia. The survey was conducted anonymously with an online questionnaire with the prior consent of the parents. Written parental consent was requested and obtained to ensure compliance with ethical guidelines.<sup>35</sup> The students need an average of six minutes to finish the questionnaire provided by the music teachers.

Table 1 shows that 216 students participated in the research, of whom 119 were girls (55.1%) and 97 were boys (44.9%). To compare according to age, the students were grouped into a younger group (fifth and sixth grade) and an older group (seventh and eighth grade). A total of 132 students from the younger group and 84 students from the older group participated.

Table 1. Description of the sample (N=216)

| Variables | Categories   | Students (N=216) |      |
|-----------|--|------------------|------|
|           |  | f*               | %    |
| gender    | male   | 97               | 44.9 |
|           | female   | 119              | 55.1 |
| age       | younger students (5 <sup>th</sup> and 6 <sup>th</sup> grade) | 132              | 61.1 |
|           | older students (7 <sup>th</sup> and 8 <sup>th</sup> grade)   | 84               | 38.9 |

<sup>35</sup> Cf. Marina AJDUKOVIĆ, Gordana KERESTEŠ (ur.), *Etički kodeks istraživanja s djecom* [Code of Ethics for Research with Children], Zagreb, Ministarstvo rada, mirovinskoga sustava, obitelji i socijalne politike Republike Hrvatske, drugo revidirano izdanje, 2020, <https://mrosp.gov.hr/UserDocsImages/dokumenti/Socijalna%20politika/Obitelj%20i%20djeca/Eti%C4%8Dki%20kodeks%20istra%C5%BEivanja%20s%20djecom%20-%20integrirani%20tekst%20s%20prilozima.pdf>.

### 2.2.2. Instrument and statistical procedure

The anonymous survey questionnaire contained questions to determine the participants' sociodemographic characteristics (gender and age). With two items in multiple-choice questions, students were asked to declare in which non-musical subjects music is used and for what purpose. Also, with two items in the form of multiple-choice questions, the research participants were asked to declare what musical activities and types of music are used in teaching non-musical subjects. The instrument that measured student's opinions on the use of music in teaching non-musical subjects consisted of nine items in the form of a five-point Likert scale. The reliability of the measuring instrument is acceptable, given that the value of Cronbach's alpha coefficient is 0.862. Gender and age were treated as independent variables. Of the total of 20 items from the original questionnaire, 15 were analyzed for the purposes of this research. The remaining five items were omitted because they were not directly related to the aim of the study, research questions, and hypotheses.

The Mann-Whitney U test was used to process quantitative data to determine possible statistically significant differences in student's opinions regarding sociodemographic variables. Namely, a non-parametric test was used due to the violation of the normality of the distribution, which was determined using the Kolmogorov-Smirnov and Shapiro-Wilk tests. The data were processed using the SPSS 25 computer statistical package.

## 3. Results and Discussion

In the first part of the questionnaire, students were asked to answer two questions to find out which non-musical subjects' music is used for and for what purpose. The answers are visible in Tables 2 and 3.

Table 2. Non-musical subjects in which music is used

| Subject                       | Students (N=216) |      |
|-------------------------------|------------------|------|
|                               | f*               | %    |
| Croatian                      | 72               | 33.3 |
| English                       | 144              | 66.7 |
| German                        | 66               | 30.6 |
| Mathematics                   | 13               | 6    |
| Physical and health education | 78               | 36.1 |
| Fine arts                     | 114              | 52.8 |
| History                       | 3                | 1.4  |
| Physics                       | 11               | 5.1  |
| Technical culture             | 5                | 2.3  |
| Religious studies             | 3                | 1.4  |

As seen in Table 2, two-thirds of the students said that music is used in English classes, and slightly more than half said it is used in Fine arts classes. About a third of the students said the same for Croatian, German, and Physical and health education subjects. Among the other subjects in which music is used, the students mentioned Mathematics, History, Physics, Technical culture, and Religious studies. The frequent use of music in English teaching is not surprising, given that various studies<sup>36</sup> have established numerous benefits of using music in foreign language teaching.

Table 3. The purpose of using music in non-music subjects

| Purpose       | Students (N=216) |      |
|---------------|------------------|------|
|               | f*               | %    |
| motivation    | 97               | 44.9 |
| relaxation    | 145              | 67.1 |
| concentration | 52               | 24.1 |
| fun           | 126              | 58.3 |
| better mood   | 98               | 45.4 |

More than two-thirds of students think that music in non-musical subjects is used for relaxation, and more than half believe it is used for fun (Table 3). Less than half of the students cited motivation and a better mood as their purpose, while a little less than a quarter cited concentration. The results are not in accordance with the results of other study,<sup>37</sup> in which teachers stated that they most often use music to motivate students in teaching non-musical subjects. The differences are understandable, given that this research examined the student's opinions.

In response to the first research question RQ1 According to the student's opinions, in teaching which non-musical subjects and for what purpose is music used? we can conclude that, according to the students, music is most often used in teaching foreign languages, Fine arts, and Physical and Health Education. At the same time, students think that relaxation and fun are the most common purposes of using music.

In the continuation of the questionnaire, students expressed their opinions about musical activities and music genres used to teach non-musical subjects (Tables 4 and 5).

<sup>36</sup> Cf. Talamini et al., *Learning a second language...*; Khaghaninejad, Fahandejsaadi, *Music and Language Learning...*; Khaghaninejad et al., *How does Mozart's music affect...*; Šulentić Begić, Papa, *Rano učenje njemačkoga jezika...*

<sup>37</sup> Cf. Šulentić Begić, Špoljarić, *Glazbene aktivnosti...*, 459.

Table 4. Musical activities in the teaching of non-musical subjects

| Musical activities | Students (N=216) |      |
|--------------------|------------------|------|
|                    | f*               | %    |
| singing            | 63               | 29.2 |
| listening to music | 184              | 85.2 |
| dance              | 61               | 28.2 |

The most significant number of students (85.2%) stated that teachers of non-music subjects prefer listening to music as an activity (Table 4). Only a little more than a quarter of the students mentioned singing and dancing. The obtained result is not surprising because, for teachers who are not trained in music, listening to music is the simplest musical activity and is in line with the results of some earlier research.<sup>38</sup> In addition, listening to music is today the most widespread musical activity in everyday life.<sup>39</sup>

Table 5. Music genres in the teaching of non-musical subjects

| Music genre | Students (N=216) |      |
|-------------|------------------|------|
|             | f*               | %    |
| classical   | 100              | 46.3 |
| popular     | 98               | 45.4 |
| traditional | 83               | 38.4 |
| jazz        | 29               | 13.4 |
| other       | 3                | 1.4  |

As seen from Table 5, an equal number of students, slightly less than half, stated that teachers of non-musical subjects use classical and popular music. More than a third of the students mentioned traditional music, and almost every seventh student mentioned jazz. One student mentioned children's music and spiritual music.

To answer the research question RQ2 According to the students' opinions, what musical activities and what types of music are used in teaching non-musical subjects? we can conclude that listening to music is the most commonly used musical activity in teaching non-musical subjects. Also, the students mentioned classical and popular music as the ones that are used the most.

In the second part of the questionnaire, students were asked, using answers to statements on a five-point Likert scale, to find out their attitudes about using music in teaching non-musical subjects (Table 6). At the same time, the Mann-Whitney U test was used to check for possible statistically significant differences in the student's opinions with regard to gender and age group (Tables 7 and 8).

<sup>38</sup> Cf. Šulentić Begić, Špoljarić, *Glazbene aktivnosti...*, 459.

<sup>39</sup> Cf. Thomas SCHÄFER et al., The psychological functions of music listening, *Frontiers in Psychology*, 4 (2023) 1-33, 1.

Table 6. Student’s opinions on the use of music in the teaching of non-musical subjects

| Claim  | Students (N=216) |      |
|--|------------------|------|
|  | M                | SD   |
| I like it when the teacher uses music.                             | 4.33             | 0.94 |
| Music helps me to relax.   | 4.12             | 1.13 |
| I would like that music be used more often in class.               | 4.06             | 1.19 |
| When we use music, it motivates me to work.                        | 3.93             | 1.16 |
| I think that music should be used in the teaching of all subjects. | 3.58             | 1.38 |
| Music helps me to learn more easily.                               | 3.34             | 1.39 |
| Music helps me to concentrate better.                              | 3.27             | 1.33 |
| I like the music that the teachers choose for the lessons.         | 3.18             | 1.28 |
| Teachers often use music.  | 2.91             | 1.19 |

Table 6 shows that most students like the use of music in teaching non-musical subjects and would like music to be used more often in teaching. They simultaneously expressed a neutral opinion regarding the teacher’s music selections and the frequency of music use. Regarding music’s influence on class participation, students rated its relaxing and motivational role the best and somewhat less as an aid to learning and concentration. Finally, the students expressed slightly positive opinions about using music in teaching all subjects.

To verify hypothesis H1 There is no statistically significant difference in students’ opinions on using music in teaching non-musical subjects regarding gender, the obtained results were compared (Table 7).

Table 7. Mann-Whitney U test of differences in opinions with regard to gender

| Claim  | Gender            |                 | Mann<br>Whitney U | Z     | p-value |
|--|-------------------|-----------------|-------------------|-------|---------|
|  | Female<br>(N=119) | Male<br>(N=97)  |                   |       |         |
|  | Rank<br>average   | Rank<br>average |                   |       |         |
| I like it when the teacher uses music.                             | 113.77            | 102.04          | 5144.500          | 1.541 | 0.123   |
| When we use music, it motivates me to work.                        | 114.09            | 101.64          | 5106.500          | 1.533 | 0.125   |
| Teachers often use music.  | 102.48            | 115.88          | 5055.500          | 1.615 | 0.106   |
| Music helps me to learn more easily.                               | 111.17            | 105.23          | 5454.000          | 0.713 | 0.476   |
| Music helps me to concentrate better.                              | 110.77            | 105.72          | 5501.500          | 0.606 | 0.544   |
| Music helps me to relax.   | 112.28            | 103.87          | 5322.000          | 1.067 | 0.286   |
| I like the music that the teachers choose for the lessons.         | 108.92            | 107.99          | 5722.000          | 0.111 | 0.912   |
| I would like that music be used more often in class.               | 114.08            | 101.65          | 5107.000          | 1.574 | 0.115   |
| I think that music should be used in the teaching of all subjects. | 113.35            | 102.55          | 5194.000          | 1.308 | 0.191   |

\*statistical significance up to 5%; \*\*statistical significance up to 1%; \*\*\*statistical significance up to 0.1%

As seen in Table 7, girls express more positive opinions on the use of music in teaching non-musical subjects. However, the Mann-Whitney U test results showed no statistically significant difference between the genders of students in how they felt about using music to teach subjects other than music. Because of that, hypothesis H1 was accepted. Namely, the average of the ranks does not indicate statistically significant differences.

Finally, the obtained results were compared to verify the second hypothesis H2 There is no statistically significant difference in students' opinions on using music in teaching non-musical subjects regarding age (Table 8).

Table 8. Mann-Whitney U test of differences in opinions with regard to age

| Claim  | Age  |   | Mann<br>Whitney U | Z     | p-value  |
|--|--|---|-------------------|-------|----------|
|  | Younger<br>students<br>(5 <sup>th</sup> and<br>6 <sup>th</sup> grade)<br>(N=132) | Older<br>students<br>(7 <sup>th</sup> and<br>8 <sup>th</sup> grade)<br>(N=84) |                   |       |          |
|  | Rank<br>average  | Rank<br>average   |                   |       |          |
| I like it when the teacher uses music.                             | 110.00   | 106.14  | 5346.000          | 0.496 | 0.620    |
| When we use music, it motivates me to work.                        | 108.02   | 109.26  | 5480.000          | 0.151 | 0.880    |
| Teachers often use music.  | 121.84   | 87.54   | 3783.000          | 4.054 | 0.000*** |
| Music helps me to learn more easily.                               | 111.22   | 104.23  | 5185.500          | 0.821 | 0,412    |
| Music helps me to concentrate better.                              | 107.92   | 109.42  | 5467.000          | 0.176 | 0.860    |
| Music helps me to relax.   | 109.58   | 106.80  | 5401.000          | 0.346 | 0.729    |
| I like the music that the teachers choose for the lessons.         | 120.08   | 90.31   | 4016.000          | 3.498 | 0,000*** |
| I would like that music be used more often in class.               | 110.53   | 105.32  | 5276.500          | 0.647 | 0.518    |
| I think that music should be used in the teaching of all subjects. | 112.04   | 102.94  | 5077.000          | 1.080 | 0.280    |

\*statistical significance up to 5%; \*\*statistical significance up to 1%; \*\*\*statistical significance up to 0.1%

For most statements, both younger and older students expressed equal opinions, which is evident in the comparison of average ranks (Table 8). Nevertheless, a statistically significant difference was observed between the two claims. Younger students agree more with the statement that teachers often use music to teach non-musical subjects. The more difficult teaching content of various subjects in primary school's final grades may help explain the difference in opinions. Also, younger students like the teacher's choice of music

much more. Younger children are more receptive to various types of music,<sup>40</sup> which can account for the difference above.

Considering the obtained results, hypothesis H2 There is no statistically significant difference in students' opinions on using music in teaching non-musical subjects regarding age is accepted.

### *Conclusion*

The research results showed that, according to the students, music is most often used in teaching foreign languages, Fine arts, and Physical and Health education. At the same time, students think that relaxation and fun are the most common purposes of using music. Moreover, among the musical activities employed in the instruction of non-musical subjects, students report that listening to music is the most frequently utilized. Also, the students mentioned classical and popular music as the ones that are used the most. Most students like the use of music in teaching non-musical subjects and would like to see music used more often in the teaching. The students simultaneously expressed a neutral opinion regarding the frequency of music use and whether they enjoyed the music the teacher had chosen. Regarding the influence that music has on their participation in classes, the students rated its relaxing and motivational role the best and slightly less as an aid to learning and concentration. The students expressed a slightly positive opinion on the use of music in the teaching of all subjects. Finally, a statistically significant difference in the student's opinions on the use of music in teaching non-musical subjects with respect to age and gender was not established.

The results point to the need to respect the student's wishes and, therefore, more intensive use of music in teaching various subjects, as well as listening to their wishes when choosing music genres. Cooperation between teachers of non-music subjects and music teachers would undoubtedly have a positive effect. There are numerous benefits that music can contribute to the teaching process, such as more interesting teaching, motivation, easier acquisition of teaching content, more successful language learning, etc., and teachers should try to take advantage of this. Also, research, including systematic observation of classes, would give a more objective and complete insight into the researched issue.

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<sup>40</sup> Cf. Snježana DOBROTA, Marija SARAJČEV, Glazbene preferencije učenika prema klasičnoj glazbi 20. stoljeća i glazbama svijeta – hipoteza otvorenosti [Students' Musical Preferences for Classical Music, 20<sup>th</sup> Century Music, and World Music – The Open-Earedness Hypothesis, *Školski vjesnik*, 70 (2021) 1, 11-25, 18.

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*Glazba u neglazbenim predmetima*

Sažetak

Brojne su prednosti kojima glazba može doprinijeti nastavnom procesu, kao što su zanimljivija nastava, motivacija, lakše usvajanje nastavnih sadržaja i uspješnije učenje jezika. U ovom je radu provedeno istraživanje tijekom školske godine 2022./2023. putem anonimnog *online* anketnog upitnika. Istraživanje je obuhvatilo osam općeobrazovnih osnovnih škola u Republici Hrvatskoj, a u njemu je sudjelovalo 216 učenika od petog do osmog razreda. Cilj istraživanja bio je ispitati mišljenja učenika viših razreda osnovne škole o korištenju glazbe u nastavi neglazbenih predmeta, kao i moguće razlike u mišljenjima s obzirom na spol i dob. Rezultati ukazuju na to da se glazba često koristi u nastavi stranih jezika, Likovne kulture i Tjelesne i zdravstvene kulture. Također je utvrđeno da se umjetnička i popularna glazba često sluša za opuštanje i zabavu. Većina učenika izrazila je želju da se glazba češće koristi u nastavi neglazbenih predmeta. Ipak, nije utvrđena statistički značajna razlika u mišljenjima učenika s obzirom na dob i spol. Rezultati ukazuju na potrebu uvažavanja želja učenika, intenzivnijeg korištenja glazbe u nastavi različitih predmeta, kao i osluškivanja njihovih želja pri odabiru glazbenih žanrova.

*Ključne riječi: glazba, motivacija, nastava neglazbenih predmeta, učenici.*

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