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# Evaluation Report

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of project:

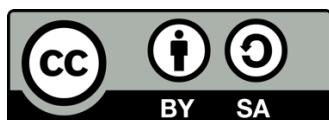
„New Digital Skills for Music Education”

implemented under Key Action 2  
of Erasmus+: Cooperation Partnerships



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Polish Chamber Musicians' Association

Accademia di Musica Pinerolo

2023

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## Introduction

**The report is a summary of a survey on a new digital solution for musicians called "DIGI ORCHESTRA".**

"DIGI ORCHESTRA" is a kind of instrument intended for a soloist-instrumentalist to replace a live orchestra. Thanks to the use of artificial intelligence, the solution can effectively accompany the student in learning and concert performance. In other words, it is a digital tool that will allow the soloist to have a virtual orchestra but focused on individual interpretation and adapted to the needs of the student.

The conducted survey is informative and educational.

The purpose of the survey was:

- Gathering information that will help to better organize the project.
- Gathering information about alternatives to live orchestra digital solutions used by musicians/instrumentalists.
- Collecting information on the demand for digital tools simulating an orchestra.
- Collecting information about the importance of conducting pre-concert rehearsals without the involvement of a live orchestra.

200 people associated with the music community took part in the survey.

## Results

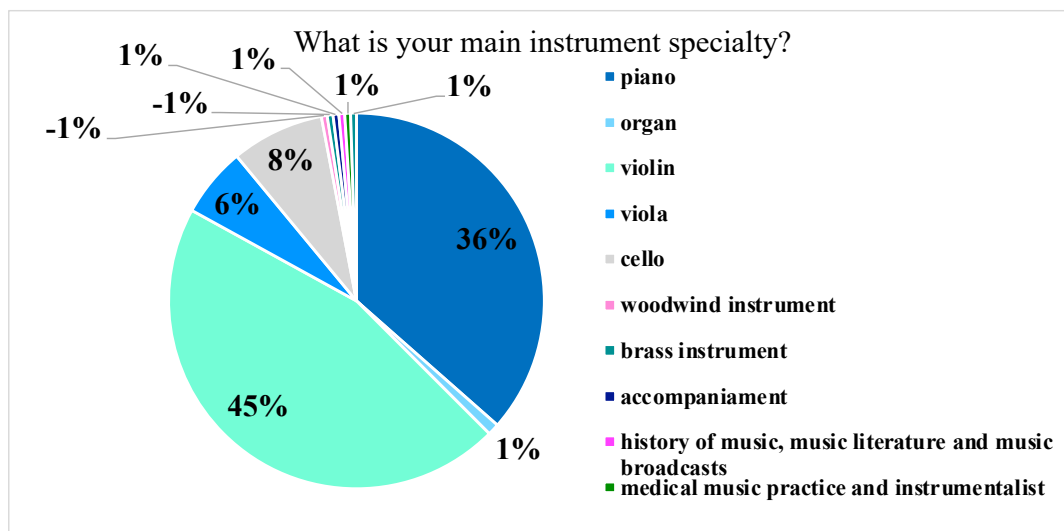
### Description and analysis of research tools

Survey for music teachers, musicians, instrumentalists, people associated with the music industry:

The online survey was conducted from December 2022 to January 2023. 200 respondents from all over Poland participated in the survey (all respondents completed the survey). Respondents answered 20 single-choice or multiple-choice questions, and one with a place to enter the answer themselves. The purpose of the survey was open, and the submissions were voluntary. The requirement that the respondents had to meet to be able to answer the questions was their broadly understood relationship with the musical community (among them: teachers and management staff from primary and secondary music schools, academic teachers, performing musicians).

#### Question No. 1

Most of the respondents, 45% (91 people), specialize in playing the violin, slightly less, 36% (73 people) in playing the piano. The remaining respondents declared specialization in the game: cello 8% (16 people), viola 6% (12 people), organ >1% (2 people), brass instrument <1% (1 person), wind instrument wooden <1% (1 person), accordion <1% (1 person), accompaniment <1% (1 person). Among the other specializations, the following were also distinguished: music history, music literature and music broadcasts <1% (1 person) and medical music practice and instrumental studies <1% (1 person).



Question No. 2

Most of the respondents (92%) declared that the dominant profile in their activity is teaching to play an instrument. The others also included: being an active musician - performer (46%), organizer of concerts and other artistic events (>18%), performing other musical activities (>11%), performing other non-musical activities (>4%), being a student/ student (<1%), orchestra musician and teacher (<1%), school principal (<1%), deputy school principal (<1%), accompanist (<1%), active teacher and school principal (<1%) %).

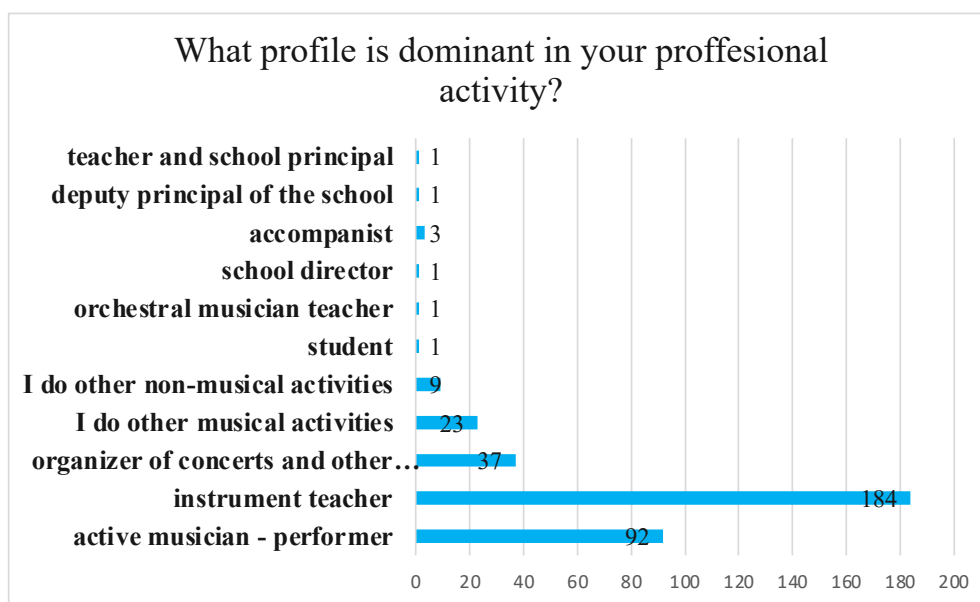


Chart No. 2 Predominant profile in professional activity.

Question No. 3

In the third question, the respondents indicated the frequency of the possibility of soloists playing with orchestral accompaniment in the education process, excluding performances organized at the end of the academic/school year. 112 people (56%) of the respondents answered "zero", which meant that such a possibility does not occur at all, 71 people (>35%) answered that such a possibility occurs 1-4 times, 11 people (>5%) that such a possibility occurs in the range of 5-10 times, while only 6 people (3%) answered that such a possibility occurs more than 10 times.

Apart from the performance essays at the end of the academic year, how many opportunities were there, in the training course, to deal with the repertoire for solo instrument and orchestra effectively with orchestral accompaniment?

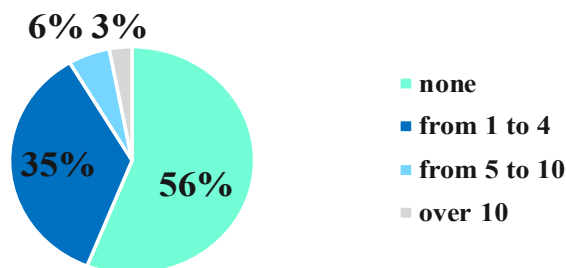


Chart No. 3 The frequency of the possibility of playing with accompaniment in the teaching process.

#### Question No. 4

To the question “how – on the basis of your teaching experience – was the repertoire for solo instrument and orchestra taught and explored (except for the last rehearsals before a public performance)” the answers were as follows: with a pianist-accompanist 185 people (69%), solo 47 people (18%), with a recording (10%) and with an orchestra of 9 people (3%).

In the previous teaching experience, the repertoire for solo instrument and orchestra (apart from the final rehearsals in view of a public performance) has normally been addressed and studied with which of these means:

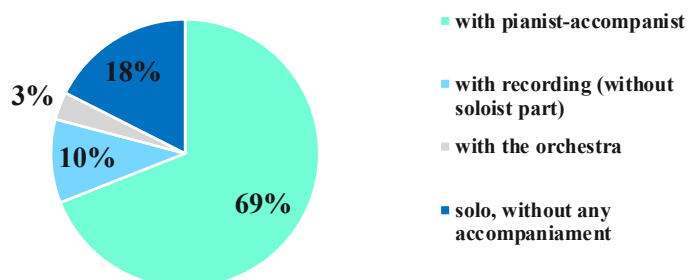


Chart No. 4 How the repertoire for solo instrument and orchestra was taught and explored.

#### Question No. 5

In the fifth question, the respondents assessed the degree of usefulness of a digital orchestra faithfully reflecting the sound while accompanying the soloist. Such a solution was considered significantly useful by 68% of the respondents (136 people), necessary by <19% (37 people), somewhat useful by 12% (24 people) and useless by >1% (3 people).

How useful do you think is an orchestra reproduced with high fidelity loudspeakers that actively accompanies a solo performer?

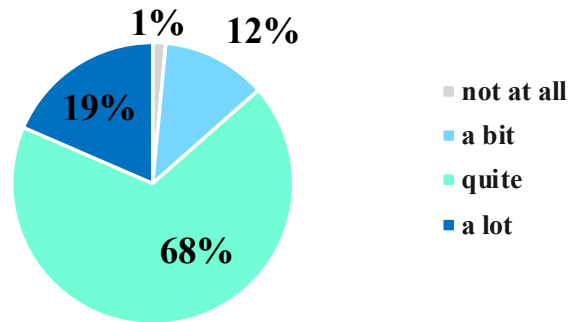


Chart No. 5 Usefulness of the digital orchestra.

### Question No. 6

In turn, the opinions assessing the usefulness of a tool that faithfully reflects the sound of a real orchestra for testing the sound balance during a performance were as follows: such a tool was found to be very useful by 43% (85 people) of the respondents, very useful by 32% (64 people), and somewhat useful by 21 % (42 people), and 4% (9 people) not useful at all.

Can it be useful to have a high fidelity simulation of the live orchestra to test the sound balance of the performance?

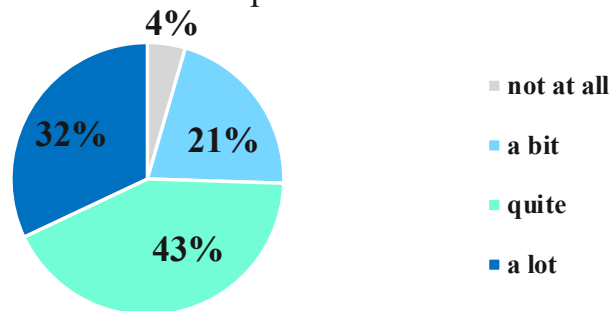


Chart No. 6 Usefulness of a tool that faithfully reflects the sound of a real orchestra.

### Question No. 7

In the seventh question, the respondents assessed the usefulness of recording only the orchestral parts for the most important concerts. The question emphasized that this project would be carried out under the direction of a concertmaster who takes care of the agogics, dynamics and phrasing. This solution was considered very useful by 51% (102 people) of the respondents,

very useful by 34% (67 people), slightly useful by 13% (27 people), and not useful at all by 2% (4 people).

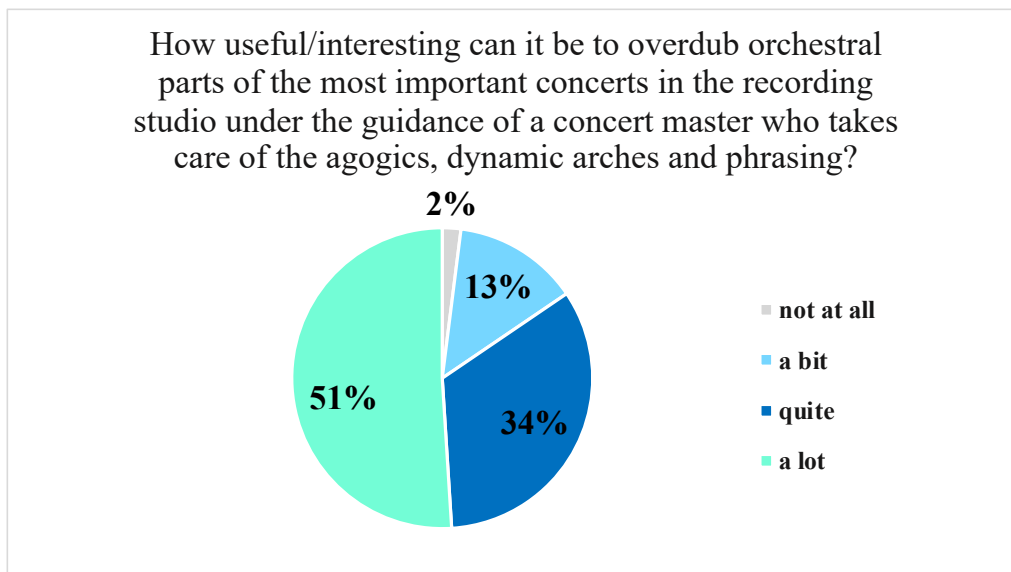


Chart No. 7 Usefulness of recording only orchestral parts.

#### Question No. 8

The distribution of votes was similar in question eight, in which respondents assessed the usefulness of having a faithful simulation of the orchestra accompanying the musician in preparation for performances with a real orchestra/cooperation with a conductor. 53% (105 people) found this solution to be very useful, 34% (67 people) to be very useful, 12% (25 people) to be a little useful, and not useful at all >1% (3 people).

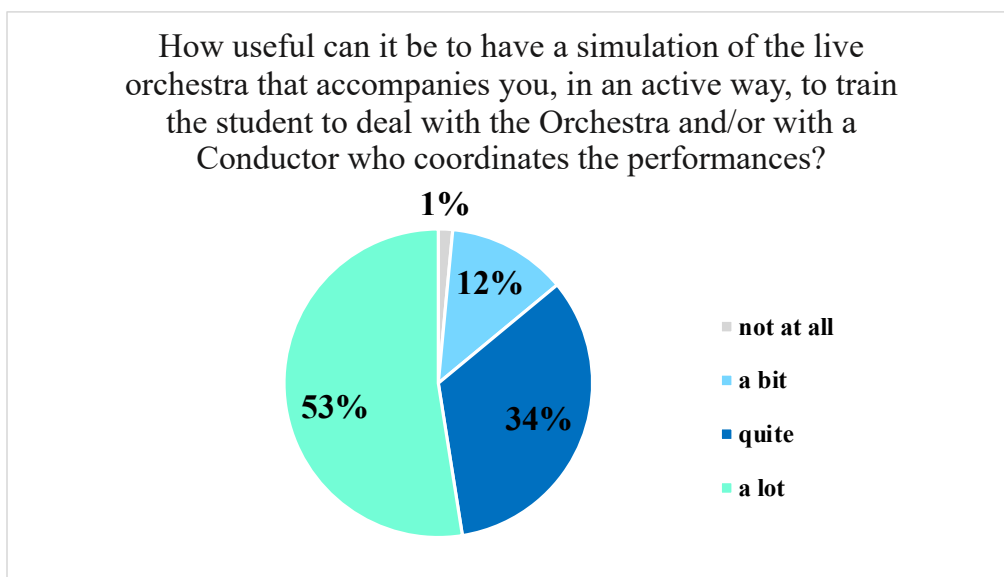


Chart 8 Usefulness of having a faithful simulation of the orchestra.



### Question No. 9

The next three questions were directly related to the "DIGI ORCHESTRA" project.

In the first question, the respondents answered the question "could DIGI ORCHESTRA be used by pupils/students who want to practice solo pieces with an orchestra when a real orchestra is unavailable?". In such a situation, the "DIGI ORCHESTRA" tool was considered very useful by 57% (114 people) of the respondents, 29% (58 people) very important, 12% (24 people) slightly important, and 2% (4 people) not useful at all. persons).

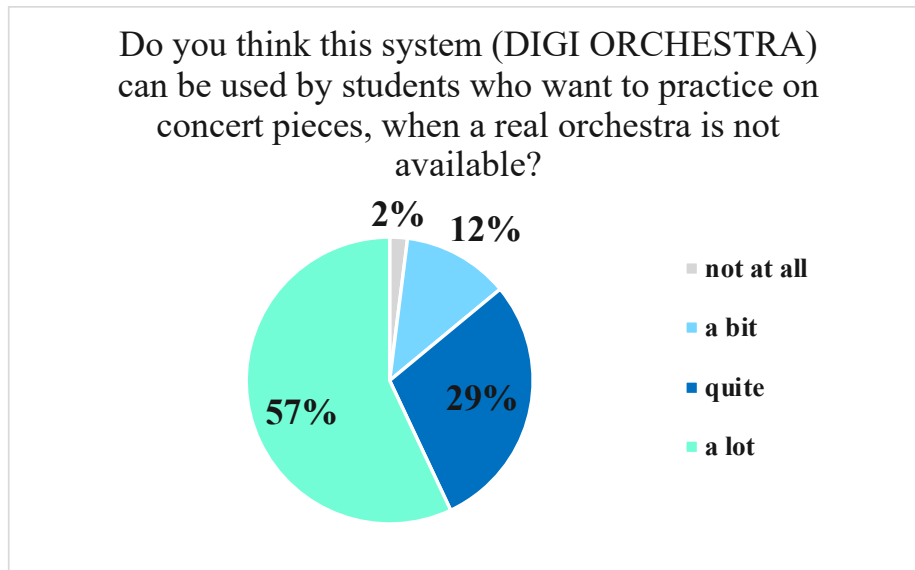
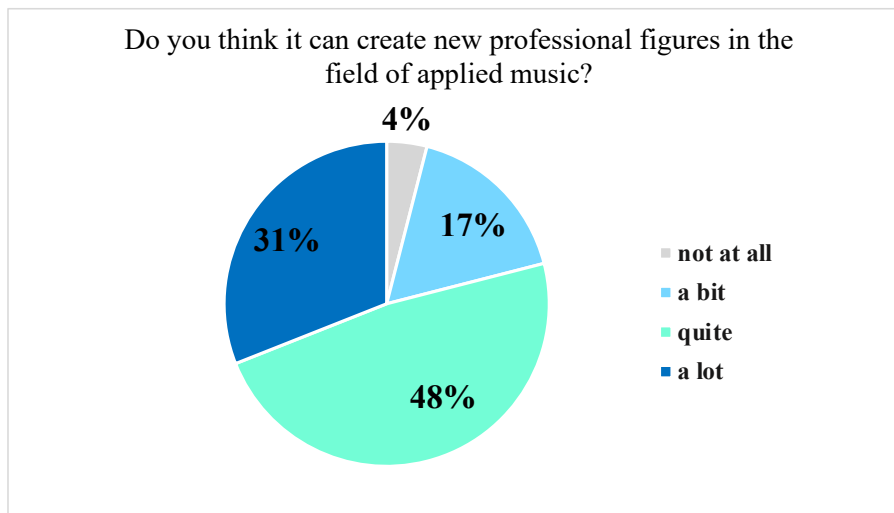


Chart No. 9 Usability of "DIGI ORCHESTRA".

### Question No. 10

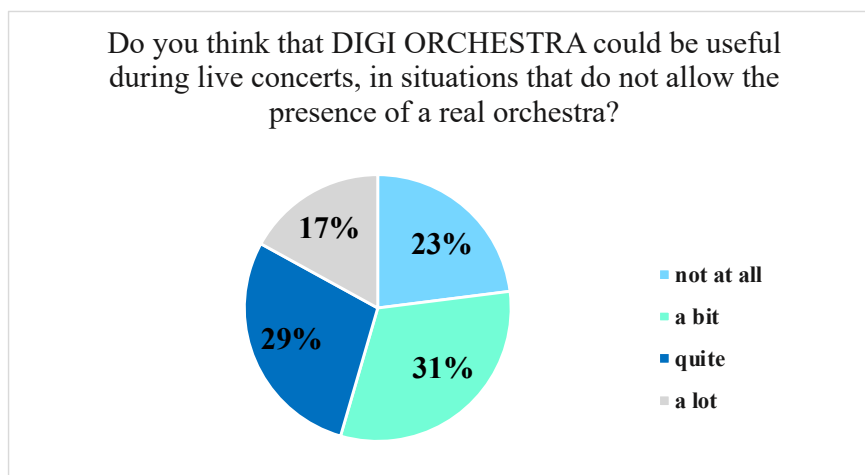
Another, extensive question concerned the respondents' assessment of whether the DIGI ORCHESTRA system could pave new paths in the area of professional education and performance. The respondents were informed that in the DIGI ORCHESTRA system all instrumental parts are recorded as separate tracks, and the performance of the orchestral sections can be changed depending on the needs of the soloist. In addition, the development of the project is carried out in cooperation with performing musicians. 48% of the respondents (96 people) considered this solution to be a significant new path in professional education, 31% (62 people) very much, 17% (34 people) a little bit, and 4% (8 people) not at all.



*Chart No. 10 Setting new paths in professional education and performance.*

### Question No. 11

The third question was used to assess the usefulness of the DIGI ORCHESTRY (virtual orchestra) during live concerts, in situations that do not allow the presence of a real orchestra. The opinions of the respondents in this case were slightly different: 31% (63 people) found this solution somewhat useful, 29% (57 people) very useful, not useful at all 23% (46 people), 17% (34 people).

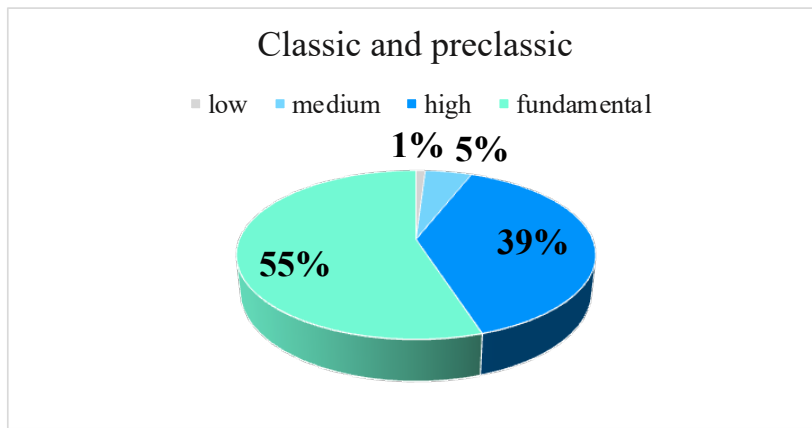


*Chart No. 11 Usefulness of DIGI ORCHESTRA during live concerts.*

### Question No. 12

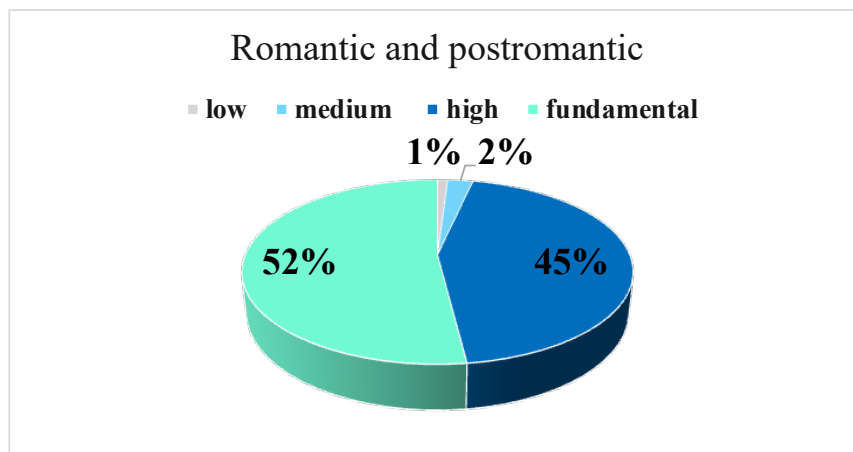
The twelfth question was used by the respondents to assess the importance of the repertoire for solo instrument and orchestra from the following periods: classical and pre-classical, romantic, and post-romantic, and the second half of the 20th century and contemporary music for instrumental education. The answers were broken down as follows:

1. Classical and pre-classical: 55% (110 people) considered importance as essential, 39% (78 people) as important, 5% (10 people) as slight, 1% (2 people) as none.



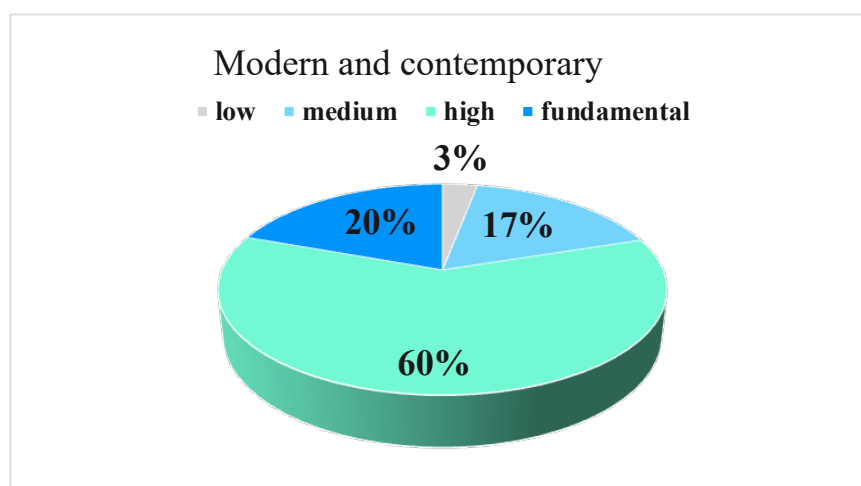
*Chart No. 12 The importance of the repertoire - classical and pre-classical.*

2. Romantic and post-romantic: 52% (104 people) considered the importance essential, 45% (89 people) as important, 2% (5 people) as minor, 1% (2 people) as none.



*Chart No. 12 The importance of the repertoire - romantic and post-romantic.*

3. The second half of the 20th century and contemporary music: 60% (121 people) considered the meaning important, 20% (39 people) as essential, 17% (34 people) as minor, 3% (6 people) as none.



*Chart No. 12 The importance of the repertoire - the second half of the 20th century and contemporary music.*

### Question No. 13

The thirteenth question was used by the respondents to assess the extent to which musicians/students use the digital solutions and music applications available on the market. According to the respondents, 52% (104 people) of the above-mentioned often use this type of solutions, 32% (63 people) said that it is difficult to assess, 15% (30 people) said that these people use this type of facilities very rarely, and 1% (3 people) of the respondents that they don't use at all.

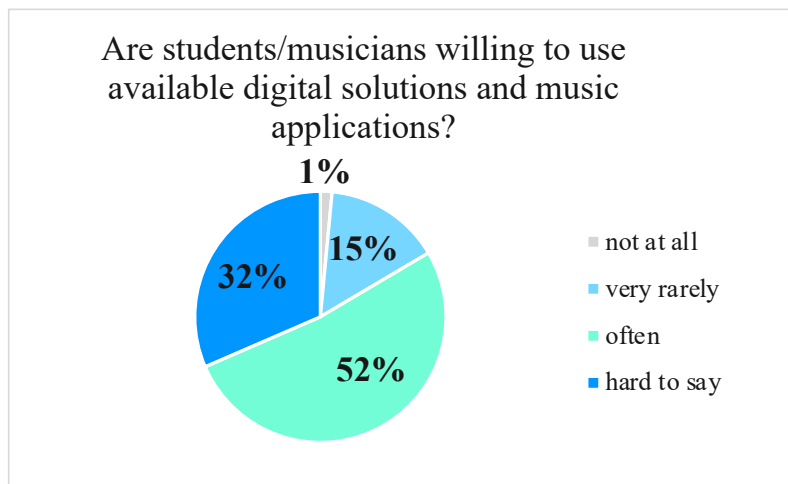


Chart no. 13 Students/musicians using digital solutions available on the market.

### Question No. 14

When asked at what level of education the possibility of performing a solo piece with an orchestra should be available, the respondents answered: from the very beginning of education 78 people (39%), at the earliest at the end of initial education 68 people (34%), at the stage of secondary education 45 people (>22%) and at the stage of studies and after studies 9 people (>4%).

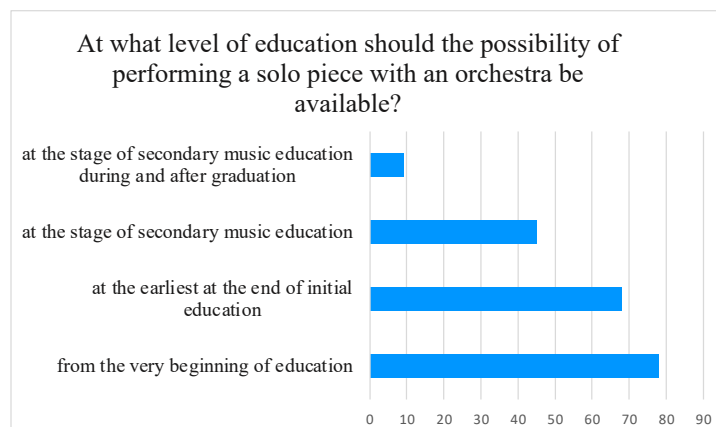


Chart No. 14 At what level of education should the possibility of performing a solo piece with an orchestra be available.

### Question No. 15

Respondents also answered the question to what extent a solution such as DIGI ORCHESTRA will contribute to the development of professional competences of a musician-instrumentalist. 55% (110 people) believed that this solution would significantly contribute to the development of competences, >30% (59 people) thought that this solution would significantly affect development, >13% (27 people) thought that it would development to a slight extent, and only 2% (4 people) decided that this solution would not matter at all.

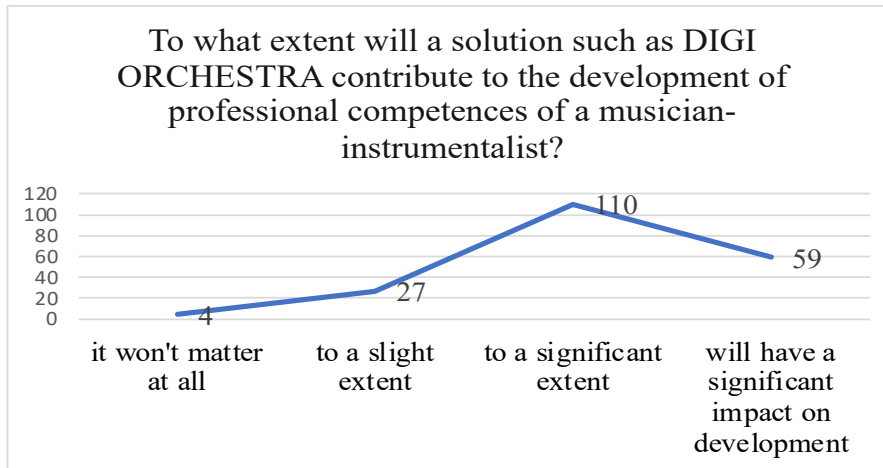


Chart No. 15 DIGI ORCHESTRA and the development of professional competences of a musician-instrumentalist.

### Question No. 16

As for the application of the DIGI ORCHESTRA solution in practice, i.e., in instrumental education and organization of student concerts, the respondents answered: 50% (100 people) said that they would use the solution often, 24% (48 people) rarely, 23% (45 people) very often, and only 3% (7 people) would not use such a solution at all.

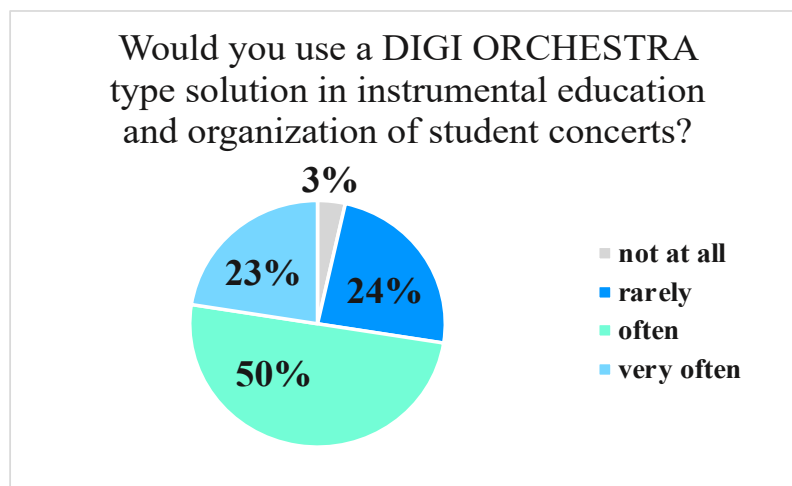


Chart No. 16 DIGI ORCHESTRA in practice.

### Question No. 17

The respondents also assessed, based on their own experience, the availability/popularity of information about digital solutions and music applications. Only 16% (33 people) of them considered that this information is widely available and popular, 34% (68) answered that this information is not widely available and popular, and the remaining 50% of people thought that it was difficult to determine.

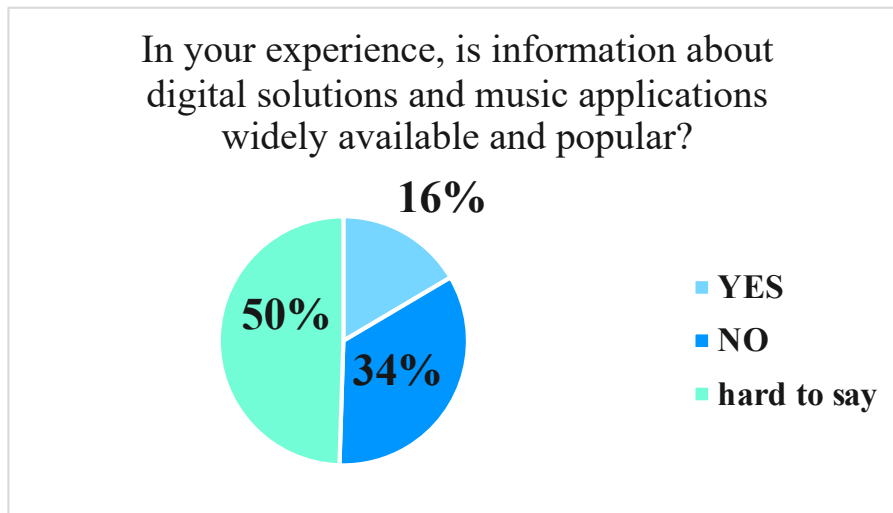


Chart no. 17 Availability/popularity of information about digital solutions.

### Question No. 18

To the question "Are the applications you use or which you associate are paid", the answers were as follows: 47% (80 people) answered that the applications they use are free, 40% (69 people) stated that they are partially paid/partially free, and 13% (22 people) declared that the applications they use are paid.

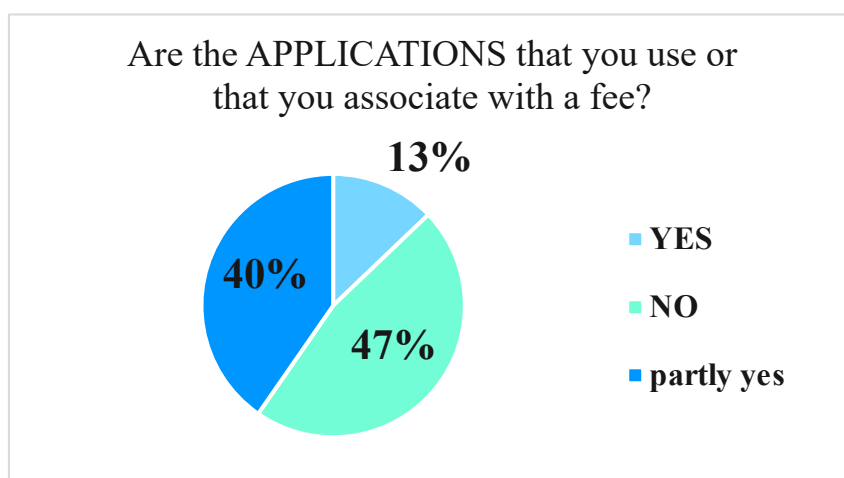


Chart no. 18 Payment for the application.

### Question No. 19

Respondents also answered the question "who should familiarize students/musicians/teachers with technical innovations and music applications". 146 people (73%) decided that this body should be the Music School, 110 people (55%) - teachers, 106 people (53%) - Academy of Music, 103 people (51%) - organizations (e.g., unions/associations) 92 people (46%) - Musical cultural institutions, 82 people (41%) - musicians themselves, 30 people (15%) answered "other".

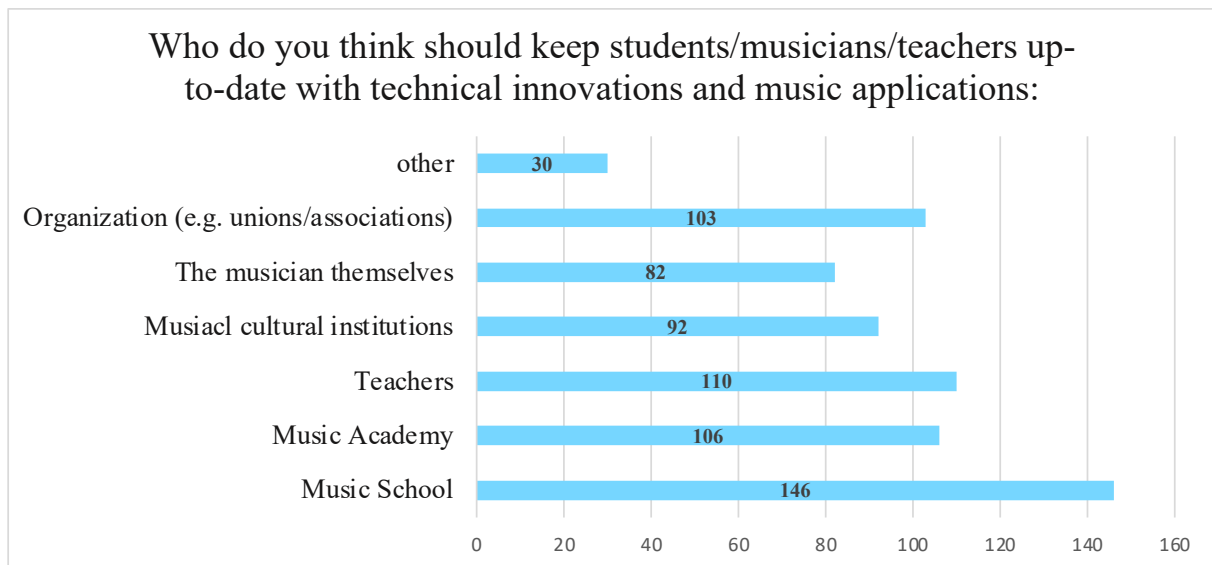


Chart No. 19 Who should familiarize with technical innovations and music applications.

### Question No. 20

The open question, in which it was necessary to list the digital tools known (to the respondent) that support musicians in the process of professional education and development, was answered by 129 people. It can be concluded that the remaining 71 people do not know/do not use the above-mentioned. Among the most common responses, (in order from most mentioned tool to least mentioned): Metronum, YouTube, Voice Recorder-Camera-Audio Recorder, Musescore, Rubato, Note Editors (Sibelius, Finnale), Tuners (name not given), Spotify, Digital Tuner (not given name), CDs, smartphone, online courses and workshops, Cubase, Zoom, Ear Master, Con.sol.la, Piano Maestro and Smart Pianist etc.

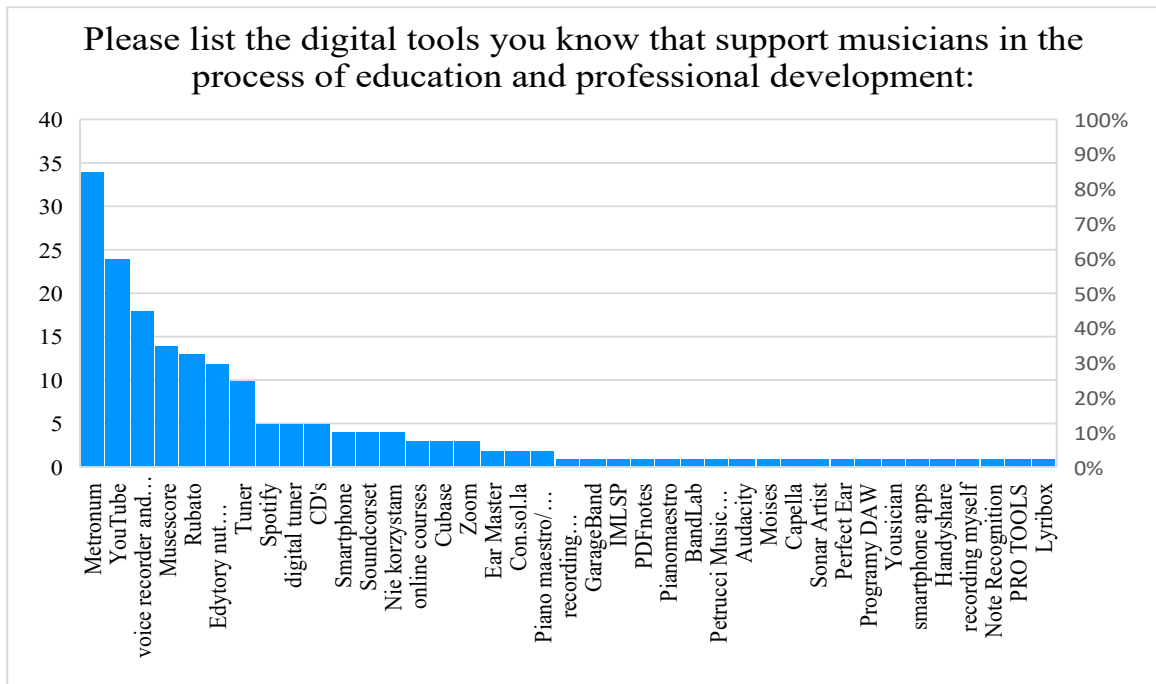


Chart No. 20 Known digital tools



## Summary

The conducted survey allowed to draw the following conclusions:

- The vast majority of respondents actively play an instrument by teaching instrumental music or by being a performing musician.
- Respondents indicated that the possibility of playing with orchestral accompaniment focuses almost exclusively on one event a year (end of the school/academic year).
- More than half of the respondents indicate that there is no possibility of performing with an orchestra at all. Only 3% of respondents have the opportunity to play with an orchestra more than 10 times.
- Based on the experience of the respondents, teaching and exploring repertoire for orchestra is scarce (only 3%).
- The vast majority of respondents (99%) indicated that it is desirable to create a digital orchestra faithfully reflecting the sound while accompanying the soloist. Only 1% of respondents indicated this as unnecessary.
- The vast majority of respondents (96%) found the digital orchestra a useful tool for testing sound balance during a performance. Only 4% of respondents considered the digital orchestra to be a useless tool for testing sound balance during a performance.
- The vast majority of respondents (98%) found it useful/interesting to record only the orchestral parts for the most important concerts performed under the direction of the concertmaster. Only 2% of the respondents found it useless to record only the orchestral parts for the most important concerts performed under the direction of the concertmaster.
- The vast majority of respondents (99%) recognized the usefulness of having a faithful simulation of the orchestra accompanying the musician when preparing for performances with a real orchestra.
- The vast majority of respondents (98%) found the DIGI ORCHESTRA tool useful when used by students who want to practice solo pieces with an orchestra when a real orchestra is unavailable. Only 2% of respondents found such a tool useless.
- The vast majority of respondents (96%) recognized the DIGI ORCHESTRA as a tool for setting new paths in the area of professional education. Only 4% felt that it had no influence.
- In the case of live concerts that do not allow the presence of a real orchestra, most respondents (77%) recognized the usefulness of DIGI ORCHESTRY. 23% indicated that the tool is useless in this situation.

- Respondents considered the classical and pre-classical as well as the romantic and post-romantic periods as necessary for instrumental education, and the second half of the 20th century and contemporary music as important.
- Respondents stated that musicians/students are very eager to use digital solutions available on the market, although some of them find it difficult to assess. Only 1% are of the opinion that they do not use it at all.
- Respondents considered that the performance of a solo piece with an orchestra should be available from the very beginning of education.
- The vast majority (98%) of the respondents believed that DIGI ORCHESTRA will contribute to the development of professional competences of instrumental musicians.
- The vast majority (97%) recognized the DIGI ORCHESTRA as a tool that can be used in the education and organization of student concerts. Only 3% would not use such a solution.
- 50% of respondents found it difficult to determine the availability and popularity of digital solutions and music applications. Only 16% felt that this information was widely available and popular.
- Respondents are more willing and more likely to use free or partially paid applications.
- Respondents are of the opinion that students/musicians/teachers should be acquainted with technical innovations/music applications in the first place, followed by teachers, music academies, organizations, e.g., unions/associations, musical cultural institutions, musicians themselves, and 30 people answered "other".
- The most commonly known/used digital tools that support musicians in the process of professional education and development are indicated by Metronum, YouTube, voice recorder-camera-sound recorder, Musescore, Rubato, note editors (Sibelius, Finnale), Tuners (no specific name given), Spotify, digital tuner (name not given), CDs, smartphone, online courses and workshops, Cubase, Zoom, Ear Master, Con.sol.la, Piano Maestro and Smart Pianist etc.

## Conclusions and recommendations

Based on the conducted survey, it can be concluded that the DIGI ORCHESTRA tool is a desirable application in educating students from the lowest grades of music school to the highest stages of music education. The application will also be useful to the musicians themselves performers, teachers, students, schoolchildren. The application supports musicians in the field of education as well as during their professional career. According to the respondents, knowledge about music applications and their availability are not common. It is indicated that there is a need, even a necessity, to create new digital tools facilitating the conditions of education and work.