Intellectual Output 1

Digital technologies in music education in opera. Analysis of the state of the art

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Names of Authors	***Scientific Coordinators*** Federico Bardazzi, Paolo Lippi, Francesco Cirri ***Editors*** Jean-Marie Gardette, Andrea Bareggi, Federico Bardazzi, Francesco Cirri, Marco Di Manno, Ludek Golat, Marek Golat, Rebecca Huber, Paolo Lippi, Carla Giovanna Zanin
Leading Organization	**Tisseurs des Sons**
Version	**Version 2**
Language	**English**
Use (external / internal)	**External**
Intellectual Output	**O1**
Date	**28/02/2023**

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Jean-Marie Gardette, Andrea Bareggi, Federico Bardazzi, Francesco Cirri, Marco Di Manno, Ludek Golat, Marek Golat, Rebecca Huber, Paolo Lippi, Carla Giovanna Zanin

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1. Foreword

The research documented in this report was in many ways a first step. First of all, it marked the start of the operational phase in the collaboration between the project partners as a transnational consortium and thus the start of a common path aimed at elaborating new and specific ways of applying digital technologies to training in the field of opera.

Secondly, it was the starting point for the creation of all the project results: as envisaged at the beginning, the research results feed into the experimentation and production of the methodological guidelines (outputs 2 and 3), are recorded in the training resources database (output 4) and are presented and illustrated in the online course (output 5).

Thirdly, and more generally - and this should be borne in mind when reading the following account - the research of Virtual Stage output 1 was a beginning for the field itself. Indeed, in the field of opera, both at the level of production and at the level of training, it is essentially unprecedented.

Not that there has been an absolute lack of attempts in this regard, but in fact the line of research behind the project - namely specific digital solutions for the training of opera artists - is still in its infancy. Virtual Stage inaugurates a strand. We ventured into a territory that was almost unexplored, yet to be mapped.

This is how it was before the pandemic, when the need for digitisation was not even felt, certainly not by the majority of professionals. So it was also at the time when - responding to the 'call for digital readiness' of the Erasmus+ programme at the end of 2020 - the consortium was created around a clearly and avowedly experimental project idea. In the acute phase of the emergency, to which the initial idea and also the detailed definition of the project date back, a new need was felt, to try to do something with digital, dictated by the urgency, by the restrictions on gatherings and the movement of people.

The partners had to make a considerable effort to imagine something that they knew could be useful but that nobody had ever seen, at least in practice. The design of the project started from some intuitions and experiments that the partner Ensemble San Felice shared with the coordinator Giunti Psychometrics. Then the project took on a transnational diemnsion by sharing the first proposals and starting a joint elaboration with the French partners Tisseurs des Sons and ESME SUDRIA, the Dutch partner Les Vents Atlantiques (which changed its name to Heliosfero in the project start-up phase) and the Czech partner Slezské Divadlo Opava.

The following report is therefore to be read as a beginning, an attempt to gather the building blocks with which to patiently work out innovative proposals (which will flow into the subsequent outputs 2-5 of Virtual Stage) with which we hope to initiate a new strand of research and experimentation aimed at bringing even such a "difficult" sector as the training of opera professions, and particularly artistic professions, into the "digital readiness" that is an important resource of our time, probably also for the more traditional and traditionalist sectors.

2. Objectives

The main objectives of Virtual Stage's research are threefold:

- To get to know the state of the art of digitisation in the training sector in the specific field of training of opera professionals and in particular opera artists;
- To check what tools the operators we are addressing, i.e. the trainers of opera artists, have at their disposal in terms of equipment and, above all, digital skills;
- Gather information on existing good practices and resources, those possibly already addressed to the themes of the project, i.e. the targeted use of digital technologies for training in opera, and those transferable from other fields.

Along these three lines, an attempt was made in the course of the project activities to take significant steps forward, aware, as already mentioned in the introduction, that the territory is unexplored or little explored and that this is only a first beginning.

The development of the project, with the use of the research results as input for the development of the other outputs, has then translated the acquisitions that we will summarise below into contributions to the creation of new proposals, which we hope will become new standards.

3. Scope, methodologies and tools

The research was carried out in a distance co-operative mode, between partners from different countries: France, Italy, the Netherlands and the Czech Republic. The horizon of the investigation was however European and also open to initiatives and novelties in non-European contexts, with which the project partners have many contacts and collaborations. The research, for reasons that have already been amply explained, although aimed at the past and, above all, at the present, is carried out entirely in function of a future that is all to be built. Therefore, an attempt was made to understand the state of the art in the four project countries and, as far as possible, in the EU area, in order to understand where one could start from and with what means at one's disposal, but in the search for ideas, resources and solutions, no limits were set: any resource can be useful when it can provide added value for the creation of new proposals towards "digital readiness", which in this sector should still be seen as a goal and not as a starting point.

The research consists of three phases:

- An analysis of the context in which the partners shared their knowledge of the opera production sector and related training systems;
- A survey of the industry at European level;
- A desk analysis of available, specially produced and/or transferable resources in the sector.

4. Context analysis

4.1. Opera

To address this topic, it is necessary, as a preface, to specify the term 'opera', a shortened form of the expression 'opera in musica'.

Originating in Florence, Italy, around 1600, opera (or Arte Lirica) is a musical and theatrical genre featuring singers accompanied by an orchestra.
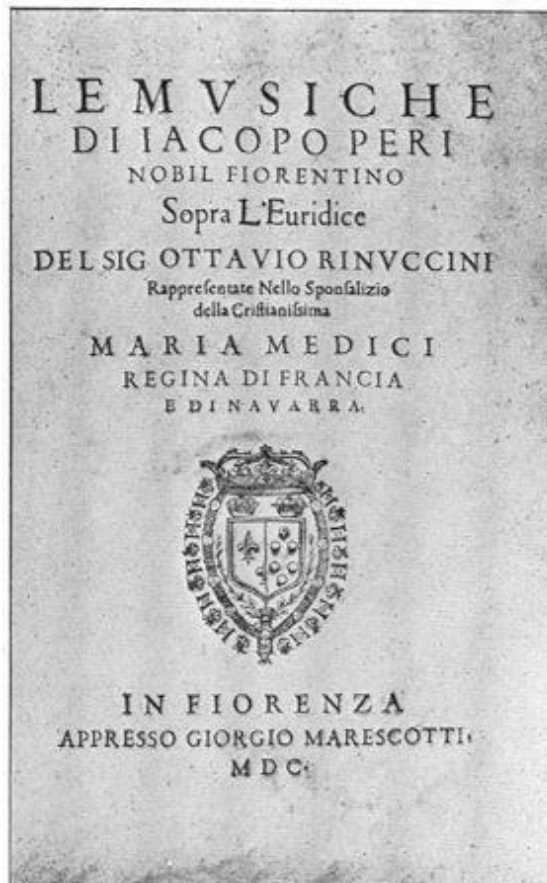
Frontispiece Eurydice - Jacopo PERI

The opera house is the building in which operas are performed. Usually, theatres designed for opera include at least a stage, an orchestra pit, a hall, a backstage area, a foyer and administrative offices. There may also be rehearsal rooms for music, dance, costume workshops and even set design workshops.

This is the environment in which performance and, to a significant extent, training activities take place.

4.2.   Professional figures in the sector

To prepare the survey, it was first necessary to draw up a list of the various professions in opera. An average-sized opera house employs around 300 people.

The professions directly related to Opera concern the artistic, technical and administrative sectors. Below is a brief description of them.

The Opera professions of the work can be traced back to the following categories:

- Artistic professions: solo and choral singers, actors and extras, dancers, musicians, conductor, piano accompanists, conductors, choir directors, choreographers, ballet masters, stage managers.
- Technical professions: technical direction, stage managers, stagehands, electricians, propsmen, sound technicians.
- Set designers: carpenters, painters, upholsterers, sculptors, ironworkers.
- Sewing workshop professions: tailors, modellers, dressmakers, hairdressers, make-up artists.
- Administrative professions: general management, administrative management department, communication/printing/editorial department, accounting management department, personnel department.
- Maintenance and security professions: security service, maintenance service, reception service.

The Executive Board manages the general operation and directs all the trades of Opera:

- the various administrative bodies ensure administrative, financial, technical and artistic management and ensure the smooth functioning and coordination of the various artistic and technical teams;
- all technicians, stage managers and members of the various workshops are at the service of the directors, set designers, choreographers, artistic director, conductor, stage staff and musicians;
- the artistic crew (consisting of solo and support singers, actors and extras, dancers) is under the direction of the director, artistic director, conductor, choreographer and set designer;
- the musicians in the orchestra pit are conducted by the conductor;

- accompanying pianists, vocal and choral conductors participate in rehearsals, under the direction of the artistic director, musical director, stage director and choreographer.

4.3.   The focus on artistic professions

In the Virtual Stage project, we focus specifically on the artistic professions. Both because they are the performers at the heart of the sector's activities and, above all, because they are the ones who pose the greatest problems in the development of new training methodologies, particularly if digitisation is to be introduced. In order not to broaden the field too much, we focused the project on the training of singers and the orchestra (instrumentalists, conductors). This made it possible to give greater compactness and effectiveness to the methodological proposal. Moreover, and this is perhaps even more important in a project where a highly experimental approach had to be adopted, it made the group practical experimentation phases much more manageable and controllable. However, it is also worth mentioning those figures working in the field with whom the singers and instrumentalists are called upon to interact in the production, also because in order to ensure adequate preparation, the training contents must also include the management of these interactions.

Let us therefore look in more detail at who the artists are and how they operate in opera, starting with those we find on stage.

4.3.1.   Singers

The soloists and singers of the choir are classified according to their vocal tessitura, i.e. soprano, mezzo-soprano and alto voices for women and tenor, baritone and bass voices for men.

Before performances, the soloists work with the conductors and accompanists under the guidance of the conductor and director. The choristers work under the guidance of the choral conductors, piano accompanists and director. Soloists and choristers must develop acting skills.

4.3.2.   Dancers

The dancers are grouped in an ensemble called ballet. Depending on their qualifications and experience, they belong to different categories. At the Opéra Garnier (Paris), for example, the most prestigious dancers have the rank of étoile. Then there are the prima dancers, the subjects, the 'coryphées' and the 'quadrilles'. All are under the direction of the choreographer assisted by a ballet master.

4.3.3. Musicians in the orchestra pit

The opera orchestra is composed of different categories of instrumentalists. The principal is the leader of the orchestra, assisted by the first and second concertmaster and the section leaders:

- Among string instruments, first and second violins - also called rank violinists - are the leaders. They are grouped in sections. Similarly, there is a viola section, a cello section, a double bass section and a harp section.
- The woodwind family is divided into two groups, the woodwind section and the brass section. The woodwinds include flutes, oboes, clarinets and bassoons. Among the brasses, we find, for example, French horns, trumpets, trombones and tubas.
- The percussion instruments are very varied, including timpani, drums, snare drums, triangles, gongs, xylophones, celesta and bells.

4.3.4. Conductor

The conductor directs the musicians in the orchestra pit and the singers on stage. His role is essential and decisive because he sets the tempo, directs the musical lines and dynamics and ensures the coherence of the performers as a whole. Before performances, he takes part in rehearsals, gives instructions to the conductors, choirmasters and accompanying musicians. He assists and advises soloists in their preparation. He also makes proposals for the programming of works.

4.3.5. Stage director

The stage director organises all the elements that contribute to the composition of a performance. His role is decisive. He must have an overall vision, work with all the artists and technicians, coordinate and direct them. He provides his artistic vision of the work.

4.3.6. Behind the scenes: the technicians

In opera, as in all live performances, technicians are of fundamental importance. By design choice, these figures are not included in the scope of Virtual Stage. However, the need to create a good collaboration between artists and technicians made central in the sector and was taken into account in the elaboration of the training proposals and in the creation of the intellectual outputs 2-5. The technical figures most involved in the work are:

- Light technicians: light technicians manage the lighting of the show. They are specialised electricians. They follow the instructions of the director, who has prepared the lighting plan, i.e. the sequence of light combinations on a computerised console: the organisational chart.

Highly qualified, the lighting manager must take into account all safety regulations in addition to his technical knowledge. He is responsible for setting up the equipment, which he controls remotely via computerised consoles.

- Props workers: they purchase, adapt or produce the props for which they are responsible. They are also responsible for the maintenance and repair of objects, taking care to observe basic safety rules. Although technical, the props profession requires imagination and a creative mind. Toolmakers must be able to sew, tinker and have some knowledge of carpentry.
- Machinists: carpenters, electricians, upholsterers and painters, they create the sets from models made by the set designer. They assemble and disassemble the sets and position the props. Their interventions during performances are limited in time, according to the changes in the set design. Like the lighting technicians, their work is coordinated by the stage manager.

4.4. What training: vocational training in the workplace as life-long situational training

VET specialists are familiar with the concepts of 'learning by doing', 'situated learning' and 'cooperatve learning'. These are learning modes that are highly valued and that one tries to promote even at the cost of a certain design and organisational effort. In some areas, it can be complex to create and then manage the appropriate learning environment and training activities. In the musical theatre and music sectors, these are the basic ingredients of vocational training, especially for artistic personnel, who are trained in theatres and music halls, playing and/or singing together.

In addition, there is a very strong incidence of continuous training: instrumentalists, singers, conductors, in opera as in classical music, must renew and update their training with each production. Both singers and instrumentalists in opera (and in classical music and early music and baroque) - to exemplify the professional categories directly concerned by the project - are first of all trained through in-depth music education courses, which typically end with a tertiary qualification, such as a conservatoire diploma. Then, however, the professionalism and specialisation of the work is created through artistic practice, through work experiences that are also training experiences in the field. Seminar activities such as master classes are another typical component of artists' training.

Perhaps the most characteristic aspect of so-called cultured music and opera is, as is known even to the uninitiated, the need to study and practise extensively in the preparation phase of a production. Staging an opera requires very in-depth and advanced study, both individually and collectively. Therefore, many phases of the preparation of a production can be considered explicitly formative, and conversely, the link with the production can be considered indispensable in order to be able to speak of professional and professionalising training in this sector.

It follows from all the above that it is necessary to involve as project partners subjects such as theatres (Slezské Divadlo Opava) and musical ensembles and associations that do cultural production and musical theatre performances (Ensemble San Felice, Tisseurs des Sons, Heliosfero). It was also necessary, in order to test the methodologies identified in a cooperative manner, to choose together some case studies on which to focus the work in the project. The partners shared the choice of some pieces and works to work on, which were then also the subject of joint performances during the dissemination phase.

4.5.   Who are the trainers

If those listed above are the professions, and in particular the artistic professions of the opera, it is also necessary to identify the trainers, the main target of the Virtual Stage project, who in the opera field represent a category whose composition is far from obvious.

The training of artists is primarily done in the theatre, as we have said, and it is mainly continuous training, aimed at growth and specialisation, throughout one's professional career.

From a careful analysis shared by all partners, the following figures emerged, which broadly, though perhaps not exhaustively, represent the direct target group of the Virtual Stage project, in its variety: music teachers (singing, instruments, composition, conducting, etc.), stage art teachers, accompanists, vocal coaches, singers, instrumentalists, continuists, stage directors, orchestra conductors, choir conductors.

4.6.   Opera, classical music and the digital world

Traditional performing arts have a complex relationship with digitisation that needs to be understood in order to address the issues of this investigation.

In a nutshell, until the outbreak of the COVID-19 pandemic, all professional training activities in the field of opera and all the preparatory phases of opera (learning, rehearsals, rehearsals, stage presence, costume and set design, etc.) were carried out in presence and people were used to gathering in large groups, working together for several hours, in long sessions, which among other things involved a considerable organisational and economic effort.

One of the attractive aspects of digital technology, in the future, is the possibility of improving the efficiency of vocational training and production preparation activities, where 'blended' courses, for example, could be a very attractive alternative in terms of saving time, reducing travel and thus cutting costs and reducing polluting emissions. Before these advantages can be duly exploited, however, it is necessary to overcome the natural mistrust of a sector tied to a very strong tradition, break the ice and demonstrate in practice what can be done with digital technologies and with what results.

4.7.   The response to the pandemic situation

Returning to the current scenarios, during the period of the great COVID-19 pandemic from which this project originated, opera specialists experienced, like all those working in music, theatre and the performing arts, and more generally in the cultural sector, a moment of stalemate, in which health problems halted traditional cultural activities for a period, and severely restricted them for other periods: the closure of theatres and all public gathering spaces, a halt to gatherings and thus to performances, rehearsals and classes themselves. Virtually all customary and traditional activities were stopped.

The shock was inevitable, as was the disorientation. This was an unprecedented situation that occurred without any warning. Who could have imagined something like this until 2019? In this 'dystopian' but unfortunately real scenario, the partners, like everyone else in the industry, tried to react in order to provide continuity of business. Thus, the first 'solutions' were attempted, based on direct experience, with a 'trial and error' approach. Hence an equally unprecedented massive experimentation with the various modes of networked communication, synchronous and asynchronous, for both performance, testing and education and training activities.

The problems encountered were considerable. We leave their description to the voice of the practitioners questioned in the survey. The main problems, in fact, will be found in our European survey of practitioners (see section 5). As a general description, we can limit ourselves to outlining the two most widespread approaches among those who wanted to at least attempt to use digital technologies: one we might call 'cautious' and one we will call 'exploratory':

- The 'prudent' approach is the approach of those who - not being able to refer to recognised examples of successful distance performance - preferred not to delve into the experimentation of technical-practical activities, the development of vocal and/or instrumental technique, and limited themselves to exploiting digital technology for theoretical lessons, making use of tools and methods already tried and tested in other areas of doing (such as the use of videoconferencing/video-calling systems, chat, document sharing). This approach represents a 'conservative' but certainly understandable line in its assumptions, which, however, runs the risk of a limited hold, i.e. a drop in the motivation and skills of the learners if the 'theoretical' phase is prolonged beyond a short period;
- The 'exploratory' approach is the approach of those who - like the Virtual Stage partners - despite the lack of established and recognised reference standards and models of success, wanted to try to develop new digitisation practices that were both synchronous and asynchronous and could possibly be 'blended' even after the pandemic emergency. This approach constitutes an innovative line but is subject to uncertain outcomes, due to the lack of recognised models of success that we have already mentioned.

There is no need to explain further how the Virtual Stage partners - and several of their industry interlocutors, whom we will mention in the section on stakeholders - programmatically place themselves among the supporters of the second approach, among the 'explorers' or experimenters.

VIRTUAL STAGE

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Emblematic in this respect is the case of Ensemble San Felice (Italy), which came up with the initial idea of Virtual Stage. During the first Italian lockdown (March 2020), when no one was allowed to go out and meet, ESF immediately realised that it was time to usher in a new era in opera teaching and training. In fact, while activities were at a complete standstill, the group began to undertake initial experimentation in the field of digital technologies and conceived Monteverdi's 'Orfeo' opera with the first application of the concept from which the Virtual Stage project would derive. The combination of a videoconferencing platform with audio software allowed musicians to share audio exercises and have visual interaction.

The decisive points, on which the survey, the results of which we will see in section 5, will provide some clarification, are the general mapping of the trends and needs that are widespread among the sector's operators, i.e. their distribution in the two camps that we have defined above as 'prudent' and 'exploratory'.

5. Design and implementation of the Virtual Stage survey

5.1. Specific objectives and expected results

The aim of the survey is to find out the state of the art in the opera sector with regard to the use of digital technologies for training.

Starting from a general knowledge of the situation, we opted for a very broad approach to the subject. In fact, limiting ourselves to the mere collection of practices and experiences responding to the needs of the project, i.e. to cases of "digitised" training paths specific to the artists of the work would have been self-limiting. It had to be taken into account that the scenario was one of difficulty in responding to an emerging issue, and of first attempts, without recognised reference standards. Little meaningful would have come of it. Whereas there are many useful resources, albeit largely unused, or insufficiently broken-in, in opera.

We therefore set ourselves specific 'basic' objectives in order to test the ground and bring out useful elements to build new practices, if we had not found any already sufficiently developed and tested:

- identify individual access to new technologies in the context of the implementation of a distance learning programme by musicians, singers, teachers, students and, more generally, music and opera professionals;
- to define the degree of knowledge and individual use of recent digital tools by musicians, singers, teachers, students and, more generally, by music and opera professionals;
- identify the technological tools most used by musicians, singers, teachers, students and more generally by music and opera professionals;

- assessing different individual feelings about the relevance of the use of digital tools by musicians, singers, teachers, students and, more generally, music and opera professionals in the context of an online course programme.

The survey, as will be explained in detail below, took place online, at European level, with a survey disseminated by invitation email to a large sample of professionals in the sector identified in the partners' contact networks. Mostly, but not exclusively, people resident in the four project countries (Italy, France, Netherlands, Czech Republic).

In order to achieve a good representation of the sector and the different opinions and experiences, we had set ourselves the target of reaching at least 300 responses at European level. As we shall see, although not without difficulty, we managed to meet and exceed this target.

5.2. Target audience of the survey

As we have already seen, opera professions are numerous and diverse. In order to carry out a study in a limited timeframe, with the aim of designing a relevant survey, the different partners of the Virtual Stage project chose to limit their observation to people involved in the musical professions of opera. It was therefore decided to create a targeted survey, aimed at trainers in the sector, i.e. the diverse target group already mentioned in section 4.5: music teachers, stage art teachers, accompanists, vocal coaches, singers, instrumentalists, continuists, directors, conductors, choir directors.

Since Virtual Stage falls within the field of vocational training, it seemed obvious to also involve the audience of organisations training in the opera music professions, such as international music schools, higher conservatories, theatre schools, specialised universities and higher education institutions: pupils, students, teachers, staff and administration

Finally, in a broader training context, it seemed appropriate to involve local music schools, independent music teachers, amateur choirs and orchestras, music lovers and amateur musicians.
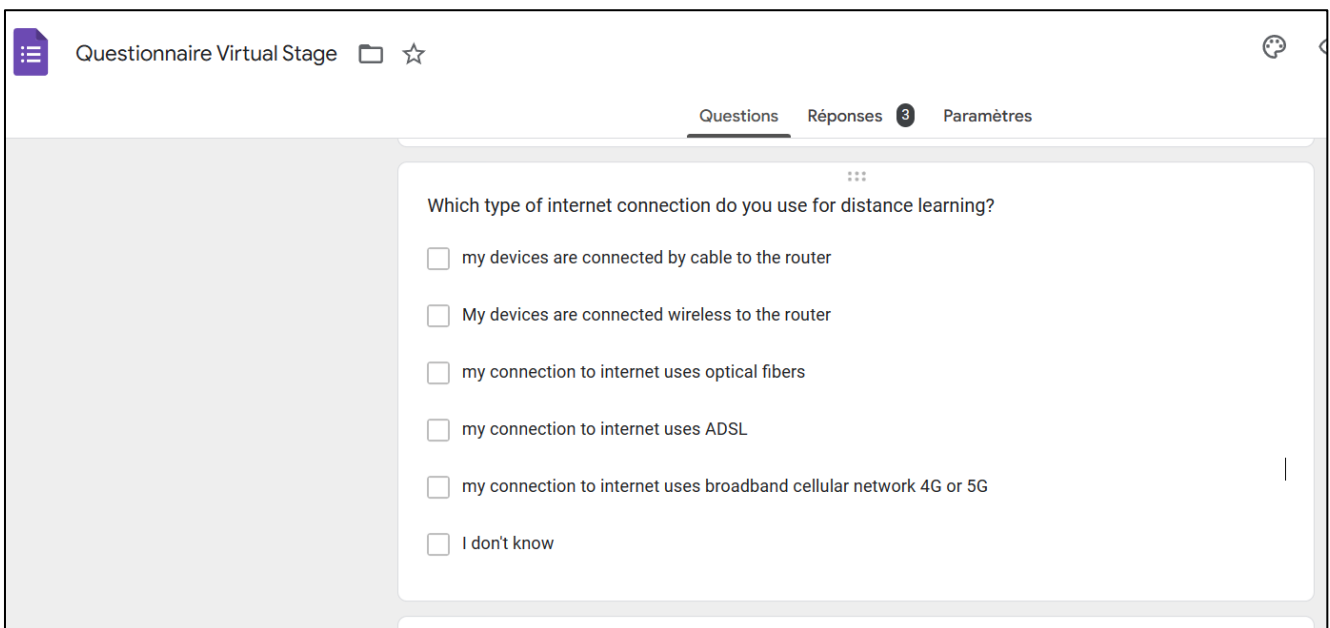
5.3. Questionnaire design

As we have seen, the training of professional musicians is still based on a very traditional approach, with historical teaching and learning practices that are still considered universally valid in the sector. How can the new digital tools be associated with music training? What types of online courses are feasible and practicable? Can online courses complement face-to-face courses? Can they replace face-to-face courses in some cases (e.g. to overcome travel difficulties)?

The Virtual Stage partners examined these aspects. As a premise, during O1, they conducted a reflection on digital tools and new technologies applicable to new distance learning methods. They drew up a questionnaire to identify needs and expectations.

The questionnaire was developed cooperatively by the project partners, with the team led by Jean-Marie Gardette of Tisseurs des Sons (leading partner of output 1) and the supervision of Paolo Lippi of Giunti Psychometrics.

To mobilise as many participants as possible, the project partners devised a simple survey, accessible to all, aimed at both newcomers to new technologies and experts. Each candidate chooses the answer that suits them best from the various options proposed.

This is an example of what the questionnaire looks like:

The complete questionnaire (in 4 languages) can be found in the appendices, in a 'printable' version that shows all the contents of the online questionnaire with a different graphic design.

5.4.   Questionnaire structure and questions

The questionnaire is divided into 4 sections. It consists of 24 questions, 20 of which are multiple-choice (some of them with several selectable options) and 4 open-ended.

The questions elaborated in co-operation by the partners are as follows:

Section A: master data and information on the user's experience and equipment

A.1 Name and Surname (*Optional*)

A.2 (*) email

A.3 (*) Nationality

A.4 (*) Gender

A.5 (*) Age

A.6 (*) Your institution is ...

A.7 (*) Your role

A.8 (*) Did you ever use distance learning in music teaching?

A.9 (*) Did you ever use distance learning in the Opera repertoire?

A.10 (*) How are your devices (PCs, Tablets, Smartphones...) connected to the router?

A.11 (*) Which type of internet connection do you use for distance learning?

A.12 (*) Which is the bandwidth of your internet connection?

Section B: distance learning

B.0 Synchronous/Asynchronous learning (explanation of terminology for the benefit of the user)

B.1 (*) Which approach do you use in Distance Learning? (synchronous/asynchronous)

B.2 (*) Did you use a theoretical or practical approach?

B.3 (*) Considering the overall teaching process, how many hours (in %) did you or your institution spend on distance learning?

Section C: in-depth study on distance learning tools (only for those who have already used them)

C.1 Tools for distance learning (introduction to the section with explanation of the division of the instruments into three lists A, B and C - see below)

C.2 (*) List A - Which tools are you using in the following list? (tools that do not require specific IT skills - online learning platforms, archives and reference tools)

C.3 (*) List B - Which tools are you using in the following list? (tools requiring computer skills at basic and/or intermediate user level - specific services for managing training activities and sharing content)

C.4 (*) List C - Which tools are you using in the following list? (tools requiring computer skills at advanced user level - advanced services for online music education)

Section D: evaluation of distance learning (also for those who have not used it directly)

D.1 Distance learning : pros and cons

D.2 (*) Distance learning raises several debates about its effectiveness. Please, read the following items and choose the sentences you agree with (several evaluations are proposed)

D.3 (*) Distance learning is appreciated in new musical pedagogy for several reasons. Please, read the following items and choose the sentences you agree with (several evaluations are proposed)

Section E: open questions - user experiences

E.1 Esperienza positiva (which the user can freely describe)

E.2 Negative experience (which the user can freely describe)

5.5. A multilingual questionnaire

The questionnaire was drafted in English for the sake of cooperation between partners. As was the case with the other project documents, as English was the only language spoken fluently by all the staff involved, this was - of necessity - also the language of cooperation. In order to make it easier for users to fill in and to increase the number of potential users, it was decided to translate the questionnaire into the national languages of the individual partners' countries. After consultation with the staff of the individual partners, the decision was made to translate the questions into Italian, French and Czech for the benefit of users in the respective countries and to administer the English version to users in the Netherlands instead. This choice, which was suggested by the Dutch partner Heliosfero, was dictated by the realisation that English is a language with which practitioners in the Netherlands are very familiar.

Each user was given the opportunity to read and complete the questionnaire in English, Italian, French or Czech, selecting the preferred language directly at the compilation stage. The appendices contain the entire questionnaires, including the answers, in the four languages used.

5.6. Administration: methods, instruments, timing, results

The questionnaire was administered remotely via online distribution with the possibility of anonymous completion via Qualtrics.

Qualtrics is an advanced professional tool for collecting and analysing user evaluations and opinions, which was created for experience management (experience design, experience improvement) and is used for this purpose by large industries and web services players to capture feedback on customer, product, brand and employee experiences in one place and act on the results obtained. The Virtual Stage coordinator Giunti Psychometrics has been using this tool for years for its research

in the field of psychology and for collecting feedback on its publishing products (psychometric tools). The company has made its Qualtrics professional account and the questionnaire creation, data collection and automatic reporting functions available free of charge to facilitate the implementation of the survey.

The administration procedure used was very simple: via the Qualtrics platform, we published the questionnaire online. The platform generated a direct link that was then sent by email. It was then the project partners (Tisseurs des Sons, ESME, Ensemble San Felice, the Opava Theatre) who distributed the questionnaire directly via their email contacts. Each user who received the email inviting them to fill in was able to access the questionnaire via a direct link and, after selecting the chosen language, fill it in.

The administration took place in two phases. A first phase, carried out in the first months of Virtual Stage, in line with the initial planning of the project, made it possible to collect approx. half of the 300 planned responses fairly quickly. Although we had already invited more than 300 recipients to participate with whom we already had direct contact, we realised that we would need more time to obtain a larger number of responses. Despite efforts to simplify the compilation procedure for interested professionals, it was not easy to find the time to participate, and the compilation was quite demanding, focusing on aspects not fully familiar to all musicians. 150 responses were sufficient for us to proceed with the set-up, design and realisation of the subsequent outputs of Virtual Stage, i.e. the guidelines for trainers (O2, O3), the database of teaching resources (O4) and the online courses (O5), without delaying the realisation of the project.

The second phase, which accompanied the realisation of the outputs and lasted until the end of 2022, served to complete the survey in order to get a more complete picture of the state of the art. In the end, we managed to reach 367 completed questionnaires, approx. 20% more than planned.

It must be emphasised that despite the considerable efforts we made and the many direct contacts we made with practitioners, it was not easy to get the expected answers. One has to take into account that on the one hand the target audience of the survey is very specific, and on the other hand that, although easy and relatively quick, answering a series of questions on technical topics that are often far removed from one's daily activities and concerns is always a commitment. Certainly the wave of shock caused by the COVID-19 pandemic in the sector made the task easier for us: although it had not been the 'bread and butter' of those working in this sector, digitisation with the use of remote communication had become a topical issue with which - playfully - to deal, and this made our questionnaire attract the attention of the recipients. The hesitation to fill it out may be due, according to our hypothesis, to the scarcity of specific experience accumulated, which probably somewhat curbed the expression of those concerned. In any case, even if it took longer than expected, a considerable number of responses eventually arrived.

5.7. The protection of confidentiality

In compliance with European regulations, the user was offered the project's privacy policy before proceeding with the compilation.

Personal data (name, surname, email) were requested but as optional data: each user was free to choose whether or not to fill in these fields. This choice was aimed at collecting as many compilations as possible, as it was not necessary to associate the identity of the user with the answers for the purposes of our research.

6. Analysis of survey responses

6.1. Biographical data (section A, questions A.1-A.7)

Although they are not central to the purposes of this analysis, the initial questions on the survey users' biographical data are interesting as indicators of the composition of the target audience, also in relation to the general state of the sector. Some of the following data potentially have an impact on the issues related to trainers' digital competences and their receptiveness towards further training. We refer in particular to the age of the users, predominantly mature (see below), a fact that helps to understand the reference context and to interpret the answers to the following questions.

As far as **nationality (A.3)** is concerned, the majority of responses (approx. 49%) came from Italian users, not necessarily resident and working in Italy. It should be borne in mind that the sector has a high level of internationalisation, as witnessed by the partners themselves who have staff members of different nationalities, including non-European ones. It is worth noting that within the answers to the questionnaire, more than 22% of the users declared a nationality other than that of the project countries, further proof of this fact.

The **gender composition (A.4)** of the user base shows the prevalence of the female component (60%):

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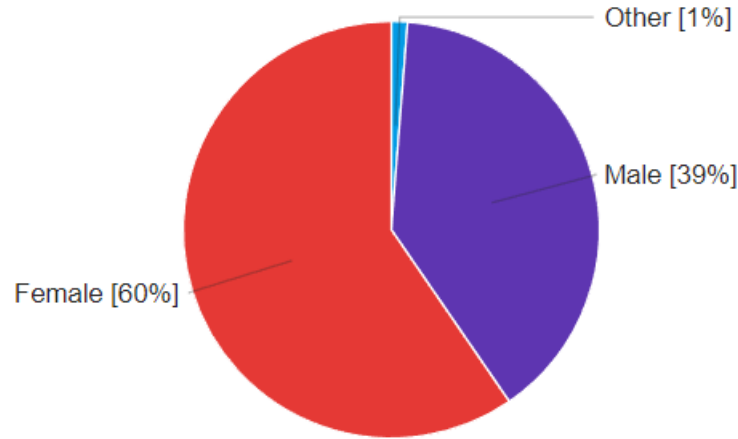
Percentage distribution of answers to question A.4 (gender)

This figure is interesting and reflects the state of the opera sector and of music education in general.

Also significant, as already mentioned, is the substantially equal distribution among the age groups considered, with a prevalence of mature individuals (more than 42 per cent declare to be over 50 years old):
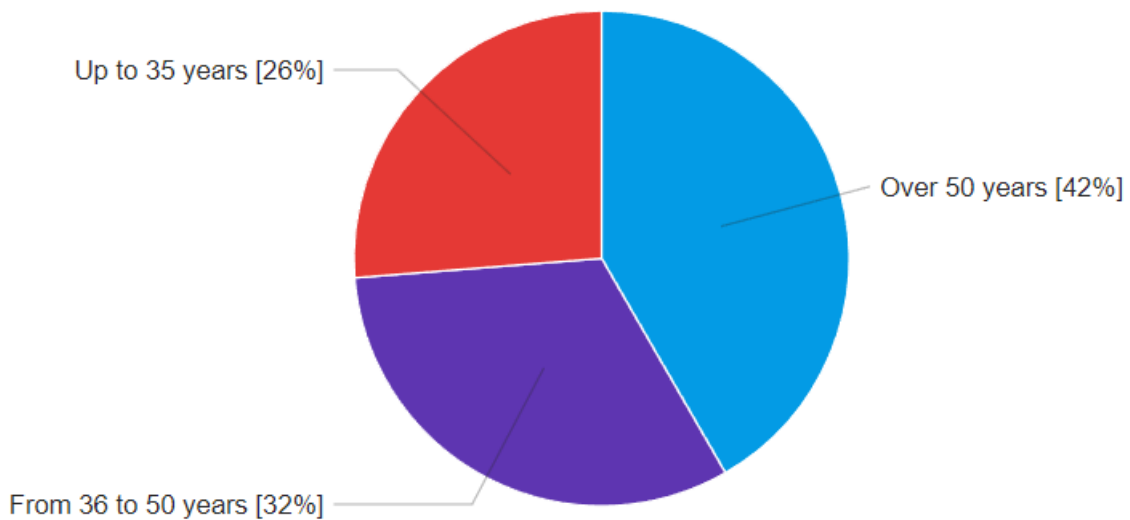
Percentage distribution of answers to question A.5 (age)

The age data can be indicatively correlated with a tendency not to be high in the use of digital technologies and, to a certain extent, with a tendency to be low in the diffusion of advanced digital skills. The latter, as we will see later, is a central element of the reference context that should be

taken into account in the development of methodologies and training guidelines. Caution is needed in recommending complex solutions.

The answers to the questions concerning the **type of institute or training body (A.6)** and the **professional role of the user (A.7)** show a very varied composition of the users, in line with the objectives of the project, which aims to satisfy training needs at different levels in the musical-operatic field. The two prevailing answers to question A.6 are 'University level music institution' (34.4%) and 'Association for amateur music teaching, local music school or private music tuition, choral association' (26.1%). The component belonging to the 'Association for music performance' typology is also significant (15.3%). As far as role is concerned, the answers are basically split in two: about half of the users define themselves as teachers and the other half as musicians/singers. Due to the peculiar characteristics of the sector, it is almost certain that the vast majority of users perform both roles and that they are split down the middle in indicating what they consider to be their predominant activity. Again, in addition to reflecting the state of the sector, this indication is significant in terms of the breadth of representation of the different viewpoints of practitioners interested in the issue of digitisation in music-opera training.

6.2. Previous experience and technological equipment (Section A, questions A.8-A.12)

Question A8 opens with the description of experiences in the field of training with digital tools, in particular of online distance learning (both synchronous and asynchronous, as we will see later). This is the central part of the questionnaire, which actually serves us to understand the state of the art with regard to the use of digital tools in vocational training in the field of opera. It comprises three blocks of closed-ended questions (A9-A12, B1-3, C2-4) with a total of 10 questions, which provide us with the main data for the present analysis.

In order to simplify the compilation and avoid tedious requests for details from those who would have no elements to answer, we thought of opening this series with a general question (A8) that serves as the main junction in the compilation of the questionnaire. Using the functionality of Qualtrics, the questionnaire was programmed in such a way as to show the subsequent questions (up to C4) only to those who answered positively. Thus, those who declare a specific experience of online training are asked to provide the specifics through questions that analyse and elaborate on the various aspects, while the other users are directed directly to the final sections (sections D-E) where they can still provide opinions and evaluations on the opportunities offered by digital technologies. The mechanism is also evident from the text of the questionnaire exported by Qualtrics (see Appendix I et seq.).

Now to the results. What may come as a surprise in an industry as traditionalist and traditionalist as opera training is the positive response of over 80% of users to the general question:
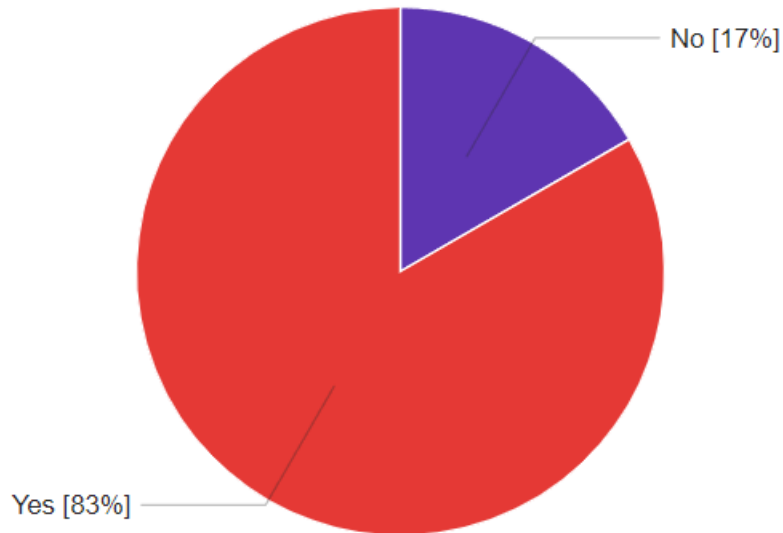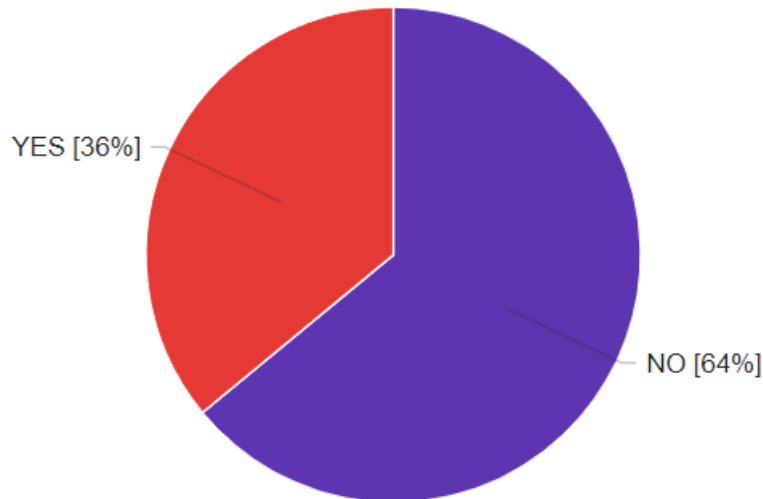
Percentage distribution of answers to question A8

'Did you ever use distance learning in music teaching?'

As explained above, this means that the users who were asked the next 9 follow-up questions, up to and including C4, were 83% of the participants.

How should such a largely positive result be interpreted? On the one hand, it can be explained by the generality of the question: a positive answer can include many different activities, encompassing all kinds of experiences and experiments, and without any evaluative connotation, so that even those who are not satisfied with the results are invited to answer yes. On the other hand, it must also be said that the impact of the COVID-19 pandemic was decisive. It was difficult to think that such a high percentage could be achieved before 2020. The state of necessity brought about by the restrictions on gatherings and the movement of people led to circumstances that generated a kind of massive experiment, in which almost everyone at least attempted to use distance learning technologies of some kind.

To understand the real state of the art of the sector, one must undoubtedly refer to the specific insights of the following questions. What remains, however, is the testimony of an unprecedented historical moment for distance learning and the application of digital technologies to teaching and learning processes. After all, Virtual Stage itself was made possible by such circumstances, at least in the form and dimensions that the project assumed. However, this is no guarantee of continuity of the experience. In other words, the massive digitisation of the emergency response to the pandemic could turn out to be an epoch-making turning point in vocational training or a mere parenthesis. How the situation will evolve in the future may vary widely depending on the sector and the specific field of application. It is too early to make predictions about a sector as complex as opera.

The litmus test with regard to the question of the specificity of the experience is the next question:

Percentage distribution of answers to question A9

'Did you ever use distance learning in the Opera repertoire?'

The combination of the two results of questions A8 and A9 is as emblematic as ever of the post-COVID state of the art: while the vast majority of the respondents had tried to do something, in terms of distance learning, less than a third of the total had any specific experience in the opera field (36% refers to those who are part of the 83% who answered positively to the previous question, as we have already explained). Factors such as, on the one hand, the complexity of the performance and, consequently, of the preparatory training, and, on the other hand, the fewer job and training opportunities linked to the decrease in performances, clearly play a role here. It should be borne in mind that around half of the responses were collected in 2021, when, despite the decline in risks and fewer restrictions, the situation in the theatres and environments used for rehearsals and training had certainly not yet returned to normal.

That said, there remains the opportunity to analyse and address the obstacles to the extension of digital practices and the transfer of experiences from other fields, transversal or of different specialisations, to opera. This will be the subject of the following sections of the questionnaire. First, however, it is necessary to examine the technological endowment available to the practitioners. This is a point that cannot be stressed enough. Generally speaking, any digitisation practice, in any sector, requires (at least) all of the following components:

- motivation of those concerned;
- sufficient digital skills;
- appropriate technologies available.

The third component is central as an enabling factor at different levels, an aspect that will be examined in detail below. In any case, the availability of adequate means cannot be taken for granted, despite the fact that the 'democratisation' of digital technologies has led to a wide diffusion of sophisticated devices. At the very least, it must be kept in mind that digital technologies mean both hardware, software, infrastructure and network connections. They are all indispensable and, depending on the objectives and applications, the requirements may be non-trivial for one and/or the other component.

Question **A10** investigates **the type of device used and the connection mode (cable, wi-fi)**. The aim is to estimate the potential of the technological resources available to the user, in terms of hardware and network connection. Performance (upload and download speed) and the reliability of the connection are crucial for live streaming, and are still critical for high demands applications such as distance music education. It is widely known to musicians, and easily verifiable, how without special instruments and arrangements it is practically impossible to play together at a distance, despite the great advances in Internet connections. This is certainly one of the factors holding back digitisation in the sector, although we can be equally certain that it is not the only one.

In simple terms, there are certain types of educational activities, of specific interest to the Virtual Stage reference sector - essentially those involving playing together 'live' - which require the use of a PC with good memory capacity and processing speed and, above all, an internet connection with high upload and download speed (the former is usually much lower than the latter) and high reliability of the same (no interruptions, even brief ones). The latter two requirements are often not met - at least not both together - by wireless connections, at least in the state of technology in the survey period (2021-2023).

The survey respondents' answers show a heterogeneous landscape that once again tends to reflect the general situation in the sector. The majority use a PC (indicated in about 53% of the responses)- a device that enables a greater variety of applications and higher performance - but of these, the majority use a wireless connection, which has both performance and reliability limitations. In fact, the best condition for advanced applications, i.e. using the PC with a wired connection to the modem/router, is declared usual by a minority of users (approx. 18% of responses). Finally, a substantial proportion of the participants declare that they only use smartphones and tablets on a regular basis. These options were chosen in over 40% of the responses. Considering that several choices are possible, it can be roughly estimated that the users who exclusively use these mobile devices may be between 25 and 30%. A share that may become operationally limiting because such devices are undoubtedly convenient, but they are not the optimal equipment for complex applications and for guaranteeing the best performance and most reliable connection.

To settle the question of connection definitively, we asked the question directly. Let us see the results:
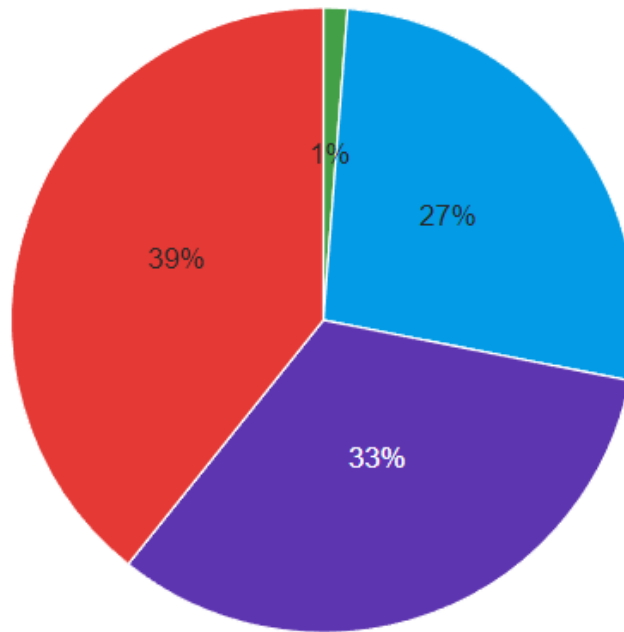
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Percentage distribution of answers to question A11

'Which type of internet connection do you use for distance learning?'

As can be seen, the question posed is very precise: the explicit reference to use for teaching purposes is important because the organisational circumstances of the training activities and the characteristics of the venues used may mean that the connection practically usable in the training activity is not the best of all those available to the trainer.

There are three alternatives we have proposed: cable connection of good performance but not the latest generation (ADSL), cable connection of the latest generation and superior performance (fibre optic), connection via mobile network (4G or 5G).

They proved to be exhaustive since the option 'other' was chosen by only 1% of the survey participants.

The formulation of the alternatives was designed according to the project objectives. We are not surveying connectivity technologies per se, nor are we interested in pure performance per se. Our aim is to understand what coverage there is for what is the optimal solution for music education, particularly in the context of opera, based on the experience of the partners and according to the possibilities of the different methodologies applicable, among those known to the consortium members. Furthermore, reference is made to the possibilities of current technology, not to future scenarios, where different situations may arise, e.g. with the spread and evolution of 5G

connections. With the Virtual Stage project, we want to propose strategies and solutions for the enhancement and resilience of education 'here and now', which are immediately applicable. On the other hand, we have not returned here to the question of the modem/router connection mode, which does have an important influence, focusing on the most basic enabling requirement that is difficult to change, i.e. the connection type itself. It appeared more important here to distinguish between traditional ADSL (copper cable) and the fibre-optic connection, which offers more possibilities for advanced applications.

The fibre-optic connection covers around 40% of the users participating in the survey. This can be described as encouraging: on the one hand, there is already a substantial number of operators who can benefit from the high performance of this technology - a number which is certainly destined to grow in the future - on the other hand, we are still talking about a minority and this may still limit the possibilities of remote interaction, so that it is difficult to speak of a sufficient common basis to plan activities which presuppose this requirement, except in the context of specific target groups. Within homogeneous groups of users it is possible to realise a training course based on the assumption of the common use of the fibre connection, however, the conditions immediately become more uncertain if private connections (connection from home) are used, where the variability is high. Moreover, one of the most interesting applications of distance collaboration methodologies is between different geographical areas, for virtual exchanges between groups from different regions or countries and for common international paths. As a matter of fact, the last case is not uncommon in the work; think of the preparation of a production where it is quite typical to involve artists from different countries, to whom it might be convenient to carry out a blended study and research pathway and then meet at a later stage, where, after all the propaedeutics have been taken care of, the in-presence activity can focus essentially on rehearsals. This is one of the most promising and interesting application contexts of the project, in view of the synergy between vocational training and cultural production (performance) that is vital for the opera sector.

In any online collaboration, the possibilities of interaction of the group are constrained by the possibilities of interaction of the user who has fewer resources and this remains an inescapable aspect. This does not detract from the fact that great strides have been made in recent years and that this is nevertheless a turning point for the opera and music education sectors. Basically, if the streaming of a frontal lecture, with or without slides, and to a certain extent that of a group conversation or interactive but always verbal lecture made it possible already in the early 2000s, with software such as Skype and the like, to do asynchronous teaching in many sectors, in this field we had to wait for the mass availability of a very wide bandwidth of connection to start carrying out online those practical group activities that are fundamental for the training of artists.

Available bandwidth is the last topic of the first section of the questionnaire, on which the survey participants gave the following answers:
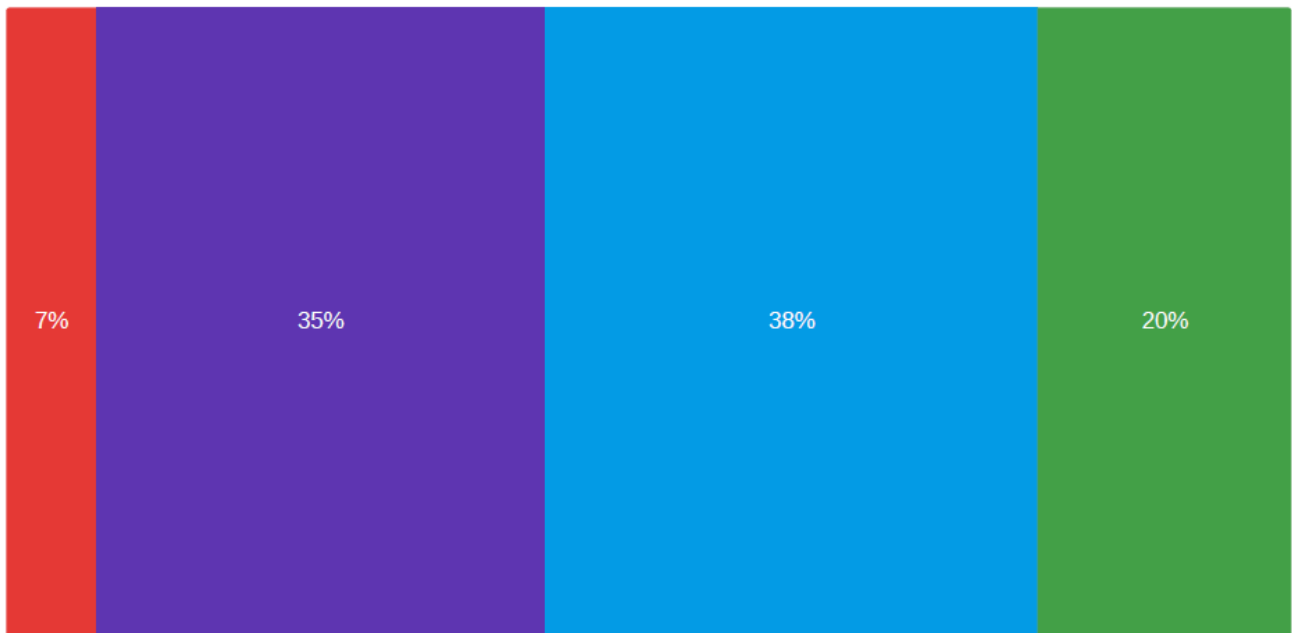
Percentage distribution of answers to question A12

'Which is the bandwidth of your internet connection?'

For the analysis of the results, essentially the same considerations made above regarding the type of connection apply: those who use a digital infrastructure for a training activity have an advantage in making full use of its performance, but in the creation of groups of learners and training courses requiring interaction between participants, perhaps live, the concrete possibilities must be assessed, bearing in mind that the lowest bandwidth of those available to the various participants will be decisive for the entire group.

The majority, i.e. 73%, split between the two ranges 10-25Mbps and >=100Mbps. Certainly encouraging is the fact that only 7% said they had a connection of less than 10Mbps. Although bandwidth is certainly not the only enabling factor for the most advanced methodological solutions, we have confirmation that the European education system also in this sector has access to connections capable of supporting the streaming of large masses of data and, therefore, applications for 'live' collaboration of a certain commitment. As with all technological performances of infrastructures and devices of teachers and learners, time will tend to play decisively in their favour. We can expect that those reading this document after the conclusion of the project will find themselves in a more favourable scenario than the one depicted in the survey.

6.3.   Section B: distance learning

In the second section of the questionnaire we start to get into the substance of the training, i.e. the methodological and content aspects. There are only three questions but they are central to the topic addressed by the project, namely the digital readiness of training. Indeed, we need to understand, before we can come up with improved solutions, what trainers are already doing. It goes without saying that the questions - as already mentioned above - only make sense for those who have already had experience with distance learning and were only asked of those who answered positively to question A8 (as explained above in section 6.2).

The expectation, for reasons already amply explained, was of rather limited use, with the possibility, however, of a very recent turnaround on the back of the need to respond to the pandemic situation.

First, we took care to make clear the distinction between synchronous and asynchronous learning, which is central to distance learning across any sector and even more so in music, given the prevailing interest in practical training. Not wishing to take for granted the familiarity with this terminology on the part of specialised trainers in a field - it should never be forgotten - that has largely neglected distance learning until 2019, the following explanatory text was therefore proposed:

"Synchronous learning refers to all types of learning in which learners and teachers interact at the same time during the teaching process. This includes in-person classes, live online meetings when the   whole   class   or   smaller   groups   get   together.

Asynchronous learning is a student-centered teaching method widely used in online learning. In asynchronous learning, teachers usually set up a learning path, which students engage with at their own pace." (item B0).

These explanations are not intended to set universal definitions but simply to explain the meaning to survey users so as to avoid misunderstandings and misinterpretations.

It goes without saying that although this distinction is applicable to any type of activity, for the purposes of methodological elaboration it is essentially of interest for distance learning activities, to which we will therefore refer in our comments on the answers to the next questions.

In the case of Virtual Stage, wanting to explore multiple solutions to be used and combined in a customised way, both types of teaching are interesting. Indeed, there are asynchronous activities that can be very useful in the professional training of opera artists, as in any music learning activity, where continuous individual study and practice have always been fundamental. Moreover, distance collaboration in asynchronous mode is an equally important resource. However, the fact remains that from the point of view of requirements, synchronous distance learning is the most demanding, and most critical, mode and is therefore of specific interest, as well as having its own requirements and requiring a separate feasibility study in all aspects (hardware, software, connectivity).

Finally, but for the Virtual Stage team it is the most important thing, they intend to explore in the project the possibilities of 'blended' training (part in-presence training and part distance training), which appears - at present but also in the future - to be the privileged way for the massive introduction of digital technologies in vocational training in the field of opera.

The first question in this section therefore investigates the type of previous experience of the trainers involved in the survery and those who are currently maturing:
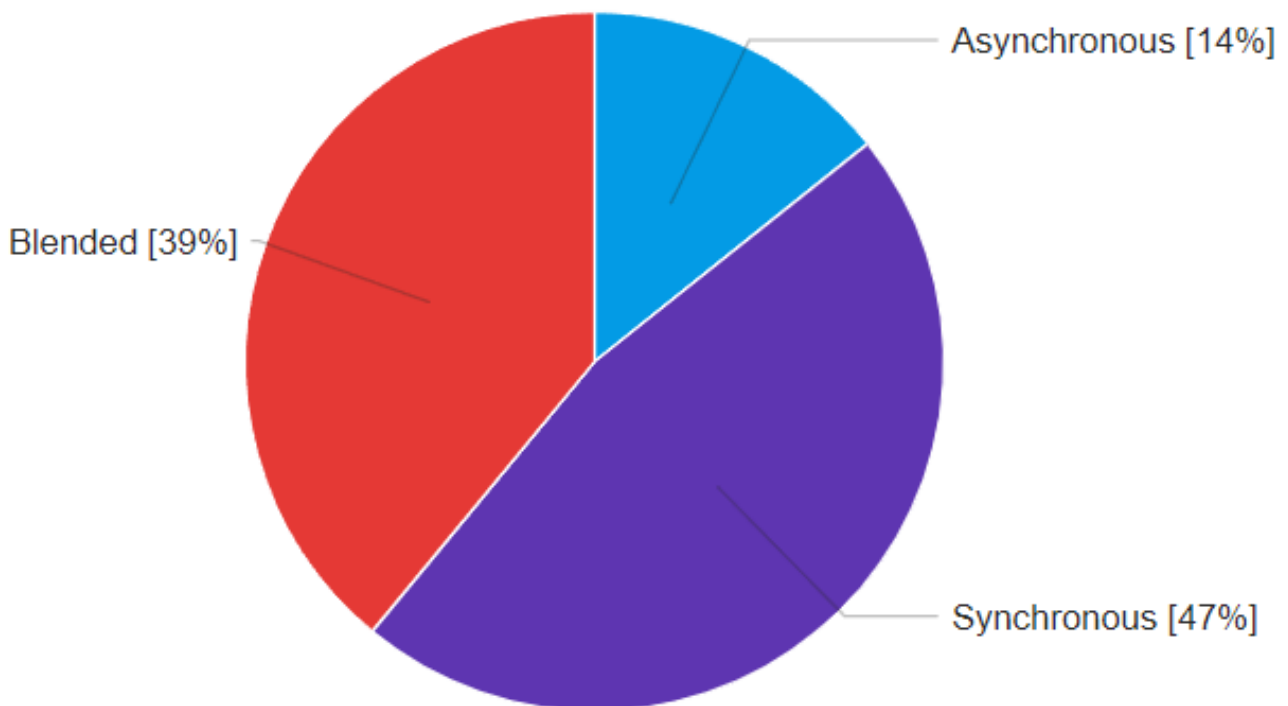
Percentage distribution of answers to question B1

'Which approach do you use in Distance Learning?'

Blended learning is confirmed as a valid and appreciated approach, already experienced by 39% of the participants. Synchronous training appears to be the most practised experience, and this may be one of the effects of responding to the needs of the pandemic situation. Indeed, in all sectors of training and education - but one can certainly say in all sectors of activity in general - 2020 has been the year of streaming meetings, inaugurating a trend that seems destined to continue well beyond health emergencies, in fact shaping new habits.

It should be noted that specific reference was again not made to training in opera. The aim here was to investigate users' familiarity with the different modes of technology-mediated learning. For the purposes of the project, a user who is accustomed to using synchronous distance learning, or is

already familiar with blended courses, is in any case a user - and in this case a trainer - at least partially "trained" and thus more ready to use certain modes and technologies.

Minority is the use of the asynchronous mode, which will however be explored in detail in the guidelines (outputs 2 and 3), in the belief that the project partners are able to propose a number of interesting training solutions and activities in this area.

Let us, however, get to the heart of the methodologies:
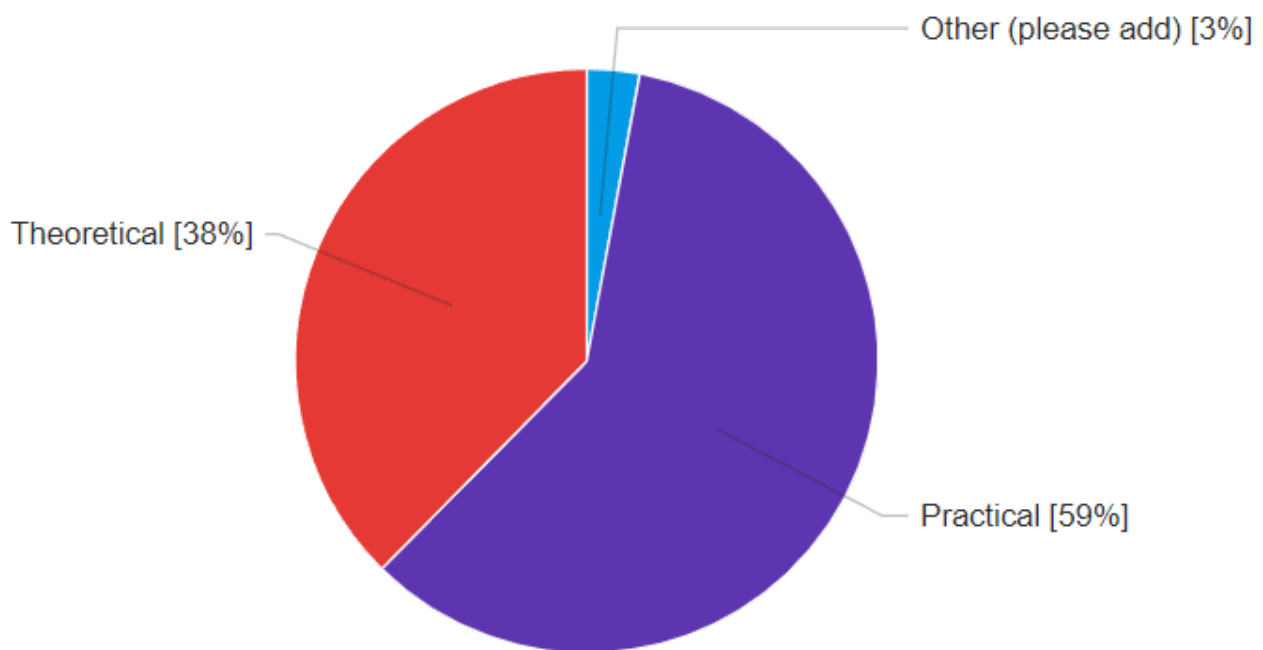
Percentage distribution of answers to question B2

'Did you use a theoretical or practical approach?'

The question is necessarily very simple, in order to be able to gather a clear indication from all participants and bearing in mind that there are no consolidated and codified methodologies to refer to, at least with regard to Virtual Stage's subject area, in the field of distance and/or blended learning.

This is a central question for the analysis of the post-COVID scenario. It might appear too general, since the range of practical activities is as heterogeneous as ever, encompassing both vocal and instrumental techniques and (at least potentially) many other kinds of activities, and no distinction is made between group and individual activities. What we were interested in investigating, however, knowing the specific sector and also having been able to directly observe many experiences realised during the acute phase of the pandemic, was in general the propensity to drop the use of technologies into that purely practical sphere which is decidedly dominant in opera training

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practice, but is also the most complex from the point of view of digitisation. The outcome of the survey was a positive surprise. Evidently the need to ensure some form of continuity in practical training prompted attempts in this direction, at least on an experimental level. Given the pre-COVID situation and considering the objective technical difficulties, as well as the need for some creativity in training design, being able to count on a base of almost 60% of users who already have at least the intention of using digital technologies in practical musical-theatre training is definitely encouraging. Even if it were the trainers most sensitive to the issue who responded, at the very least, a large vanguard of practitioners could be configured to promote change.

Remaining on the theme of intentions and experimental approaches, let us now see quantitatively what kind of impact the survey participants declare on their training practices:
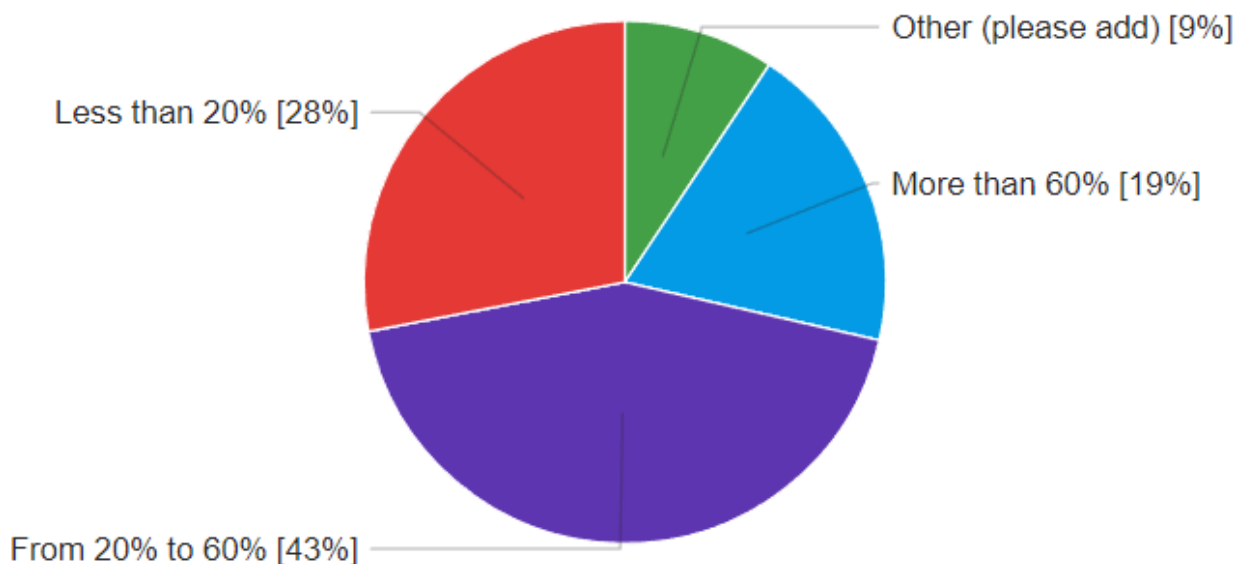
Percentage distribution of answers to question B3

'Considering the overall teaching process, how many hours (in %) did you or your institution spend on distance learning?'

These data require very careful evaluation. 19% of the participants declare over 60%. This may seem to be an unrealistic representation, but again the particular historical moment in which the survey was carried out must be taken into account. Remember that the first answers were collected in 2021, i.e. in a phase that can still be defined as an emergency from a health and, therefore, social point of view. It would be more interesting than ever to repeat the same question at a later date, in 2024 or 2025, and compare the data for this bracket. Prudently, in the absence of further feedback we consider this figure as potentially related to a transitional phase.

Obviously, the same considerations also apply to the next bracket, i.e. to the very large 43% of the sample who declare a 20 to 60% incidence of distance learning.

We can however conclude that the 'ice-breaker' function of the pandemic emergency with respect to online training is also fully confirmed for the operatic sector: at least in the years 2021-2023 many experiences have been made and the use of digital tools for teaching has been massive, while it is undoubtedly too early to say whether this trend is destined to last, i.e. whether the emergency response tends towards continuity and stabilisation.

Strictly from a project perspective, it can be said that the time is right to propose digitised methodologies, as we intend to do with Virtual Stage.

6.4. Section C: in-depth study on distance learning tools (only for those who have already used them)

Section C is an in-depth section, which is very useful for the purposes of the project to understand the trainer's habits and preferences, but meaningful for the users only if they have specific previous experience. For this reason, this section was also only administered to users who answered positively to question A8, i.e. who stated that they had already had distance learning experience. In addition, given the large number of items involved, we tried to organise the section in such a way as to facilitate the user's reflection and response.

First of all, we divided the instruments on which to question users into three separate lists, simply called A, B and C, to each of which a question in the questionnaire was dedicated (C2, C3, C4).

The logic of this subdivision is explained in C1 as follows:

"We listed some digital tools that could be used in musical practice.   The tools in the **List A** do not require specific Information Technology (IT) skills.   The tools in the **List B** require some moderate knowledge and skills in the IT.   The **List C** requires some advanced knowledge and skills in the IT."

Let us now see, list by list, how the respondents answered the survey, bearing in mind that it was possible to tick several answers for each list.

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List A - tools that do not require specific computer skills
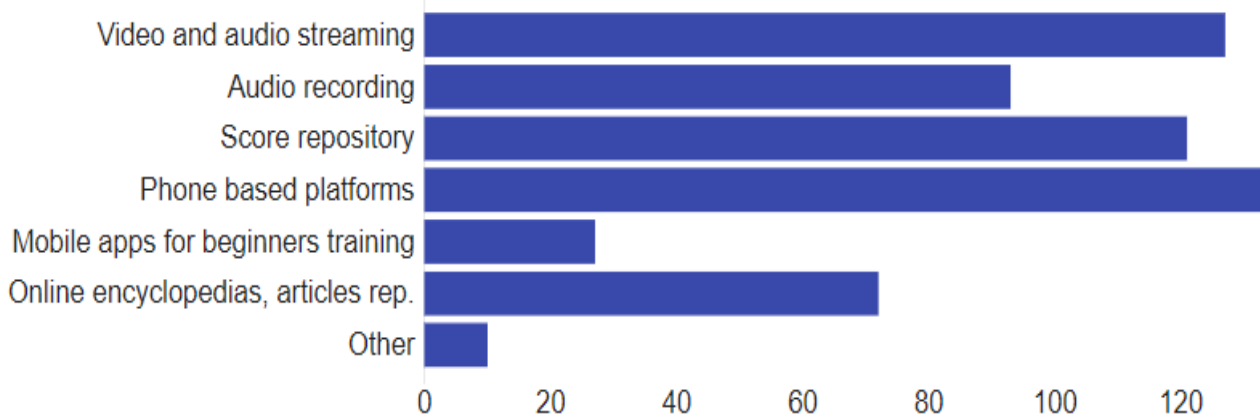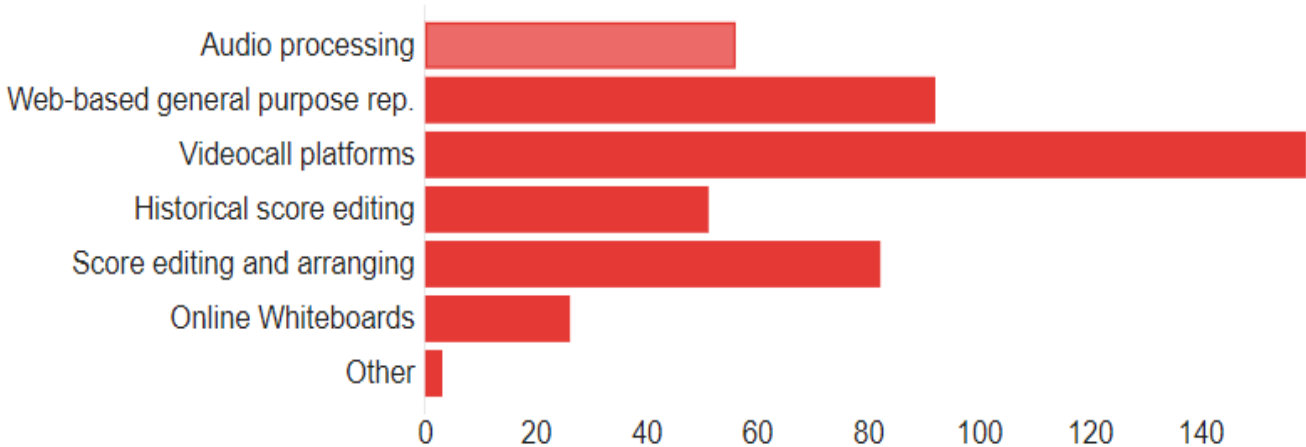

Distribution of answers to question C2 (List A)

As can be seen, and predictably given their simplicity, these categories of tools are used by a significant number of survey respondents. The least used, probably because they are less well known, are the training apps for beginners. Some tools ùù, such as streaming and phone call platforms. on the other hand, benefit from a 'mainstream' usage that during the COVID pandemic period made them the common heritage of many, inside and outside the music environment. Who during the pandemic did not use streaming information channels and did not need to expand their capabilities to the maximum to keep in touch at a distance with friends and relatives? Clearly, it is another thing to use it for specifically educational purposes, but it is undeniable that it is easier and more immediate to experiment with what one already knows by other means.

Interesting, and potentially related to a pre-COVID digitisation process, is the rather widespread use of score archives. The topic is beyond the scope of this project's investigation, but in the classical music sector, as well as in the opera sector, the use of digital formats for the consultation of musical scores is widespread and the advantages for archiving and reading that it can offer are beginning to be well known by those in the field.

Also quite significant is the finding of a certain lesser familiarity with recording, compared to live communication, in teaching practices. Here, the greater technical complexity of the use of recorded signals, but also its correlation with rather articulated activities from the point of view of methodology and teaching methods may have an impact. Live communication, even in audio/video streaming, lends itself to theoretical lessons, which are more immediate and secure, and which are not confronted with the greater challenges for digitisation, linked to practice and technical-practical learning.

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*List B - tools requiring some computer skills (not advanced)*

Distribution of answers to question C3 (List B)

What we observed for list 'A' is also confirmed in this second list. By far the most frequently mentioned category of tools by users are video call platforms. Video conferencing and video calling applications have become decidedly mainstream and almost universally used in all professional (but also private) environments.

With regard to the other, more specific tools, it can be seen that the processing of music writing is one of the applications of greatest interest (score editing/arrangement, sheet music editing). The use of tools such as cloud repositories and audio processing tools, while not exclusively pertaining to opera and music, are of primary interest to the sector, given the importance of audiovisual content for the training of singers and instrumentalists. It is easy to see that what involves content creation and editing (audio processing and sheet music editing) tends to have fewer users. It can be assumed that this is due not so much to less interest, but to far greater technical skills prerequisites of the user - storing a recording in the cloud is one thing, editing a recording is another.

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List C - tools requiring advanced computer skills
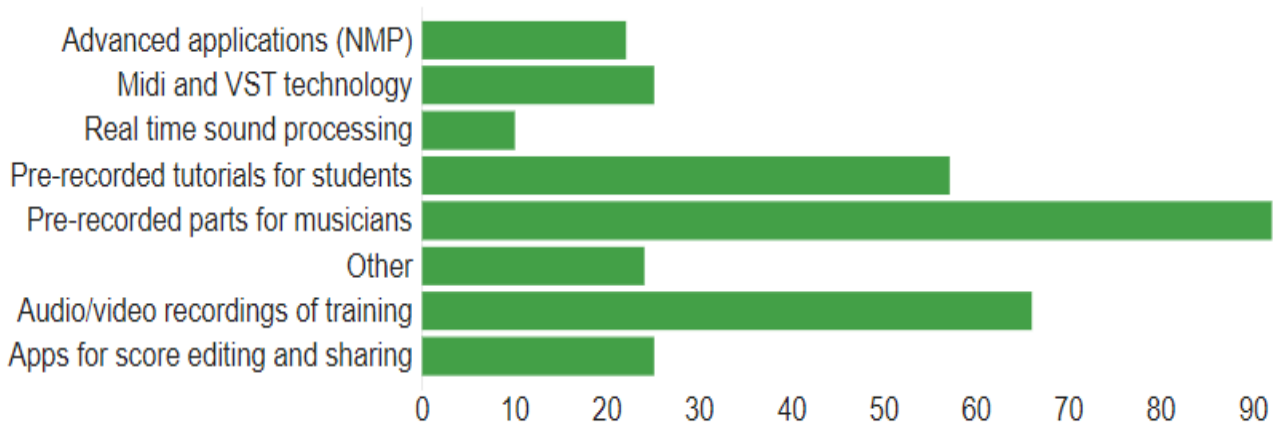
Distribution of responses to question C4 (List C)

When we get to the more advanced tools, and more precisely those requiring more technical computer skills on the part of users, the numbers predictably drop. None of the tool categories proposed exceeds 100 positive responses. However, a strong interest in audio and, to a lesser extent, video content is noticeable among the more advanced users. This is important from a methodological point of view because it confirms the now mature perception of the appropriateness of using digital technologies also to support practical training. By far the category with the largest number of users are pre-recorded paritems for musicians and this illustrates the point without the need for much further comment. On the other hand, we note - and this was an equally important finding for our researchers - that a very limited number of users (in both cases less than 30) use Midi technologies and real-time sound processing systems. These types of resources require extensive knowledge of digital sound processing systems and the development of complex technical skills. However, these are technologies with a very high potential for the training of musicians, far beyond the more obvious areas of interest such as electronic music, electroacoustic music or pop music. As will be illustrated in the guides for trainers, Output 2 and Output 3, these are technologies that can open up great scope for innovation in the fields of opera and classical music. If used well, midi and real-time sound processing technologies can already act as enhancing factors in music education, even in presence.

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6.5. Section D: evaluation of distance learning (also for those who did not use it directly)

In section D, all survey users (even those who declared no direct experience of distance learning in their answer to question A8) are asked to express an opinion on the most debated aspects currently surrounding distance learning.

D1 is simply an invitation to express oneself, while in D2 and D3 a series of problems/negative evaluations and a series of advantages/positive evaluations are proposed, respectively. With respect to each item, the user is asked to express agreement or disagreement.

Let us first look at the answers on the positive evaluations, bearing in mind that the selection was free for each list, i.e. it was possible to select one or more answers:

Negative evaluations - criticised and/or controversial aspects

Reported statement	No. of users who agree
Distant interaction is limited despite the use of technology	131
I like to work in contact with others: technology is a barrier for the quality of sound	106
I like to work in contact with others: technology is a barrier for extra-musical content in ensemble music	73
There are technological problems: my students are not equipped	58
Distance learning ask for more concentration compared to traditional methods	57
There are technological problems: I'm not equipped	36
I think this teaching method is not useful or not applicable to music pedagogy	27
Other	24
I cannot afford to invest in the purchase or renewal of new technology equipment	20
There are educational problems: I'm not trained	18
I do not like to use technology because I have a different way of thinking, compared to IT experts	13
I do not like to use technology because it requires too much time	11

Users' answers to question D2

'Distance learning raises several debates about its effectiveness'

Having proposed very different reasons for a hypothetical critical or sceptical stance, one can compare these with each other to see which attitude prevails.

The answers, as can be seen, are listed in descending order of user agreement. What is immediately apparent is that the limitation of digital is seen by the majority of users in the management of interactions between musicians, to which the first three responses can be attributed. The trainers who participated in the survey are aware, of course, that digital technologies with the spread of broadband computer networks support remote interaction between users. What is disappointing is the quality of the interaction, which is considered inadequate for the communication needs within a group of musicians. A fairly significant minority of users (27 responses) also make this a matter of principle from a pedagogical point of view, believing that the road to digitisation is somewhat blocked. Interestingly, the problem of technological barriers, i.e. the users' (students') equipment, is considered less serious (58 responses).

Positive evaluations - aspects appreciated

Reported statement	No. of users who agree
Students and teachers are free of teaching and learning indipendently from their geographical location (16)	147
Possibility of recording the lessons and reviewing online content (19)	132
It makes timetable and organisation more flexible (18)	117
It allows a wider diffusion of knowledge (13)	98
Possibility of learning by best performers in the world (21)	91
Possibility of exchange and discussion with a wider audience (forum, real time chat, newsletters) (20)	73
Students can progress at their own pace (14)	65
No need to displace large instruments (piano, organ, harp, harpsichord, double-bass...) (17)	60
Possibility of performing aimed researches in large databases (24)	57
There are no physical boundaries to the learning process (15)	55
Easyness in music edition, music part layout and real time information sharing for music groups (22)	43
Other	9

Users' answers to question D3

'Distance learning is appreciated in new musical pedagogy for several reasons'

Again, we have listed the answers in descending order of user agreement. The general advantages of distance learning prevail, such as independence from geographical constraints and simplification of logistics and timetable management, all aspects related to users' travel that can apply to any sector and type of expertise. It is worth noting that a rather high number of users (over 90) cite the possibility of following lessons from the world's best performers, a need which is particularly relevant in the artistic professions where the peculiar relationship between teacher and pupil makes contact with personalities recognised as highly authoritative more attractive. Again, one notes a very strong interest in audiovisual content (second answer in order of preference) - which has already emerged in other answers - which in some ways is part of our age, transversally to all sectors, but which assumes a greater relevance in musical training and particularly in practical musical training, where attending a maestro's performance or reviewing one's own are training experiences that cannot be replaced by a descriptive or analytical account.

6.6. Positive user experiences (sect. E, question E.1)

This was an open question with which we wanted to gather some feedback from the users' voices. A total of 23 comments were collected. Rather than attempting to summarise them, which would in any case give a very partial picture in relation to the more than 300 users involved, we have selected a few comments that we found stimulating as points for further reflection on the theme of digital readiness as applied to the training of opera artists. We report them in the original language in which they were written by the users:

1. "Teaching composition works very well online. Scores online in pdf are easier to view together and annotate than on paper"
2. "I could have rehearsals during Covid-19 Lockdown"
3. "Durante i vari lockdown abbiamo continuato le prove del coro a distanza. Non è stato semplice, ma ci ha almeno consentito di continuare con lo studio delle parti."
4. "Le mie esperienze positive sono legate alla stabilità della connessione internet, ai momenti in cui è possibile ascoltare bene i suoni dello strumento e relazionarmi quasi in contemporanea con lo studente."
5. "Le lezioni teoriche online mi permettono una maggiore libertà per organizzare il mio tempo e studiare lo strumento."
6. "Poter insegnare a studenti in ogni parte geografica, principalmente in regioni dove non c'è l'insegnamento di certi particolari strumento/disciplina, come nel mio caso, la viola da gamba."
7. "In particular, it has been positive in scheduling more frequent technique work and when my students have both good equipment and internet signal."

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8. "Durante il periodo di lockdown un mio allievo adolescente ha sofferto per dei gravi lutti dovuti alla pandemia; attraverso la lezione di musica online sono riuscita a trasmettere al ragazzo un senso di continuità, di costante presenza e di normalità."

9. "I found pre-recorded exercises very useful. Student can play it over and over any time."

These 9 brief comments indeed seem to represent multiple aspects of the situation emerging from the state-of-the-art analysis. Some of them highlight specific aspects that make some online activities enhancing and improving the effectiveness of teaching and learning: partly these are advantages linked to technical aspects of musical training (1, 9), and partly they are characteristic advantages of online and blended training - frequently mentioned also in other fields, far from opera and musical training, such as the organisational flexibility of distance learning, which cuts down travel time and makes it easier to manage commitment calendars (5-7). Other answers refer to positive experiences linked to what we can call the resilience of online training, i.e. to distance learning as an emergency response guaranteeing didactic continuity with consequent benefits both in purely educational terms and in terms of psychological and motivational support (2-3, 8). Finally, answer 4, although a testimony of positive experience, for us has above all the value of a reminder regarding the need for basic technical requirements to successfully realise online activities: live music teaching can be of considerable value but requires a highly stable connection.

6.7. Negative user experiences (sect. E, question E.2)

Similarly to what we did for the positive experiences, rather than attempting an improbable and insignificant synthesis of the 24 testimonies received, we thought of selecting a few significant comments on the theme of digital readiness declined in the field of artist training for opera and we quote them below in the original language in which they were written by the users:

1. Difficoltà nell'utilizzo di determinati software avanzati.
2. Having to teach a student who disappears most of the time because of weak Wifi at his apartment.
3. Toutes les activités avec "trop" de problèmes techniques à gérer... De plus en plus, on se retrouve à faire des sessions de travail avec des étudiant·es en présence et d'autres à distance. Si on est seul·e à animer le travail et veiller aux connexions, ça peut vite devenir très compliqué. Alors... être deux, mais c'est beaucoup de temps/argents...
4. Senza un'interazione diretta in presenza risulta più difficile acquisire tecniche di canto, soprattutto visto che si tratta di un'attivitá pratica. Risulta più difficoltoso anche esplicitare eventuali dubbi all'insegnante
5. Spesso ho riscontrato difficoltà audio e mancava l'interazione con gli altri coristi.
6. Mancanza di Condivisione emozionale con gli altri amici cantanti e con gli strumentisti.

7. Le mie esperienze negative sono legate alla scarsa qualità della connessione internet e al ritardo del segnale che spesso non consente un buon ascolto dei suoni dello strumento.
8. Certe lezioni pratiche (che riguardano lo strumento) online sono state un disastro per colpa della connessione. Sia da allieva che da insegnante.
9. Le esperienze negative sono state quelle lezioni funestate dalla connessione scadente, soprattutto in occasione di lezioni di pratica musicale. È stato estremamente frustrante non poter lavorare in presenza, in certi casi.
10. I can't always see complete posture of my student.
11. It needs bigger preparation for the lesson- pre-recorded videos, explanation videos, …

It is of some interest to note, in comparison with the answers concerning the critical aspects of distance learning (D2), that here there is a greater emphasis on technical difficulties, the need for better equipment and connections than those available. One user also comments on the need for specific study in order to acquire the necessary skills to use the most advanced tools and another on the heavier work of preparation on the part of the teachers, who must create audiovisual materials to support the lessons, implying that this is not necessary for face-to-face teaching. It will be the task of the researchers in the elaboration of the guidelines for trainers (outputs 2 and 3) to come up with a convincing response to these remarks, to indicate ways of approaching digitalisation such as to motivate and help those concerned to overcome the difficulties encountered, to acquire and make the best use of technological resources and digital skills capable of making a difference, in a positive sense, for e-learning and, hopefully, also for face-to-face learning.

6.8.   Towards digital readiness, insights from the survey

One of the objectives of this document is to provide guidelines for professionals in the field. Given that in the framework of the Virtual Stage Project we propose practical guides for the training of singers (output 2) and instrumentalists (output 3), to which we refer for details, it is useful to draw the threads of the considerations made in the previous sections and to derive some general indications that may be useful for a renewed approach to digital readiness for the opera sector, transversally to the different methodological approaches and specific technologies used.

In fact, clear results emerge from the survey which reinforce the conclusions of the context analysis and complement it: users are sceptical about the possibility of effectively interacting at a distance in a music training course, because they are well aware of the complexity of the interaction between trainers and learners, and within the group of learners, moreover they were only able to experiment rather simple and limited forms of interaction, while those who tried to do more found difficulties of various kinds related to the reliability and quality of the available technologies, the need for specific digital skills etc. The interest in the management of digital audio/video content and digital

musical scores, the good diffusion by now acquired at European level of broadband connections and a familiarity with the use of streaming and live streaming, even if mostly at amateur level, nevertheless give hope that the trainers surveyed will be willing to consult the methodological proposals we intend to elaborate in Virtual Stage and, perhaps, to try and try again some practical experiments, if suitably guided on the basis of a good level of experimentation. At least on the part of the survey users, there is indeed a presence of sceptics who are theoretically wary of the possibilities of digitisation, but in an estimated percentage of between 10 and 20% that can be considered physiological, especially taking into account the scarcity of documented specific experiences.

The enabling factors for digital readiness thus appear to be essentially four, all of them of fundamental importance:

- the infrastructure i.e. the telematic connection,
- digital skills of trainers and learners - including those needed to create and process audiovisual digital content and manage real-time communications,
- the specific methodological skills of trainers,
- the availability of hardware and software technologies capable of ensuring truly effective dsitance communication for the needs of music (information-rich non-verbal communication).

7. Stakeholder networks and contacts with industry bodies

The project partners make networking one of the key components of their training and cultural production activities. The broad base of international contacts not only made it possible to reach and surpass 300 responses in the survey, but also to identify a number of operators interested in becoming more involved in the project.

Among the stakeholders who collaborated with suggestions, opinions, comments on the ongoing research, the ideas that emerged and the results of the project, we can mention:

	Name	Typology	Country
1.	Lira Transalpina	Musical Ensemble	France
2.	Ecole de Musique Connectée	Online music school	France
3.	CEFEDEM Lyon	Centre for Professional Training in the Arts	France

4.	Opera2Day	Baroque orchestra	The Netherlands
5.	Broken Consort	Orchestra and choir	The Netherlands
6.	Ribatutta ensemble	Orchestra and choir	The Netherlands
7.	Ludwig	Musical Ensemble	The Netherlands
8.	Modelo62	Musical Ensemble	The Netherlands
9.	Huismuziek	Ensemble and instrument builder	The Netherlands
10.	Konzert Opera Florence	Cultural association - music ensemble and festival organiser	Italy
11.	Conservatorio di Firenze	Conservatory	Italy
12.	Conservatorio di Brescia	Conservatory	Italy
13.	Liceo Musicale La Spezia	Secondary school	Italy
14.	Opera Network	Cultural association - music ensemble, festival organiser and promoter of innovative training projects	Italy
15.	Conservatorio La Spezia	Conservatory	Italy
16.	Etruria Barocca	Musical Ensemble	Italy
17.	Accademia Musicale di Firenze	Music School	Italy
18.	In Canto Armonico - Juvenes Cantores della Cattedrale di Sarzana	Choir	Italy
19.	Centro Studi Musica & Arte	Musical training organisation	Italy
20.	San Miguel Chamber music festival	Festival - one of the oldest chamber music festivals in the country	Mexico
21.	Orquesta de Malaga	Orchestra	Spain
22.	Eurofilmfest	Cultural production and promotion body,	Czech Republic

		organiser of events and training projects	
23.	Leoš Janáček Primary School of Music	Primary school	Czech Republic
24.	Církevní konzervatoř Opava	Conservatory	Czech Republic

As can be seen, this is a very rich and heterogeneous sample comprising operators in the sector (including 1 non-European) and a number of players operating in contiguous sectors such as music education, higher music education, training and amateur artistic production.

To complete the picture, we must mention the many bodies, associations, institutions and companies which, although not reaching the level of involvement of the 24 stakeholders listed above, were reached and informed through e-mail communications, with direct contact to contact persons (representative but not exhaustive list):

	nome	Paese
1.	Univ.Lumière Lyon 2 - dept.musicologie	France
2.	Orchestre OSEMP	France
3.	ENM de Villeurbanne (CRD)	France
4.	CRR de Toulouse	France
5.	Ensemble Le petit Trianon	France
6.	Atelier Musical Renaison	France
7.	Le Concert de l'Hostel Dieu	France
8.	The Beggar's ensemble	France
9.	Trio Guersan	France
10.	Duo ControVersia	France
11.	CRR Annecy	France
12.	Schola Cantorum Basiliensis	France
13.	Orchestre des lauréats CNSMDP	France
14.	Orchestre National de Lyon	France
15.	Ensemble La Marquise	France

16.	Sinfonia Rotterdam	The Netherlands
17.	Belgrade Philharmonic	Serbia
18.	The Beggar's Ensemble	France
19.	CNSMD Lyon	France
20.	Le Concert de l'Hostel Dieu	France
21.	Académie de Concert de Lyon	France
22.	Ensemble Batera	France
23.	Spirito	France
24.	Soundsgood	France
25.	Opéra National de Lyon	France
26.	Petits Chanteurs de Lyon	France
27.	MJC Fontaines Saint Martin	France
28.	Antiquarius Consort Praga	Czech Republic
29.	Musica Divina	Czech Republic
30.	Beethovan Triopraga	Czech Republic
31.	Vivaldi Orchestra Praga	Czech Republic
32.	HAMU Praha	Czech Republic
33.	JAMU Brno	Czech Republic
34.	Konzervatoř Brno	Czech Republic
35.	Konzervatoř České Budějovice	Czech Republic
36.	Konzervatoř Pardubice	Czech Republic
37.	Konzervatoř Praha	Czech Republic
38.	Leoš Janáček Primary School of Music	Czech Republic
39.	Městské divadlo Brno	Czech Republic
40.	Národní divadlo	Czech Republic
41.	SofiG Art Photo	Czech Republic
42.	ZUŠ Mariánské Hory	Czech Republic
43.	ZUŠ Terezie Brzkové Plzeň	Czech Republic

44.	Grange Festival	UK
45.	Scordatura ensemble	The Netherlands
46.	Koninklijk Conservatorium Den Haag	The Netherlands
47.	Conservatorium Utrecht	The Netherlands
48.	Orchestra of the 18th century	The Netherlands
49.	Butter Quartet	The Netherlands
50.	Huismuziek - Ver. samenspel en instrumentenbouw	The Netherlands
51.	Traverso, American School of The Hague	The Netherlands
52.	Holland Baroque	The Netherlands
53.	New Dutch Academy	The Netherlands
54.	New Collegium Den Haag	The Netherlands
55.	B'Rock	The Netherlands
56.	Fonds Podium Kunsten	The Netherlands
57.	Anima Eterna	The Netherlands
58.	Australian Romantic Orchestra	Australia
59.	Richter Ensemble	USA
60.	Sarasa	USA
61.	Liceo Musicale Pistoia	Italy
62.	Liceo Musicale Massa	Italy
63.	Teatro del Maggio Musicale Fiorentino	Italy
64.	Conservatorio Mantova	Italy
65.	Conservatorio Genova	Italy
66.	Conservatorio Parma	Italy
67.	Scuola di Musica di Fiesole	Italy
68.	Liceo Dante Firenze	Italy
69.	Conservatorio Padova	Italy
70.	Nuove Scuole Serristori	Italy
71.	Istituto Mascagni Livorno	Italy

72.	Conservatorio Piacenza	Italy
73.	Conservatorio Alessandria	Italy
74.	Haute Ecole de Musique de Geneve	Switzerland
75.	Centre des Musiques du Monde, La Chaux-de-Fonds, Neuchâtel	Switzerland
76.	Anassa Productions	Romania
77.	University of Music and Performing Arts Graz	Austria
78.	DIT Conservatory & Drama	Ireland
79.	TCD dept. of Music	Ireland
80.	Hochschule der Künste Bern	Germany & Switzerland
81.	University College Antwerpen	Belgium
82.	Schola Cantorum Basilensis	Switzerland
83.	Štátny komorní orchester Žilina	Slovak Republic
84.	Štátna filharmonia Košice	Slovak Republic
85.	UMFC, Uniwersytet Muzyczny Fryderyka CHOPINA	Poland
86.	Sofia Opera and Ballet	Bulgaria
87.	Istituto Superiore di Studi Musicali Arturo Toscanini	Italy
88.	Accademia Lirica Internationale Umberto Giordano	Italy
89.	Classics Management	Hungary
90.	Sinfonietta Hellenica	Greece
91.	Mihail Jora Philharmonic Orchestra of Bacǎu	Romania
92.	Opera Europa	Belgium
93.	OperaVision	Belgium
94.	Copenhagen Soloists	Denmark
95.	Grange Festival	UK
96.	English Baroque Soloists, OAE	UK
97.	Ensemble Triagonale	Austria
98.	DocArtes	Belgium

99.	Opera Classica Europa	Germany
100	Academy of Art, Szczecin	Poland
101	Conservatorio La Coruña	Spain

8. Desk research: resources for digital readiness in opera training

8.1. Specific objective of desk research

The partners carried out a comprehensive search for available resources that, in different ways, could be functional for digital readiness. After careful reflection on the needs of the project and the experimental and in many ways pioneering status of the specific strand of investigation, being aware of the fact that we were unlikely to be able to find materials specifically designed for the purposes of the project, we decided to extend the search to as wide a range of resource types as possible, including:

- teaching materials on music that can be used for opera training;
- music-specific digital technologies that can be used in opera training;
- digital technologies in general use or born for other applications, which can be used in opera training;
- useful bibliographical references for in-depth study of topics relevant to digital readiness in opera training.

In other words, to make a significant contribution, given that the line of research on specific responses to the needs of digitisation applied to the training of opera artists is essentially in its nascent state. This is how it was before the pandemic and in the acute phase of the emergency, and this is how it is now, although we hope to have contributed with Virtual Stage to take some significant steps.

8.2. General Scenario

Partner research soon revealed the substantial absence of specific precedents. Confirming what was assumed in the initial analyses carried out in 2020, there are in fact no projects and experiences of a similar nature to Virtual Stage, in terms of objectives, breadth and depth of intervention.

There is widespread use by musicians, ensembles and institutions of streaming platforms and social networks for promotional purposes. It is also noted that some institutions, including institutions of the highest international relevance and visibility, offer online training content for self-study (in

asynchronous higher education). These practices, however, do not affect the teaching and study process and preparation for production.

The absence of precedents and training practices comparable to those proposed by Virtual Stage did not stop the research carried out by the partners. We verified the existence of many useful resources and the research was able to develop extensively at international level and produce a number of relevant results, which then formed the basis for the development of new methodologies within the project.

8.3.   Search object

The desk research focused on finding useful resources for the development of digital readiness in the relevant sector. The partners were activated and confronted, always acting in a cooperative manner. A feedback loop was set in motion with the methodological elaboration (outputs 2 and 3): the resources identified in the research stimulated the experimentation which fed the methodological elaboration, the latter in turn fed the research, calling for further investigation into resources that could be used for new problems and emerging needs. Thus research on pre-existing resources and development of new methodologies were virtuously intertwined.

The resources found were then filtered. Using a shared evaluation grid, the partners selected the most valuable for relevance and applicability to the digitisation of vocational training in opera. The resources chosen included both applications and tools designed and created for music, and applications and tools designed and created for other sectors or from the offer of "generalist" services (from audio/video streaming to automatic translation), but susceptible of effective transfer to the training sector of opera artists. We felt that the clearest and most effective criterion from an expositive point of view was to group the tools by application field, so as to highlight their added value for training.

With regard to software with paid licences, we would like to point out that in our research it seemed indispensable to take them into consideration and compare them with open source ones, even though the latter are privileged by the project, one of the aims of which is to recommend the best solutions available free of charge, without the need to purchase commercial products, as well as to valorise open resources and their prerogatives of reusability, customisation and improvement. The notes that follow therefore have no promotional intentions towards commercial products, they are only intended to provide guidance to the work's artists. We believe that the key point in view of "digital readiness" is to inform trainers, with a review of tool categories as wide and varied as possible, so as to make them aware of which tools, known and less known, even of general use, can be used to implement the types of training activities covered by the Virtual Stage project (distance

and blended training, in-presence training with integration of digital technologies). It was necessary for the sake of clarity to provide some examples and we have tried to mention those used and tested by the project partners. Other alternatives are possible and new ones will certainly emerge . However, it is essential to make it clear how one can equip oneself.

8.4.   Communication and collaboration platforms

Communication and collaboration platforms offering video conferencing services (which became extremely popular during the Covid-19 pandemic period) are extremely useful for education, allowing teachers and students to engage in interactive online lessons and collaborate effectively. These are tools that can certainly also be adopted in the field of music education.

These platforms allow teachers to offer online lessons in real time. Students can participate from home or any other location, without the need for physical travel.

During online lessons, teachers can provide real-time feedback on the exercises performed by students. They can listen to musical performances, correct mistakes, give guidance on performance techniques and provide personalised recommendations for improvement.

These platforms allow teachers to share teaching materials during lessons and thus to show scores, perform music examples, project presentations and use shared whiteboard tools.

Using these tools, students can collaborate in virtual musical ensembles. They can play together, synchronising performances over the network and sharing audio in real time. This possibility of virtual musical collaboration is especially valuable when students cannot physically be in the same place.

Many videoconferencing platforms offer the possibility of recording lectures, so that students have the opportunity to review them afterwards to go over the topics covered, clarify any doubts and repeat the exercises performed. In addition, recordings can be useful for teachers in analysing students' performance and evaluating their progress over time.

Some examples of platforms that can be adapted to the specific needs of training in the opera sector are:

- **Zoom** is an online video conferencing and collaboration platform. It allows virtual meetings, online classes and music training sessions to be organised. Zoom offers features such as group video calls, screen sharing, chat, session recording and real-time interactions. It is known for its ease of use and stable audio and video quality. It is available for several platforms and offers free and paid plans.
- **Microsoft Teams** is a communication and collaboration platform integrated within the Microsoft ecosystem. In addition to video conferencing functionality, it offers tools for chat, file sharing, project management and real-time collaboration. Teams is widely used in

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corporate and academic environments and is particularly useful for virtual classes and meetings. It is available as part of the Microsoft 365 package.

- **Google Meet** is a video conferencing service developed by Google. It offers group video calling, chat, screen sharing and session recording capabilities. Google Meet is integrated with other Google services such as Google Calendar and Google Drive, facilitating meeting scheduling and file sharing. It is widely used for both personal and professional purposes and is available to Google users.

8.5. Tools for making presentations

Presentation tools are widely used in education and can also be transferred to the field of music education in the opera sector.

These tools allow you to organise and visualise the content you want to present to students in a clear and appealing way. You can display sheet music, lyrics of arias, images of sets, costumes and other visual elements that help students learn

Presentations can be enriched with images, photos, graphics and icons that make the teaching material more visually interesting and engaging. This is particularly useful in the opera context, where images of famous singers, opera houses, famous directors and more can be shown to create a visual link with the topics covered.

The presentation tools also allow for the incorporation of audio and video files, enabling students to listen to musical examples of opera arias, performances by singers or extracts from opera productions.

The teaching material can be organised in a logical and progressive manner, creating a clear and coherent structure for presentation.

Some presentation tools offer interactive features that actively engage students during the lesson. For example, non-linear sequences, interactive quizzes or exercises can be created that allow students to actively participate in learning.

Presentations created with these tools can be stored and shared with students to enable them to access the learning material at any time. This is particularly useful for reviewing at home, preparing for performances or retrieving key information.

Below is a list of the best-known tools for making multimedia presentations:

- **Microsoft PowerPoint** is the presentation software of the Microsoft Office suite - as is well known, it is a paid proprietary software, however, we mention it for the sake of completeness, because it is a reference for other sofrware of this kind and because we find it frequently used also to produce multimedia presentations, in particular with the integration of audio commentary, also recorded live.

- **LibreOffice Impress** is the presentation software for the open source LibreOffice suite. It is free and available for various operating systems, including Windows, macOS and Linux. It is an opern source option for teachers and students.
- **Keynote** is the presentation software developed by Apple and is available free of charge but only for Apple devices such as Mac, iPhone and iPad. It offers a wide range of design templates and tools for creating high-quality presentations with smooth animations and transitions.
- **Google Slides** is a free web application offered by Google as part of the Google Drive suite. It is very similar to PowerPoint and offers basic functionality to create presentations, collaborate in real time with other users and access presentations from any device connected to the Internet.
- **Prezi** is an online presentation software that differs from PowerPoint in its non-linear approach to creating presentations. With Prezi, you can create zoomable and panoramic presentations that offer a more dynamic and engaging visual experience.
- **Canva** is a graphic design platform that allows you to create not only presentations, but also a wide range of visual materials such as posters, infographics and social media graphics. It offers predefined design templates and easy-to-use customisation tools.
- **Slidebean** is an online tool that simplifies the creation of professional presentations. It uses an artificial intelligence-based system to help users create well-designed presentations by providing hints and tips on slide structure and design.
- **Haiku Deck** is a presentation app available for iOS devices and on the web. It is known for its minimalist approach, with an emphasis on high-quality images and little text. It offers an extensive library of royalty-free images and simple design templates.

8.6. Text editing tools

Text editing programmes are very useful tools in education for carrying out a range of activities related to writing, analysing and revising texts. Here is some information on their use in education:

- **LibreOffice Writer** is an open-source text editing programme that offers similar functionality to Microsoft Word. It is free and available for various operating systems, including Windows, macOS and Linux. It is an attractive option for teachers and students who wish to use a full-featured text editing programme without having to purchase a licence.
- **Microsoft Word is** one of the most popular and widely used text editing programmes. It is a paid proprietary software, but we mention it anyway for completeness and because it offers a wide range of tools for formatting text, correcting grammar and spelling, creating tables and graphs, and document management.
- **Google Docs** is a cloud-based application that allows users to create, edit and share text documents online. It offers real-time collaborative editing tools, allowing teachers and students to work together on a document and provide comments or revisions instantly.

Google Docs is particularly useful for group document sharing and access from different devices.

- **Pages** (Apple) is a text editing application developed by Apple for the macOS and iOS operating systems. It offers formatting, spelling and grammar correction as well as predefined templates for creating attractive documents. Pages can be used both by teachers to create teaching materials and by students to draft and present their own work.

These text editing programmes offer a wide range of tools to facilitate the creation, formatting, revision and sharing of text documents. They are particularly useful in education for creating teaching materials, correcting student assignments, writing essays and organising information. They also enable more efficient collaboration between teachers and students, allowing them to work together on documents, provide feedback and revisions more quickly and easily.

8.7. Tools for transferring, sharing and archiving documents

The transfer, sharing and archiving of documents are of fundamental importance in education, especially in the context of distance learning. These processes enable teachers and students to exchange teaching materials, resources, assignments and projects quickly and efficiently.

Document sharing allows teachers to provide students with study or further study materials (such as sheet music, vocal parts, audio or video recordings, booklets and teaching resources). Students can access these materials from any Internet-connected device, and study and prepare for lessons or performances independently.

This opportunity also makes it easier for the teacher to review and evaluate the assigned tasks. Students can submit assignments, audio or video recordings, or other musical projects through the sharing media. Teachers can access these documents, provide specific feedback and assess student performance in an accurate and timely manner.

Document sharing also allows students to collaborate remotely in virtual rehearsals and performances. Students can share recordings of their vocal or instrumental parts, experiment with harmonisation and virtual ensemble, record and join their own performances, thus creating a virtual operatic performance.

There are several tools that make it possible to share, store and transfer documents in distance learning. Here are a few examples:

- **Google Drive** offers a free online storage space that allows users to upload and share documents, spreadsheets, presentations and more. Users can share files with others through links or set specific permissions to view or edit documents.
- **Microsoft OneDrive** is Microsoft's cloud storage service, which allows you to upload and share documents, spreadsheets, presentations and more. It also offers integrations with other Microsoft productivity tools such as Word, Excel and PowerPoint.

- **WeTransfer** is a file transfer service that allows you to send documents or large files by e-mail.
- **Dropbox** is another file storage and sharing service that allows you to upload and share documents, photos, videos and more. It offers synchronisation functionality between devices and the possibility of sharing files via links or real-time collaboration.

8.8.   Document scanning tools

Scanning documents in education offers advantages such as preservation and archiving, accessibility and sharing, annotation and editing, portability and reduced environmental impact. These advantages make study materials more accessible, practical and sustainable for students and teachers.

To make document scanning quick and easy, you can download apps that enable this process via smartphone.

Among the many available on the market we mention:

- **GeniusScan** is a document scanning app that offers an intuitive and easy-to-use interface. To scan a document, simply open the app, frame the document with your smartphone camera and take the photo. The app automatically processes the image to improve its quality and make the text easier to read. The scanned document can be saved in PDF or JPEG format and shared via email or other file sharing apps.
- **TurboScan** is another document scanning app that offers similar functionality. It scans documents using the device's camera, automatically detects the edges of the document and corrects any perspective distortions. The app also offers options to adjust the brightness and contrast of the scanned image. Documents can be saved as PDFs or JPEGs and shared via email or other sharing apps.
- **Adobe Scan** is a document scanning app developed by Adobe. It allows you to scan documents, receipts, whiteboards and more using your smartphone camera. The app also offers automatic image optimisation, optical character recognition (OCR) and integration with the Adobe Document Cloud for storing and sharing scanned documents.
- **CamScanner** is another popular app for scanning documents. It offers high-resolution scanning capabilities, automatic image optimisation, OCR to convert scanned text into editable text, and the ability to share scanned documents via email or file sharing platforms.
- **Microsoft Office Lens** is a document scanning app developed by Microsoft. It allows documents, whiteboards and business cards to be scanned, offering perspective correction, image optimisation and OCR conversion capabilities. Scanned documents can be saved in OneDrive or shared via email or Microsoft productivity apps such as Word or OneNote.
- **Scanbot** is a document scanning app that offers advanced features such as multipage scanning, OCR conversion, automatic document boundary recognition, cloud integration and

the ability to save documents in various formats such as PDF or JPEG. It also offers annotation and digital signature functions.

8.9. Translation applications and services

Among the useful resources for the digitisation of training in the opera sector, applications and translation services should certainly be mentioned

Such tools can be used to translate opera librettos into different languages. This allows singers to fully understand the meaning of the texts and to study them in greater depth.

Translation services and apps can also be used to translate teaching material, such as manuals, guides and articles, used in opera training courses or in preparatory meetings for the staging of an opera.

During workshops or training courses, or during online meetings for the preparation of a production, simultaneous translation services can be used to facilitate communication between people from different parts of the world. Everyone can speak in their mother tongue, while the translation is provided in real time to the participants in their respective languages.

We must emphasise one fact of context: opera is a highly internationalised sector. The circulation of training students and workers among both instrumentalists and singers is very large at European level, more so than in other professions. Moreover, cultural and training organisations in European countries, repositories of a tradition that is still a global reference, attract teachers and trainees from all over the world, so the creation of intercultural groups is very frequent. This is also the case among the project partner organisations, which count numerous foreign presences from other EU and non-EU countries (USA, China, Korea, Japan and others), both among staff and learners. For these reasons, the possibility of rapidly preparing translations of study materials into different languages facilitates the teaching and learning processes by responding to needs that are quite acute in this sector.

The following is a list of the main translation tools that can be used for the purposes just mentioned, distinguishing the contexts of use, 'mobile' and 'desktop' (online services).

The mobile applications we examined are:

- **WT2** is a real-time translation app that uses smart headsets. It is compatible with Android and iOS devices. The earpieces allow two people speaking different languages to communicate in real time, translating sentences between the two languages. The app uses speech recognition and translation technology to provide smooth communication between languages.
- **Google Translator** is a popular translation app available for Android, iOS and as an online version for computers. The app offers translations between different languages, allowing

users to enter text or speak phrases to get a translation. Google Translator also supports image translation and real-time translation using the device's camera.

- **iTranslate Voice** is a voice translation app available for Android and iOS. The app allows users to speak or type sentences that will be immediately translated into another language. It also offers the function of reading the translation out loud. iTranslate Voice supports a wide range of languages and can be used offline by downloading the necessary language packs.
- **QTranslate** is a translation app available for Windows and macOS. The app allows selected texts to be translated into different languages using predefined key combinations. It supports the translation of texts in applications such as web browsers, text editors and other system applications.
- **Instant Translate** is a translation app available for macOS devices. The app allows selected texts or entire web pages to be translated into different languages. It also supports the translation of texts in applications such as Safari, Mail and other system applications.

The following are online translation services that can be used profitably in desktop mode:

- **DeepL** is an online translation service that uses artificial intelligence to provide high quality translations. It supports numerous languages and offers more accurate translations through the use of advanced machine learning models. DeepL is known for its translation quality and ability to understand context to provide more accurate translations.
- **Google Translate** (online version) is one of the most popular and widely used translation services. The online version allows you to translate texts, sentences, web pages and documents into several languages. It uses automatic translation algorithms to provide instant translations. Google Translate also offers the possibility of listening to spoken translations and supports a wide range of languages.
- **Bing Microsoft Translator** is Microsoft's translation service that offers translations of texts, phrases and web pages in several languages. It uses Microsoft's machine translation technology to provide fast translations. The service also supports voice translation and can be used online or via apps.
- **WordReference** is a website that provides translations of words and phrases in several languages. It is particularly useful for translating single words or short phrases. WordReference also offers a discussion forum where users can ask questions about the translation or meaning of specific words or expressions.
- **ImTranslator** is an online translation service that offers translations of texts, phrases and web pages into several languages. It also supports voice translation and pronunciation of translations. ImTranslator also offers additional features such as grammar correction and unit conversion.

8.10. Video editing tools

Video editing programmes can be extremely useful in teaching practice, both for teachers, who need them to support the creation of more engaging and comprehensible customised teaching content, and for students, who can use them to make video presentations of projects or research.

In the context of music training, then, the creation of videos can bring particular advantages.

Teachers can, for example, record technique exercises, explanations or practical demonstrations and use video editing to emphasise key points, show visual examples or add graphics to facilitate understanding. They can also document in-person lessons and student rehearsals.

Students, for their part, can record their own performances and use video editing to review and analyse the recordings, identifying areas for improvement. In addition, they can compare their own performances with those of professional musicians to learn from high-level examples or send the videos to their teacher for feedback.

For the most part, this software is chargeable. There are also free prrogrammes, and we will mention a few of them. In any case, as already specified above for other categories of tools, although we have no intention of promoting commercial products, nor even less of influencing the choices of users in the market, it seems necessary to us to illustrate with examples how and with which tools - even with paid licences - one can manage the different phases of opera training and opera preparation, including the very important production of didactic videos.

Below is a list of some video-editing programmes that can be used for educational purposes:

- **iMovie** is a video editing programme developed by Apple, available for macOS and iOS devices. It is known for its intuitive interface and offers basic functionality for video editing, adding effects, creating titles and recording narrations. It is particularly suitable for Apple users and offers a good combination of simplicity and efficiency.
- **Adobe Premiere Pro** is a professional video editing programme widely used in the film and television industry. It offers a wide range of advanced features for video editing, audio editing, adding special effects and colour correction. It is suitable for more experienced users or those who want complete creative control over their video productions.
- **Final Cut Pro X** is a professional video editing software developed by Apple. It is widely used in the film and television industry for high-quality video editing. It offers a wide range of tools and advanced features for editing, adding effects, audio mixing, noise removal and colour correction. With an intuitive interface and powerful creative tools, Final Cut Pro X enables editors to create professional, immersive video productions.
- **GoPro Quik** is a video editing application developed by GoPro. It is designed to simplify the process of creating dynamic videos using footage from GoPro cameras and other mobile devices. Quik offers automatic editing features that allow you to quickly create eye-catching videos using your own video clips and photos. The app also includes tools for adding music,

titles, transitions and special effects. Quik is particularly appreciated for its ease of use and speed in creating engaging video edits.

- **KineMaster** is a video editing application for mobile devices available on Android and iOS. It is widely used to create high-quality videos directly from your smartphone or tablet. KineMaster offers a wide range of advanced editing tools and features, such as video editing, adding special effects, adjusting audio, using smooth transitions and much more. The application also supports multi-track editing, allowing multiple video clips, images, effects and audio tracks to be superimposed. With a wide selection of visual effects and filters available, KineMaster allows you to achieve professional results directly from your mobile device.

8.11. Tools for editing sheet music (music writing)

Traditionally, sheet music editing is a manual job requiring paper and pencil, multiple printing, glue, scissors, etc.

Music notation programmes offer a number of tools and functionalities that greatly facilitate these operations.

First of all, they allow the scores to be edited digitally. This offers greater flexibility than traditional work on paper scores, as changes can be made directly on the computer screen or tablet.

Secondly, they often offer audio playback capabilities, which allow the performance of the song to be listened to directly from the software and thus assess the musical effect of the changes made.

These programmes also feature automatic correction and alignment of musical elements (which simplify the editing process by reducing the need to manually adjust the alignment of the various elements) and search and replace tools that allow specific sections or musical elements in the score to be located and efficiently edited.

Finally, music notation programmes allow final scores to be printed in professional quality directly from the software. They can also export sheet music into various digital formats (such as PDF or MIDI files) for digital sharing and distribution. This simplifies the process of sharing the edited sheet music with musicians, reducing the time and costs associated with traditional printing.

Below is a list of the main tools that can be used to find and edit sheet music:

- **Finale** is professional software for writing and editing sheet music. It offers a wide range of music notation tools, allowing you to create complex scores with precision and detail. It is used by composers, arrangers and music publishers to create high-quality scores.
- **Forscore** is an app for managing sheet music on iOS devices. It allows users to import, organise and annotate digital sheet music in PDF format. It offers advanced features such as audio recognition, built-in metronome and the ability to share sheet music with other users.

Forscore is widely used by musicians, singers and conductors to access a vast library of digital sheet music in an organised and interactive manner during performances.

- **Sibelius** is another professional software for writing and editing sheet music. It is widely used by musicians, composers and orchestrators to create high-quality scores. It offers an intuitive interface, powerful notation tools and the ability to play the audio of tracks while working on the scores.

- **MuseScore** is a free and open-source software for writing sheet music. It is suitable for musicians of all levels, offering essential notation tools and the ability to create professional-quality sheet music. MuseScore also allows you to share and download sheet music from its online community.

- **LilyPond** is an open-source software for writing sheet music based on a textual notation system. Using a markup language, users describe the music in the text and LilyPond generates the sheet music in PDF or other formats. It is known for the typographical quality of its output and is often used by professional composers and musicians.

- **IMSLP (International Music Score Library Project) / Petrucci Music Library** is an online digital library of public domain or Creative Commons licensed sheet music. It offers a large collection of free sheet music that users can search, view and download. It is a valuable resource for musicians, teachers and scholars who wish to access a wide range of sheet music.

- **Enote** is an application that allows you to annotate and mark up digital sheet music on tablets or mobile devices. It offers interactive features such as highlighting, drawing and writing notes on digital music sheets. It is a useful tool for musicians who wish to work with digital sheet music in an interactive and flexible manner.

- **The Henle Library** is a collection of sheet music published by the publisher G. Henle Verlag. This library offers high-quality sheet music for a wide range of compositions, including many of the great classical composers. Its scores are known for their accuracy and attention to detail, and are often used by professional musicians and scholars.

8.12. Tools for browsing digital sheet music

There are specifically a number of tools that can be used to leaf through digital sheet music. These are pedal-operated electronic devices that allow you to move back and forth through the pages of musical writing without having to engage your hands. As such they have obvious practical utility for instrumentalists in both live performances and professional training sessions. Some of the main instruments of this type are listed below:

- **PageFlip Firefly** is a wireless pedal for paging digital sheet music on devices such as tablets, smartphones or computers. It connects via Bluetooth connection and allows musicians to flip through the pages of their digital sheet music conveniently and without having to touch the screen or device. The pedal is equipped with touch-sensitive buttons that can be

configured to perform various actions, such as moving forward or backward between pages, scrolling through text or performing other functions specific to supported music applications. It is a convenient and efficient device for musicians who use digital sheet music during live performances or studio sessions.

- **AirTurn** Ped is a wireless pedal that allows you to flip through pages of digital sheet music via Bluetooth connection. It has a durable design and configurable buttons for paging actions. It is compatible with a variety of devices and music applications.
- **IK Multimedia iRig BlueTurn** is a Bluetooth pedal that lets you browse digital sheet music without touching the device. It offers two configurable pedals and a stable connection. It is compatible with iOS, Android, Mac and PC devices.
- **Coda Musicflip** is a wireless pedal that lets you browse digital sheet music without touching the screen. It offers two configurable buttons and a reliable Bluetooth connection. It is compatible with various music applications.
- **Donner Bluetooth Page Turner** is a wireless pedal that allows you to browse digital sheet music via Bluetooth connection. It offers two programmable buttons and a long battery life. It is compatible with iOS, Android devices and computers.

8.13. Music streaming platforms

Music streaming platforms offer an enormous amount of musical and educational resources that can enrich the learning experience and deepen knowledge in the field of opera. Taking advantage of these platforms can provide convenient and immediate access to a broad spectrum of repertoire, performances and related musical resources.

Teachers and students can use these platforms to easily access, listen to, study and analyse a variety of operas. they can create customised playlists to focus on specific arias, duets or complete operas to facilitate practice and study.

Below is a brief description of three of the most widely used music streaming platforms:

- **Deezer** is a music streaming platform offering a large catalogue of music tracks, curated playlists and customised radio. Deezer offers both a free plan with advertisements, feature limitations and lower sound quality, and a paid plan that removes the limitations and offers better sound quality. Deezer is available in several regions of the world.
- **Spotify** is one of the world's most popular music streaming platforms. It offers an extensive catalogue of music tracks, curated playlists, podcasts and social features for sharing music with friends. Spotify offers both a free plan supported by ads, and a paid plan that removes ads and offers additional features such as offline listening and enhanced sound quality. Spotify is available in many regions of the world.
- **YouTube** is the universally known online video-sharing platform, which can be used for free and is now also widely used in the world of opera and classical music. Many artists and record

companies upload their music videos to YouTube, allowing users to listen to and watch the desired tracks.

8.14. Sites for music theory exercises

There are websites offering interactive music theory exercises and educational resources that can be used for self-study or as support in music theory lessons.

Here are some of the most well-known and internationally used:

- **Theory.com** (https://www.teoria.com/exercises.php) is a website offering a series of music theory exercises. The exercises cover topics such as note reading, interval identification, harmony and melody. The site also offers music dictation exercises and quizzes to test your knowledge.
- **MusicTheory.net** (https://www.musictheory.net/exercises) is a widely used website for learning music theory. It offers a wide range of interactive exercises, including those for identifying notes, intervals, chords, chord progressions, rhythms and more. It is an excellent resource for students of all levels.
- **Theta Music Trainer** (https://trainer.thetamusic.com/) is a website that offers music theory exercises based on interactive games. It covers a wide range of topics, such as reading notes, identifying intervals, chords, scales and more. It is a fun option for learning and practising music theory.

8.15. Tools for teaching rhythm

There are applications that offer interactive tools, exercises and games to help students develop a solid understanding and mastery of rhythm. They enable students to practise rhythm reading, rhythmic accuracy and musical ear in an engaging and fun way.

Here is a list of some such applications:

- **Pro Metronome** is a digital metronome application that provides a wide range of features for rhythm training, such as adjusting the speed, selecting different sounds and creating customised presets.
- **Rhythm Trainer** is an app that offers interactive exercises to train the ear and understanding of rhythm. Users can practise reading notes, tempo subdivisions, identifying strong and weak tempos, and more.
- **Rhythm** Sight Reading **Trainer** is an app that helps students improve their rhythm reading skills through sight-reading exercises. It offers different levels of difficulty and a wide range of exercises to develop accuracy and speed in rhythm reading.
- **Rhythm Cat** is a fun and interactive app that helps students develop their mastery of rhythm. Using rhythmic games and challenges, the app offers an engaging way to learn and practise rhythm through different styles of music.

- **Rhythm Lab** is an app that allows students to create and experiment with different rhythmic structures. Users can combine and manipulate rhythmic patterns to create new sequences, exploring the relationship between rhythm and music.
- **Rhythm Trainer Pro** is an advanced app that offers a wide range of rhythm exercises to train rhythm accuracy and understanding. The app also includes a metronome, a customisable exercise generator and an option to record and evaluate students' rhythmic performance.

8.16. Applications for tuning instruments

A number of specialised applications are now available that allow you to tune various musical instruments accurately using your mobile device. They are a valuable aid for all instrumentalists: trainers, students, professionals.

Below are some examples.

- **Cleartune** is an instrumental tuning application available for mobile devices. It is designed to help musicians tune their instruments accurately. Cleartune uses a frequency visualiser and detects the sound produced by the instrument, showing the note and its deviation from the desired tuning. Users can then adjust the tuning of the instrument to the desired precision. Cleartune is widely used by musicians of different skill levels and offers a simple and intuitive interface to facilitate the tuning process of musical instruments.
- **Pro Guitar Tuner** is an app that allows you to tune guitars, basses, ukuleles and other stringed instruments. It offers an intuitive interface and high tuning accuracy.
- **Fender** Tune is a tuning application developed by Fender, one of the leading manufacturers of musical instruments. It is designed specifically for Fender guitars and basses, but can also be used with other stringed instruments. The app offers an intuitive interface and precise tuning tools.
- Tunable is a tuning and metronome app that offers advanced features for precise tuning and music practice. In addition to the tuning function, it offers a metronome, a tone generator and a graphic sound visualisation to help with intonation.

8.17. Metronome synchronisation applications

During ensemble rehearsals or musical performances where it is necessary to maintain the same tempo between several musicians, it is useful to use applications for synchronising metronomes.

Here are some examples.

- **Pulse** allows metronomes to be connected via Bluetooth or Wi-Fi connection, so that all metronomes play at the same time, providing uniform rhythmic guidance for the ensemble. This feature helps maintain rhythmic cohesion and synchronisation between musicians during performances.

- **Ableton Link** is a time synchronisation protocol that allows multiple musical devices, including metronomes, instruments and software, to be connected so that they play in synchrony. Many music apps support Ableton Link, enabling easy and accurate synchronisation between devices.
- **Syncopate** is an app that allows you to synchronise metronomes and other musical devices via a Wi-Fi connection. It can be used to create a shared time experience between musicians, ensuring that everyone keeps the same tempo during musical performances.
- **Steinberg Cubase iC Pro** is a mobile app that allows you to control Cubase recording software on your computer. Among its features, it offers the ability to synchronise metronomes and devices with Cubase on the same computer, ensuring accurate synchronisation for music performance.
- **Tempo Advance** is an app that allows you to synchronise metronomes and music devices via a Wi-Fi connection. It supports a wide range of synchronisation features, including the ability to adjust the tempo speed and synchronise multiple devices simultaneously.

8.18. Digital Audio Workstation (DAW), specialised audio software and tools

The term Digital Audio Workstation (DAW) has become commonly used among music professionals (technicians, artists, trainers). In its correct meaning, it denotes computer systems (hardware and software) dedicated to the processing of audio content, with high performance and high reliability. If they are available, they are powerful tools at the service of music training. Of particular interest for the purpose of exploring the potential of digital technology in the field of opera training are the software components, i.e. the specialised programmes, typically installed on DAWs and sometimes improperly called 'Digital Audio Workstations' themselves (although they are only a part of it). They enable the recording, editing, production and playback of digital music. They can be used to manipulate sounds and music tracks and modify natural sound, with excellent opportunities for educational uses as well.

In the context of music training in opera, such software can be used by students to record their own vocal or instrumental performances, to listen to and analyse recordings to improve their technique and interpretation. Recording performances can also be useful for self-assessment and revision with the support of teachers or vocal coaches.

These software packages enable audio editing with high precision. Students can cut, copy, paste and adjust parts of their vocal or instrumental recordings to create customised study exercises, work on transitions between musical sections or create composite performances. This allows them to hone their skills and achieve greater precision in performance.

Furthermore, with the advanced music production tools these systems provide, students can experiment with arranging vocal and instrumental parts, adding audio effects, mixing and mastering. They can create customised musical accompaniments, edit instrumental or vocal tracks and experiment with sound production to achieve a professional sound.

Finally, virtual backing tracks can be created to practise the vocal or instrumental parts of a work. Record an accompaniment track and then practise singing or playing over it, providing an experience similar to that of a real orchestra or ensemble. This allows students to practise even when they do not have access to a live ensemble.

There are several high-quality audio software packages available on the market. For the most part, they are chargeable. However, it is essential to get to know them in order to understand the potential of digital audio applied to opera and music training in general. Let us try to provide an overview of some of the most popular software:

- Highly customisable and flexible, **Reaper** is characterised by its intuitive interface and light weight, which does not take too many resources from the system on which it is installed. Reaper offers a wide range of features for recording, editing, mixing and music production. It is suitable for both beginners and professionals, with advanced tools such as multi-track recording, audio and MIDI editing, and effects. It also supports custom scripting, allowing users to create custom macros and automations. A 'demo' version with no expiry date is still available and can be used free of charge.
- **Ableton Live**, versatile and widely used for both record production and live performance, can also find useful application in professional training. It offers an intuitive interface, advanced audio production tools, loop and sampling functionality, and MIDI tools for creating and arranging music.
- **Logic Pro** is a software developed by Apple for the macOS operating system. It is known for its powerful suite of virtual musical instruments, advanced mixer, high-quality effects and ease of integration with other Apple products.
- **Pro Tools** offers a wide range of recording, editing, mixing and mastering tools. It is widely used in the music, film and television industry for its reliability and stability. It has a free version (Pro Tools Intro).
- **Cubase**, developed by Steinberg, is widely used in professional recording studios. It offers advanced tools for recording, audio and MIDI editing, music composition and mixing. It is known for its intuitive interface and the wide range of plug-ins and instruments included.
- **FL Studio**, formerly known as FruityLoops, is a popular software among electronic music producers. It offers an intuitive pattern-based interface, MIDI sequencer, a wide range of virtual instruments and a powerful audio production engine. It is appreciated for its ease of use and the wide range of sounds and instruments included. It is a paid-for software (like all the others listed above, except for a version of Pro Tools), however, a 'free trial' version with an unlimited time free licence is still available.

These are just a few examples of software tools available on the market with which music educators can equip themselves to manage audio content and create their own 'DAW'. Each of them has unique characteristics, so the choice will depend on personal preferences, type of music production and specific needs. In order to be able to assess one's own needs and thus make an informed choice, we recommend - as far as teaching purposes are concerned - to refer to the training guidelines for

singers and instruments (Output 2 and Output 3 of Virtual Stage respectively). Before entering into the details of the functions of the individual softwares, it is in fact worth clarifying which ones may be most useful according to the activities to be realised.

8.19. Tools for online real-time musical collaboration

Online collaboration tools exist that offer solutions to common problems faced by operatic music education in distance work. They reduce latency, improve audio quality, facilitate communication and feedback, facilitate resource sharing and support collaboration and virtual performance, enabling students to engage, learn and develop their musical skills despite space and time constraints.

Listed below are some of the best known:

- **Jamulus** is an open-source software platform designed to enable real-time musical collaboration over the Internet. It is specifically developed to play and sing together from different locations, overcoming latency that would otherwise compromise synchronisation. Jamulus uses UDP-based networking technology to minimise delay and provide a stable connection. Users can connect to Jamulus servers, create virtual rooms and play together in real time, making it an attractive option for musicians, bands and ensembles wishing to perform and collaborate remotely. Much of the project's experimentation with the use of Networked Music Performance in education was carried out with Jamulus, which is therefore mentioned and extensively covered both in the guidelines for trainers (outputs 2 and 3) and in the online courses for trainers (output 4), to which we refer for further details and specifications on its use in education.
- **SoundJack** is an open-source software that enables real-time musical collaboration. It uses low-latency network technology to allow musicians to play and sing together online without significant delays. SoundJack also offers features such as audio monitoring and session recording.
- **Ninjam** is an online music collaboration platform based on the concept of 'latency interval'. It allows musicians to play together in real time while maintaining a constant latency interval. Ninjam also allows sessions to be recorded and offers mixing and chat capabilities to facilitate communication between participants.
- **JamKazam** is an online music collaboration application that offers an integrated platform for playing together and recording music. It supports real-time audio and video, allowing musicians to play together, communicate and record their performances from different locations.
- **Jammr** is an online music collaboration software that allows musicians to play and improvise together in real time. It supports multiple audio tracks and offers chat functionality to facilitate communication between participants. Jammr is designed to be easy to use and suitable for musicians of all levels.

8.20. Direction rehearsal tools

In traditional productions, rehearsals take place on the stage at the place where the performance is supposed to take place. The setting is constructed and placed there, with the instruments necessary for the story. The singers have to perceive the distances between the elements of the set and the instruments, know and memorise the positions of the other performers. They then rehearse for a week to study the staging, before the 'Assieme' (rehearsal of the orchestra and stage together).

It is very difficult to achieve the same result by rehearsing virtually; the artists never meet each other, they only see the environment and instruments on the screen and know nothing about the distance between the elements in the scene. This makes it impossible to estimate the time required for movements and actions.

To reduce this problem, it is possible to use, in online rehearsals, visual collaboration applications that allow several users to intervene in the creation of a graphic representation, manipulating figures (tokens, avatars) in a virtual environment (2D or 3D). These applications, not necessarily born for the performing arts, can be used by artists to place and move their character within a virtual reproduction of the stage of a hypothetical performance, exploring the stage space and becoming familiar with the environment in which the production will take place. With these tools, singers can visualise the dimensions of the stage, the layout of the stage elements and their position in relation to the other performers. This helps them to better understand the spatial dynamics of the opera and to plan their movements on stage.

With the help of these simulators, singers can practise stage movement and acting, rehearse their actions, gestures and movements, gaining confidence and precision in their movements before moving on to the real stage.

The two main tools that can be used for scene simulation are **Miro** and **Owlbear Rodeo**.

Particularly in the initial experimentation and piloting phases of Virtual Stage, the partners gained extensive experience with Miro, which was also used in transnational cooperative activities with very interesting results. For this reason, this software is mentioned and commented in the training guidelines for singers (output 2) and in the online courses for trainers (output 5). Please refer to these other project outputs for further details and practical examples.

8.21. Make-up simulation applications, virtual make-up

In the traditional way of producing an opera, some professionals, such as make-up artists and hairdressers, study with the stage manager how to make up the singers according to the period in which the plot takes place. Then they make drawings of the chosen solutions. Finally, they do make-up tests with the performers.

Make-up apps offer several improvements and advantages over this traditional way of working with image repertoires, tutorials and design ideas that facilitate inspiration and stimulate creativity.

Secondly, these tools enable make-up artists and hairdressers to experiment with different looks virtually, allowing them to try out different combinations of colours, textures and make-up styles without having to physically apply make-up to actors or singers. This virtual experimentation capability saves them time and avoids costly mistakes, allowing them to assess which look works best for each character or production.

Make-up apps also offer digital tools that allow you to work with greater precision and consistency. For example, they can provide exact measurements for applying make-up to the eyes or allow perfectly symmetrical make-up lines to be created. This ensures greater precision in the final result and helps to maintain visual consistency between different performances.

Finally, such applications can facilitate communication and collaboration between make-up artists, hairdressers and other members of the production team. They can be used to share ideas, suggestions, images and instructions, improving communication and ensuring a common vision for the visual appearance of the work. This promotes greater collaboration and more efficient teamwork.

The most interesting aspect of using these apps is that they offer the possibility of involving singers in designing their own look. Through these tools, in fact, the singers themselves can experiment with make-up and hairstyles by trying them out virtually on their own faces. Once they have worked out a look that convinces them, they can propose it to make-up artists and hairdressers. There is also the possibility that the singers themselves do their own make-up, so that the production does not involve professionals in this task.

Below is a list of the main apps that allow make-up artists, hairdressers and singers to virtually experiment with make-up or hairstyling solutions.

- **Modiface MakeUp** is an app for Android and iOS that allows users to virtually try out make-up, cosmetics and beauty styles on their face using augmented reality technology. You can experiment with different shades of lipstick, eye shadow, blush and other make-up products to see how they will look on your face.
- **MakeupPlus** is an app available for Android, iOS and Windows 10 Mobile. It offers augmented reality features to try out different make-up combinations, add photo filters and make facial changes such as skin refinement and eyebrow definition. The app also includes make-up tutorials and tips to help users achieve the desired look.
- **YouCam Makeup** is a virtual make-up app for Android and iOS. It offers a wide range of tools to try out different shades of make-up, hair styles, coloured contact lenses and other beauty options. The app also includes photo editing features to enhance images, add filters and retouch faces.
- **Makeup Genius** is an augmented reality app for Android and iOS developed by L'Oréal Paris. It allows users to virtually try on L'Oréal Paris brand make-up products and get a realistic simulation of how the make-up will look on their face. The app also offers make-up tutorials and tips for creating customised looks.

- **B612 is an** Android and iOS app for processing images taken by the camera and includes virtual make-up features. In addition to beauty options to enhance photos, the app also offers filters and special effects to create unique looks. Users can experiment with different make-up styles, such as eye shadow, lipstick and blush, to achieve eye-catching results.
- **FotoRus** is an app for Android and iOS that offers a wide range of photo editing tools, including filters, frames, collages and beauty options. The app also includes virtual make-up features that allow users to try out different make-up styles and enhance their photos.
- **Perfect365** is an app for Android and iOS that offers virtual make-up and beauty tools. Users can try out different make-up combinations, correct facial imperfections, enhance skin and apply photo filters. The app also includes make-up tutorials and tips to help users create customised looks.

If it is the singers who design their own look, it is necessary for them to know the history of make-up and hairstyling so that they do not come up with solutions that are inconsistent with the period style of the show. It may therefore be necessary for the stage manager (or his make-up assistant) to hold some lessons on the subject, using the Zoom video conferencing app (or others) and sharing on-screen images illustrating different tricks in history and using these specialised apps:

8.22. Applications for costume design

Costume designer apps offer digital tools for the creation and visualisation of costume designs and concepts. They can be used to design outfits, select colours, combine fabrics and create a complete visual vision of the costumes for each character. This facilitates communication with the production team, allowing them to share ideas, make changes and achieve faster and more effective consensus on costume design.

These apps, like make-up apps, can also be used by singers to try to create their own costumes. Below is a selection of them:

- **Fashion Design Sketches: Style** is an app that offers tools for creating fashion sketches and designs. It is designed specifically for fashion designers and stylists and offers features such as creating sketches, adding colours, using templates and customising details. This software allows tablet users to visualise their design ideas digitally before physically realising them.
- **Valentina** is an open source software for garment modelling and design. It is available for Windows 10, Mac and Linux and was developed to support the creation of customised garment patterns. Valentina offers tools for pattern creation, pattern tracing, grading, generating sewing instructions and more. It is a comprehensive application for fashion designers who wish to create high-quality patterns.
- **Tailornova** (https://tailornova.com/) is an online fashion design platform that allows you to create customised clothing patterns. It does not require the installation of specific software, as it is accessed directly from the website. Tailornova offers pattern customisation functionality, allowing users to create customised garments, select styles, fabrics and details.

It is a convenient solution for fashion designers who wish to create customised garments without having to install additional software.

- **Blender** is a 3D modelling and animation software that can also be used to create clothes and fashion models. It is available for Windows 10, Mac and Linux and is a comprehensive and powerful application for creating 3D graphics. Blender offers tools for modelling, texture creation, animation and rendering. It can be used to create virtual clothing models and display them realistically.

It is important to point out that the involvement of singers in costume design requires prior preparation. In order to devise solutions that are in line with the style of the period setting of the opera being performed, the performers must be prepared by the stage manager, who may share and comment on images, texts and videos of other productions of the same opera being staged.

8.23. Applications for agreeing production schedules

There are several applications that can be used to simplify the rehearsal planning process, allowing group or ensemble members to share their availability and find a time that suits everyone.

Here are some examples;

- **Doodle** is a scheduling application that allows you to create availability surveys to find a common rehearsal time. You can send the survey to group or ensemble members and collect their responses to determine the best time for everyone.
- **Google Calendar** is a calendar application that allows you to create events and share them with other people. You can create a rehearsal event and invite participants, who can indicate their availability via the reply function. In this way, you can view everyone's availability and find a suitable time for everyone.
- **Calendly** is a booking application that simplifies meeting planning. You can create a customised booking link and share it with rehearsal participants. Everyone can select an available time from the options provided.
- **When2Meet** is an online application that allows you to create a shared calendar to coordinate rehearsal times. You can indicate available time slots and share them with participants, who can signal their availability via the calendar.
- **WhatsApp** and other group messaging apps are more informal solutions. It is possible to create a group and discuss directly with rehearsal members to agree on a time.

8.24. Useful bibliographical references for in-depth study of topics relevant to digital readiness in opera training

As a result of our research, we were able to compile the following bibliography, which formed the basis for the bibliography of the methodological guidelines (ouput 2 and 3):

A. Hogarth (july, 7, 2021). When two become one: Top tips for piano accompaniment. Pianist Magazine, Warners Group Publications, Bourne.

W. Woszczyk, J. Cooperstock, J. Roston, and W. Martens, ''Shake, rattle, and roll: Getting immersed in multisensory, interactive music via broadband networks,'' J. Audio Eng. Soc., vol. 53, no. 4, pp. 336–344, 2005. [Online]. Available: http://www.aes.org/e-lib/browse.cfm?elib=13416

C. Rottondi, C. Chafe, C. Allocchio, A. Sarti. "An Overview on Networked Music Performance Technologies", 2017, IEEE Access.

J.-P. Càceres, C. Chafe, "JackTrip: Under the Hood of an Engine for Network Audio", Proceedings of International Computer Music Conference, Montreal, 2009.

C. Drioli, C. Allocchio, and N. Buso, "Networked performances and natural interaction via LOLA: Low latency high quality A/V streaming system", Information Technologies for Performing Arts, Media Access, and Entertainment, Springer, 2013 pp.240–250.

P. Holub, L. Matyska, M. Liˇ ska, L. Hejtm´ anek, J. Denemark, T. and Rebok, A. Hutanu, R. Paruchuri, J. Radil, and E. Hladk´a "High-definition multimedia for multiparty low-latency interactive communication", Future Generation Computer Systems, 22(8), pp.856–861, 2006, Elsevier

V. Fischer, "Case Study: Performing Band Rehearsals on the Internet With Jamulus".

J.-M. Valin, G. Maxwell, T. B. Terriberry, K. Vos, High-Quality, Low-Delay Music Coding in the Opus Codec, Accepted for the 135th AES Convention, 2013.

K. Vos, K. V. Sorensen, S. S. Jensen, J.-M. Valin, Voice Coding with Opus, Accepted for the 135th AES Convention, 2013.

K. Vos, A Fast Implementation of Burg's Method, 2013.

9. Conclusions of the state-of-the-art analysis

Overall, we can identify three areas of development for the improvement of digital readiness in the training of opera artists:

1) To find an adequate answer to the initial need, from which the research originated, i.e. to prepare to give continuity to the training even in the temporary impossibility of meeting in presence, by creating a sustainable methodological and technological model for distance learning, with good potential in terms of transfer of technical-practical skills, technological requirements and skills that can be met with the means available to the artists of the work, i.e. without the need for large investments and skills at the level of IT specialists;

2) to develop evolved and flexible methodological models for blended training activities, capable of providing a more flexible alternative, not for emergencies, but for situations in which it may be convenient, at least from a logistical and economic point of view, to limit face-to-face meetings;

3) to study innovative proposals for in-presence training, which do not make up for its absence, nor attempt to reduce its incidence in the course, but rather aim to expand its possibilities, making the most of the potential that the mediation of digital technology has, to create additional activities, different from the traditional ones and able to complement them and increase the effectiveness of the training action.The methodological and technological proposals of Virtual Stage, which can be found documented in the other outputs produced (guidelines output 2 and 3, online archive output 4, online courses output 5) attempt to respond to these needs by addressing the main issues that emerged from the research.

The specific problems to be addressed by trainers, which will be dealt with in the other outputs of the project, particularly in outputs 2, 3 and 5 (guidelines and online courses to accompany trainers towards a reasoned digitisation in the training of singers and instrumentalists), emerged well in the survey. We would like to summarise them here: a) ensuring a sufficiently high quality internet connection (performance, reliability), b) acquiring specific digital skills on the part of both trainers and learners, c) acquiring new methodological skills on the part of trainers - because the digital learning environment has its own characteristics and its own possibilities that require new methodologies, d) finding suitable technological hardware and software tools. On the other hand, no cultural prejudices towards digitisation seem to emerge that would invalidate the applicability of the research.

The type of connection is central to the aims of the project. Indeed, this is one of the cases in which certain quantitative aspects become qualitative factors from a didactic perspective, in the sense that certain performances - as enabling requirements for digital readiness - condition the possibilities of the teaching methodology.

We hope that the extensive review in section 8 will show how the careful desk research carried out by the partners found sufficient information to answer point d), while it will be the task of the guidelines for trainers (outputs 2 and 3) to give specific guidance on points b) and c).

On the other hand, cultural prejudices towards digitisation do not seem to emerge that would invalidate the applicability of the research.

With regard to the digital resources to be used in the elaboration of the new methodological proposals, rather clear indications emerge following the partner analyses, the results of the survey among operators, the desk research carried out, the comparisons with stakeholders and the field experiments. In the current and near future, in the short to medium term, it seems appropriate to focus on the use of specific tools and applications for: i) the production, distribution and use of multimedia materials for training, from tutorials to music bases to practical lessons and case studies on video, ii) the digital management of music writing, from sharing sheet music to collaborative note editing for musicians, iii) the various functions for the live connection of musicians and the optimal management of audio and video streaming. In addition to these areas, one that we mention separately because it is unfamiliar to those outside the partnership, but worthy of the utmost attention for training, is the area of digitising the sounds of acoustic instruments and managing digital sounds, including sampling. These are digital sound processing techniques outside the canons of classical and operatic performance, which is still aimed at the maximum expression of singers and musicians in a purely acoustic dimension. Without entering here into the aesthetic and philological aspects related to public performance, we would like to point out that these techniques - for which we have vast hardware and software instrumentation that has already been used for many years in other musical genres - if skilfully applied, can provide a high added value for artistic training, making it possible to solve many problems related to the more ambitious and advanced applications of digital technologies in this field.

The results of the research and the considerations made above may also be transferable, at least in part, to other contiguous areas such as the training of classical and jazz musicians and, in some respects, the training of other artistic and/or technical figures in opera and theatre.

You cannot do everything with digital technologies, and it would be a mistake to think of throwing tradition overboard and replacing traditional, 'analogue' presence training. Instead, it is necessary to assess the possible added value of new technologies, based on their characteristics and potential, without preconceptions, and to study applications that are adapted to the needs of aristic training in the opera sector. Digital readiness in this sector cannot yet be said to be solidly established, but interesting possibilities for progress in this direction are emerging. The challenge is open.

Appendices

Questionnaires administered

Appendix 1. English Questionnaire

Virtual Stage Questionnaire in English

Introduction

Intro.1

VIRTUAL STAGE is a EU-funded project under the ERASMUS+ KA2 VET for the period 2021-2023, which aims at expanding and improving the use of distance learning in the music teaching sector, and in the Opera in particular.

The 5 Intellectual Outputs to be developed in the project are:
1. A State of the art analysis: Digital technologies in VET for opera;2. The new Virtual Stage method for distance training in the field of opera. Guidelines for singers training3. New Virtual Stage method for distance training in the field of opera. Guidelines for instrumentalists and conductors training4. Virtual Stage Repository: digital OERs for training in the field of opera5. a eCourse – Introduction to the Virtual Stage method for the development and delivery of distance training in the field of opera. We have identified your expertise and experience as valuable for the Virtual Stage consortium and would like to invite you to respond to the online questionnaire.Your contribution is very much appreciated.
We will also be glad to share our results with you, so if you do not wish to remain anonymous, please fill in your name and email address. All data will be treated with the utmost confidentiality. Thank you for your cooperation.
The **VIRTUAL STAGE** Team

Privacy   **PRIVACY**
Read   here   our [privacy   policy]
The flag is mandatory in order to proceed with the survey.

☐   I have read and understood the privacy policy and consent to the processing of my data in order to participate in the survey. (1)

☐   I don't agree (4)

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Intro.2 **About** **the** **questionnaire**

The purpose of this online survey (~5 min) is to understand the diffusion of digital technology in musical practice and pedagogy, with a special attention to the environment of opera. With these questions we would like to understand if you ever used distance learning, which kind of methodology, tools etc. in your professional and teaching activities.

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Inizio blocco: Section A

Visualizza questa domanda:

If PRIVACY Read here our privacy policy The flag is mandatory in order to proceed with the survey. = I have read and understood the privacy policy and consent to the processing of my data in order to participate in the survey.

Some information about you and your activity

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A.1 Name and Surname (*Optional*)

○ First Name (1) _____

○ Surname (2) _____

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A.2 (*) email

○ email (3) _____

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A.3 (*) Nationality

○ Czech (6)

○ Dutch (2)

○ French (3)

○ Italian (1)

○ Other (please add) (5) _____

A.4 (*) Gender

○ Female (1)

○ Male (2)

○ Other (3)

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A.5 (*) Age

○ Up to 35 years (1)

○ From 36 to 50 years (2)

○ Over 50 years (3)

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A.6 (*) Your institution is … (Note: you can tick several options)

☐ University level music institution (1)

☐ Preparatory level music institution (2)

☐ Association for amateur music teaching, local music school or private music tuition, choral association (3)

☐ Association for music performance (5)

☐ Other (please add) (4) _____

Visualizza questa domanda:

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A.7 (*) Your role (Note: you can tick several options)

☐   Manager (1)

☐   Teacher (2)

☐   Musician (3)

☐   Technician (5)

☐   Researcher (6)

☐   Librarian (7)

☐   Other (please add) (4) _____

Visualizza questa domanda:

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A.8 (*) Did you ever use distance learning in music teaching?

○   Yes (1)

○   No (2)

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A.9 (*) Did you ever use distance learning in the Opera repertoire?

○   YES (1)

○   NO (2)

A.10 (*) How are your devices (PCs, Tablets, Smartphones...) connected to the router? (Note: you can tick several options)

☐   I use desktop PC, and it is connected by cable to the router / LAN (1)

☐   I use mobile PC, and it is connected wireless to the router / LAN (2)

☐   I use Tablet, and it is connected by cable to the router / LAN (3)

☐   I use Tablet, and it is connected wireless to the router / LAN (4)

☐   I use Smartphone, and it is connected wireless to the router / LAN (5)

☐   Other (please add) (6) _____

A.11 (*) Which type of internet connection do you use for distance learning?

☐ Optical fiber (1)

☐ ADSL (2)

☐ Broadband cellular network 4G or 5G (3)

☐ Other (please add) (4) _____

A.12 (*) Which is the bandwidth of your internet connection?

☐ 10Mbps or less (1)

☐ Between 10 and 25Mbps (2)

☐ 100Mbps or more (3)

☐ Other (please add) (4) _____

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Fine blocco: Section A

Inizio blocco: Section B

B.0   **Synchronous/Asynchronous**   **learning**

Synchronous learning refers to all types of learning in which learners and teachers interact at the same time during the teaching process. This includes in-person classes, live online meetings when the   whole   class   or   smaller   groups   get   together.

Asynchronous learning is a student-centered teaching method widely used in online learning. In asynchronous learning, teachers usually set up a learning path, which students engage with at their own pace.

B.1 (*) Which approach do you use in Distance Learning?

○   Synchronous (2)

○   Asynchronous (3)

○   Blended (1)

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B.2 (*) Did you use a theoretical or practical approach? (Note: you can tick several options)

☐ Theoretical (1)

☐ Practical (2)

☐ Other (please add) (3) _____

B.3 (*) Considering the overall teaching process, how many hours (in %) did you or your institution spend on distance learning?

○ Less than 20% (1)

○ From 20% to 60% (2)

○ More than 60% (3)

○ Other (please add) (4) _____

Fine blocco: Section B

Inizio blocco: Section C

C.1 **Tools** **for** **distance** **learning**

We listed some digital tools that could be used in musical practice. The tools in the **List A** do not require specific Information Technology (IT) skills. The tools in the **List B** require some moderate knowledge and skills in the IT. The **List C** requires some advanced knowledge and skills in the IT.

C.2 (*) List A - Which tools are you using in the following list?

- [ ] Video & audio streaming (Youtube, Vimeo) (1)

- [ ] Audio recording (Audacity, Reaper, smartphone native format) (2)

- [ ] Score repository (Petrucci IMSLP, Finale repository, Musescore repository) (3)

- [ ] Phone based platforms (Whatsapp, Telegram, Skype, other) (4)

- [ ] Smartphone applications for beginner training (ex: note reading, ear training) (5)

- [ ] Online encyclopedias and article repository (Gallica, Wikipedia, JSTOR, RILM) (6)

- [ ] Other (please add) (7) _____

C.3 (*) List B - Which tools are you using in the following list?

☐ Audio processing (hardware or software, for ex: changing tempo or tonality) (1)

☐ Web based general purpose repository (GoogleDrive, OneDrive, other) (2)

☐ Videocall platforms (Skype, Teams, Zoom, Framaestro, Jitsi Meet) (3)

☐ Historical score editing (Partify, Powerpoint, other) (4)

☐ Score editing and arranging (Finale, Sibelius, Musescore, other) (5)

☐ Online Whiteboards (6)

☐ Other (please add) (7) _____

C.4 (*) List C - Which tools are you using in the following list?

☐ Advanced applications (ongoing research: networked music performance like Jamulus, JackTrip, SonoBus) (1)

☐ Midi & VST technology (2)

☐ Real time sound processing (InScore, Csound, Faust...) (3)

☐ Pre-recorded tutorials for students (4)

☐ Pre-recorded parts for musicians or piano accompaniments (6)

☐ Audio/video recording of the pedagogical process (students and tutors/professors) (8)

☐ Apps for score editing and sharing (ForScore, MobileSheets...) (9)

☐ Other (please add) (7) _____

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Inizio blocco: Section E

D.1   **Distance   learning   :   pros   and   cons**

This pedagogical approach is relatively new in music teaching: your opinion will be important for the development of the Virtual Stage project materials.

D.2 (*) Distance learning raises several debates about its effectiveness. Please, read the following items and choose the sentences you agree with.

☐ I think this teaching method is not useful or not applicable to music pedagogy (1)

☐ There are technological problems: I'm not equipped (2)

☐ There are technological problems: my students are not equipped (3)

☐ There are educational problems: I'm not trained (4)

☐ I do not like to use technology because it requires too much time (5)

☐ I do not like to use technology because I have a different way of thinking, compared to IT experts (6)

☐ I like to work in contact with others: technology is a barrier for extra-musical content in ensemble music (7)

☐ I like to work in contact with others: technology is a barrier for the quality of sound (8)

☐ Distance learning ask for more concentration compared to traditional methods (9)

☐ Distant interaction is limited despite the use of technology (10)

☐ I cannot afford to invest in the purchase or renewal of new technology equipment (13)

☐ None of the above (12)

☐ Other (please add) (11) _____

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D.3 (*) Distance learning is appreciated in new musical pedagogy for several reasons. Please, read the following items and choose the sentences you agree with.

☐ It allow a wider diffusion of knowledge (13)

☐ Students can progress at their own pace (14)

☐ There is no physical boundaries to the learning process (15)

☐ Students and teachers are free of teaching and learning indipendently from their geographical location (16)

☐ No need to displace large instruments (piano, organ, harp, harpsichord, double-bass...) (17)

☐ It makes timetable and organisation more flexible (18)

☐ Possibility of recording the lessons and reviewing online content (19)

☐ Possibility of exchange and discussion with a wider audience (forum, real time chat, newsletters) (20)

☐ Possibility of learning by best performers in the world (21)

☐ Easyness in music edition, music part layout and real time information sharing for music groups (22)

☐ Possibility of performing aimed researches in large databases (24)

☐ None of the above (25)

☐ Other (please add) (23) _____

We would be pleased if you would share with us both a positive experience you have had using distance learning in music, and a negative experience.

E.1 Positive experience

_____

_____

_____

_____

_____

Q59 Negative experience

_____

_____

_____

_____

_____

Visualizza questa domanda:

If PRIVACY Read here our privacy policy The flag is mandatory in order to proceed with the survey. = I don't agree

Q31   **PRIVACY**
The first flag in the answer "I have read and understood the privacy policy and I agree to the processing of my data to participate in the survey" is mandatory in order to proceed, otherwise it will not be possible to answer the survey. The VIRTUAL STAGE project staff thanks you for your cooperation and reminds you to visit our website at the following address https://vstage.eu/.

EU - Virtual Stage - Distance Learning in Music

Introduction

Intro.1

VIRTUAL STAGE è un progetto finanziato dall'UE nell'ambito del programma ERASMUS+ KA2 VET per il periodo 2021-2023, che mira ad espandere e migliorare l'uso dell'apprendimento a distanza nel settore dell'insegnamento della musica e nel Opera in particolare. I 5 Intellectual Output che verranno sviluppati nel progetto sono: 1. un'analisi sullo stato dell'arte relativo all'uso delle tecnologie digitali nell'istruzione e formazione professionale in ambito lirico; 2. il nuovo "metodo Virtual Stage" per la formazione a distanza in ambito lirico: le linee guida per la formazione dei cantanti; 3. il nuovo "metodo Virtual Stage" per la formazione a distanza in ambito lirico: le linee guida per la formazione di strumentisti e direttori d'orchestra; 4. il Virtual Stage Repository: Open Educational Resources (OERs) digitali per la formazione in ambito operistico 5. l'eCourse "Introduzione al metodo Virtual Stage per lo sviluppo e l'erogazione della formazione a distanza in ambito lirico".   Abbiamo identificato la tua competenza ed esperienza come preziose per il consorzio Virtual Stage e vorremmo invitarti a rispondere al questionario online. Il tuo contributo è molto apprezzato.   Saremo inoltre lieti di condividere i nostri risultati con te, quindi se non desideri rimanere anonimo, inserisci il tuo nome e indirizzo email. Tutti i dati saranno trattati con la massima riservatezza. Grazie per la collaborazione.   Il team di VIRTUAL STAGE

Privacy
Leggi   qui   la   nostra   [privacy   policy](#)

PRIVACY

Il primo flag è obbligatorio per poter procedere con il sondaggio.

☐   Ho letto e compreso l'informativa sulla privacy e acconsento al trattamento dei miei dati per partecipare al sondaggio, e desidero ricevere aggiornamenti sul progetto Virtual Stage (1)

☐   Non sono d'accordo (4)

Interruzione
di pagina

Intro.2 **Informazioni sul questionario**

Lo scopo di questo sondaggio online (~5 min) è comprendere la diffusione della tecnologia digitale nella pratica musicale e nella pedagogia, con un'attenzione particolare all'ambiente dell'opera. Con queste domande vorremmo capire se hai mai utilizzato la didattica a distanza, che tipo di metodologia, strumenti ecc. nelle tue attività professionali e didattiche.

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Inizio blocco: Section A

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Alcune informazioni su di te e sulla tua attività

Visualizza questa domanda:

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A.1 Nome e Cognome (*Facoltativo*)

○   Nome (1) _____

○   Cognome (2) _____

Visualizza questa domanda:

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A.2 (*) e-mail

○   (*) e-mail (3) _____

Visualizza questa domanda:

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A.3 (*) Nazionalità

○   Ceca (6)

○   Olandese (2)

○   Francese (3)

○   Italiana (1)

○   Altra (aggiungere) (5) _____

A.4 (*) Genere

○   Femmina (1)

○   Maschio (2)

○   Altro (3)

A.5 (*) Età

○   Fino a 35 anni (1)

○   Da 36 a 50 anni (2)

○   Oltre 50 anni (3)

A.6 (*) Il tuo istituto è ... (Nota: puoi selezionare diverse opzioni)

☐ Istituto musicale di livello universitario (1)

☐ Istituto musicale di livello preparatorio (2)

☐ Associazione per l'insegnamento della musica amatoriale, scuola di musica locale o insegnamento privato di musica, associazione corale (3)

☐ Associazione per lo spettacolo musicale (teatro musicale, ensemble...) (5)

☐ Altro (aggiungere) (4) _____

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A.7 (*) Il tuo ruolo (Nota: puoi spuntare diverse opzioni)

- [ ] Manager / Direttore (1)

- [ ] Insegnante (2)

- [ ] Musicista / Cantante (3)

- [ ] Tecnico (5)

- [ ] Ricercatore (6)

- [ ] Bibliotecario (7)

- [ ] Altro (aggiungere) (4) _____

Visualizza questa domanda:

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A.8 (*) Hai mai utilizzato la didattica a distanza nell'insegnamento della musica?

- ( ) Sì (1)

- ( ) No (2)

Interruzione
di pagina

A.9 (*) Hai mai utilizzato la didattica a distanza nel repertorio lirico?

○   Sì   (1)

○   No   (2)

A.10 (*) Come sono collegati al router i tuoi dispositivi (PC, Tablet, Smartphone...)? (Nota: puoi selezionare diverse opzioni)

☐   Uso un PC desktop ed è collegato via cavo al router / LAN   (1)

☐   Uso un PC mobile ed è connesso in modalità wireless al router/LAN   (2)

☐   Uso Tablet, ed è collegato via cavo al router/LAN   (3)

☐   Uso il tablet ed è connesso in modalità wireless al router/LAN   (4)

☐   Uso Smartphone ed è connesso in modalità wireless al router/LAN   (5)

☐   Altro (aggiungere)   (6) _____

A.11 (*) Che tipo di connessione internet usi per la didattica a distanza?

☐ Fibra ottica (1)

☐ ADSL (2)

☐ Rete cellulare a banda larga 4G o 5G (3)

☐ Altro (aggiungere) (4) _____

A.12 (*) Qual è la larghezza di banda della tua connessione Internet?

☐ 10 Mbps o meno (1)

☐ Tra 10 e 25 Mbps (2)

☐ 100 Mbps o più (3)

☐ Altro (aggiungere) (4) _____

Interruzione
di pagina

Visualizza questa domanda:

If (*) Did you ever use distance learning in music teaching? = Yes

And PRIVACY Read here our privacy policy The flag is mandatory in order to proceed with the survey. = I have read and understood the privacy policy and consent to the processing of my data in order to participate in the survey.

B.0   **Apprendimento**   **sincrono/asincrono**

 L'apprendimento sincrono si riferisce a tutti i tipi di apprendimento in cui studenti e insegnanti interagiscono contemporaneamente durante il processo di insegnamento. Ciò include lezioni di persona, riunioni online dal vivo in cui l'intera classe o gruppi più piccoli si riuniscono.

 L'apprendimento asincrono è un metodo di insegnamento centrato sullo studente ampiamente utilizzato nell'apprendimento online. Nell'apprendimento asincrono, gli insegnanti di solito impostano un percorso di apprendimento, che gli studenti seguono in base al proprio ritmo e le proprie esigenze di tempo.

Visualizza questa domanda:

If (*) Did you ever use distance learning in music teaching? = Yes

And PRIVACY Read here our privacy policy The flag is mandatory in order to proceed with the survey. = I have read and understood the privacy policy and consent to the processing of my data in order to participate in the survey.

B.1 (*) Quale approccio utilizzi nell'apprendimento a distanza?

○   Sincrono (2)

○   Asincrono (3)

○   Forma mista (blended) (1)

B.2 (*) Hai utilizzato un approccio teorico o pratico? (Nota: puoi selezionare diverse opzioni)

☐ Teorico (1)

☐ Pratico (2)

☐ Altro (aggiungere) (3) _____

B.3 (*) Considerando il processo di insegnamento complessivo, quante ore (in %) tu o il tuo istituto avete dedicato all'apprendimento a distanza?

○ Meno del 20% (1)

○ Dal 20% al 60% (2)

○ Più del 60% (3)

○ Altro (aggiungere) (4) _____

Fine blocco: Section B

Inizio blocco: Section C

C.1   **Strumenti   per   la   didattica   a   distanza**

Abbiamo elencato alcuni strumenti digitali che potrebbero essere utilizzati nella pratica musicale.   Gli strumenti della **Lista A** non richiedono competenze informatiche (IT) specifiche.   Gli strumenti **nell'elenco B** richiedono alcune piccole conoscenze nell'ambito IT.   L' **elenco   C** richiede alcune conoscenze e competenze avanzate nell'ambito IT.

C.2 (*) Elenco A - Quali strumenti stai utilizzando nel seguente elenco?

☐ Streaming video e audio (Youtube, Vimeo) (1)

☐ Registrazione audio (Audacity, Reaper, formato nativo per smartphone) (2)

☐ Archivio partiture (Petrucci IMSLP, archivio Finale, archivio Musescore) (3)

☐ Piattaforme telefoniche (Whatsapp, Telegram, Skype, altro) (4)

☐ Applicazioni per smartphone per l'addestramento dei principianti (es: lettura di appunti, addestramento dell'orecchio) (5)

☐ Enciclopedie online e repository di articoli (Gallica, Wikipedia, JSTOR, RILM) (6)

☐ Altro (aggiungere) (7) _____

C.3 (*) Elenco B - Quali strumenti stai utilizzando nel seguente elenco?

☐ Elaborazione audio (hardware o software, ad esempio: cambio di tempo o tonalità) (1)

☐ Repository generico basato sul Web (GoogleDrive, OneDrive, altro) (2)

☐ Piattaforme di videochiamata (Skype, Teams, Zoom, Framaestro, Jitsi Meet) (3)

☐ Modifica degli spartiti (Partify, Powerpoint, altro) (4)

☐ Montaggio e arrangiamento partiture (Finale, Sibelius, Musescore, altro) (5)

☐ Lavagne digitali online (6)

☐ Altro (aggiungere) (7) _____

C.4 (*) Elenco C - Quali strumenti stai utilizzando nel seguente elenco?

☐ Applicazioni avanzate (ricerca in corso: performance musicali in rete come Jamulus, JackTrip, SonoBus) (1)

☐ Tecnologia Midi e VST (2)

☐ Elaborazione del suono in tempo reale (InScore, Csound, Faust...) (3)

☐ Tutorial preregistrati per gli studenti (4)

☐ Parti preregistrate per musicisti o accompagnamenti al pianoforte (6)

☐ Registrazione audio/video del processo pedagogico (studenti e tutor/docenti) (8)

☐ App per la modifica e la condivisione delle partiture (ForScore, MobileSheets...) (9)

☐ Altro (aggiungere) (7) _____

Interruzione
di pagina

Inizio blocco: Section E

D.1 **Didattica a distanza: pro e contro**

Questo approccio pedagogico è relativamente nuovo nell'insegnamento della musica: la tua opinione sarà importante per lo sviluppo dei materiali del progetto Virtual Stage.

D.2 (*) L'apprendimento a distanza solleva diversi dibattiti sulla sua efficacia. Per favore, leggi i seguenti items e scegli le frasi con cui sei d'accordo.

☐ Penso che questo metodo di insegnamento non sia utile o non applicabile alla pedagogia musicale (1)

☐ Ci sono problemi tecnologici: non sono attrezzato (2)

☐ Ci sono problemi tecnologici: i miei studenti non sono attrezzati (3)

☐ Ci sono problemi educativi: non sono addestrato (4)

☐ Non mi piace usare la tecnologia perché richiede troppo tempo (5)

☐ Non mi piace usare la tecnologia perché ho un modo di pensare diverso, rispetto agli esperti di informatica (6)

☐ Mi piace lavorare a contatto con gli altri: la tecnologia è una barriera per i contenuti extra-musicali nella musica d'insieme (7)

☐ Mi piace lavorare a contatto con gli altri: la tecnologia è una barriera per la qualità del suono (8)

☐ La didattica a distanza richiede maggiore concentrazione rispetto ai metodi tradizionali (9)

☐ L'interazione a distanza è limitata nonostante l'uso della tecnologia (10)

☐ Non posso permettermi di investire nell'acquisto o nel rinnovo di nuove attrezzature tecnologiche (13)

☐ Non sono d'accordo con nessuna delle affermazioni elencate (12)

☐ Altro (aggiungere) (11) _____

D.3 (*) La didattica a distanza è apprezzata nella nuova pedagogia musicale per diversi motivi. Per favore, leggi le frasi che seguono e scegli quelle con cui sei d'accordo.

☐ Permette una più ampia diffusione della conoscenza (13)

☐ Gli studenti possono progredire al proprio ritmo (14)

☐ Non ci sono limiti fisici al processo di apprendimento (15)

☐ Studenti e insegnanti sono liberi di insegnare e apprendere indipendentemente dalla loro posizione geografica (16)

☐ Non c'è bisogno di spostare strumenti ingombranti (pianoforte, organo, arpa, clavicembalo, contrabbasso...) (17)

☐ Rende orari e organizzazione più flessibili (18)

☐ Possibilità di registrare le lezioni e rivedere i contenuti online (19)

☐ Possibilità di scambio e discussione con un pubblico più ampio (forum, chat in tempo reale, newsletter) (20)

☐ Possibilità di apprendimento dai migliori interpreti che vivono in ogni parte del mondo (21)

☐ Semplicità nell'edizione della musica, nel layout delle parti musicali e nella condivisione delle informazioni in tempo reale per i gruppi musicali (22)

☐ Possibilità di effettuare ricerche mirate in grandi banche dati (24)

☐ Non sono d'accordo con nessuna delle affermazioni sopra elencate (25)

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☐ Altro (aggiungere) (23) _____

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Fine blocco: Section E

Inizio blocco: Section E

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Saremmo lieti se volessi condividere con noi sia un'esperienza positiva che hai avuto usando l'apprendimento a distanza nella musica sia un'esperienza negativa.

Visualizza questa domanda:

If PRIVACY Read here our privacy policy The flag is mandatory in order to proceed with the survey. = I have read and understood the privacy policy and consent to the processing of my data in order to participate in the survey.

E.1 Esperienza positiva

_____

_____

_____

_____

_____

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Intelllectual Output 1 (IEnglish)
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Q59 Esperienza negativa

_____

_____

_____

_____

_____

Fine blocco: Section E

Inizio blocco: Blocco 6

Visualizza questa domanda:

If PRIVACY Read here our privacy policy The flag is mandatory in order to proceed with the survey. = I don't agree

Q31   **PRIVACY**
Il primo flag nella risposta "Ho letto e compreso l'informativa sulla privacy e acconsento al trattamento dei miei dati per partecipare al sondaggio" è obbligatorio per poter procedere, altrimenti non sarà possibile rispondere al sondaggio. Lo staff del progetto VIRTUAL STAGE vi ringrazia per la collaborazione e vi ricorda di visitare il nostro sito web al seguente indirizzo https://vstage.eu/ .

Fine blocco: Blocco 6

EU - Virtual Stage - Distance Learning in Music

Introduction

Intro.1

VIRTUAL STAGE est un projet financé par l'UE dans le cadre du programme ERASMUS + KA2 VET pour la période 2021-2023. Il vise à étendre et à améliorer l'utilisation des méthodes d'apprentissage à distance dans le secteur de l'enseignement de la musique, l'opéra en particulier. Les 5 pistes de réflexion du projet sont :   1. Une analyse de l'état de l'art : technologies numériques dans "Vocational Education and Training - VET" pour l'opéra ; 2. La nouvelle méthode Virtual Stage pour la formation à distance dans le domaine de l'opéra : lignes directrices pour la formation des chanteurs ; 3. La nouvelle méthode Virtual Stage pour la formation à distance dans le domaine de l'opéra : lignes directrices pour la formation des instrumentistes et des chefs d'orchestre ; 4. Virtual Stage Repository : les "Open Education Resources" numériques pour la formation dans le domaine de l'opéra ; 5. Les cours en ligne – Introduction à la méthode Virtual Stage pour le développement et les prestations de formations à distance dans le domaine de l'opéra.   Nous avons identifié votre expertise et votre expérience comme précieuses pour le consortium Virtual Stage et aimerions vous inviter à répondre à notre questionnaire en ligne. Votre contribution serait très appréciée.
 Cette enquête respecte l'anonymat. Toutes les données sont traitées avec la plus grande confidentialité. Néanmoins, il vous est possible de prendre connaissance des résultats. Pour cela, merci d'indiquer simplement votre nom et votre adresse e-mail dans l'emplacement du questionnaire prévu à cet effet. Merci de votre collaboration.   L'équipe **VIRTUAL STAGE**

Privacy

Respect **de** **la** **vie** **privée**

Le premier indicateur est obligatoire pour procéder à l'enquête.

☐   J'ai lu et compris la politique de confidentialité et j'accepte le traitement de mes données afin de participer à l'enquête, et je souhaite recevoir des mises à jour sur le projet Virtual Stage (1)

☐   Je ne suis pas d'accord (4)

Interruzione di pagina

Intro.2   À   propos   du   questionnaire

Le but de cette enquête en ligne (~5 min) est d'analyser l'apport et la diffusion du numérique dans la pratique et la pédagogie musicale, avec une attention particulière liée à l'environnement de l'opéra. Les réponses au questionnaire permettront d'avoir une meilleure connaissance de l'usage du numérique dans l'enseignement à distance, ainsi que des types de méthodologie, d'outils, etc. que chacun peut être amené à utiliser dans ses activités professionnelles et pédagogiques.

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di pagina

Inizio blocco: Section A

Quelques informations sur vous et votre activité

A.1 Nom et prénom (*facultatif*)

○ Prénom (1) _____

○ Nom de famille (2) _____

A.2 (*) e-mail

○ (*) e-mail (3) _____

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A.3 (*) Nationalité

○ Tchèque (6)

○ Néerlandais (2)

○ Français (3)

○ Italien (1)

○ Autre (veuillez ajouter) (5) _____

A.4 (*) Genre

○ Femme (1)

○ Homme (2)

○ Autre (3)

A.5 (*) Âge

○ Moins de 35 ans (1)

○ De 35 à 50 ans (2)

○ Plus de 50 ans (3)

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A.6 (*)Le ou les établissements auxquels vous êtes rattachés (plusieurs choix possibles)

☐ Institution musicale d'enseignement supérieur (CNSMD, Pôle Supérieur de Musique, Faculté de Musicologie, CEFEDEM, CFMI, ENS) (1)

☐ Établissement musical de niveau préparatoire (CRR, CRD, CRM) (2)

☐ Ecole de musique associative locale, cours particuliers à domicile, association chorale, pratique amateur (3)

☐ Association pour l'interprétation musicale (théâtre musical, ensemble...) (5)

☐ Autre (veuillez ajouter) (4) _____

A.7 (*) Votre qualité (plusieurs choix possibles)

☐ Directeur / Administrateur / Coordinateur (1)

☐ Enseignant (2)

☐ Musicien / Chanteur (3)

☐ Technicien (5)

☐ Chercheur (6)

☐ Bibliothécaire (7)

☐ Autre (veuillez ajouter) (4) _____

Visualizza questa domanda:

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A.8 (*) Avez-vous déjà utilisé l'enseignement à distance dans l'enseignement de la musique ?

○ Oui (1)

○ Non (2)

Interruzione
di pagina

A.9 (*) Avez-vous déjà utilisé l'enseignement à distance dans le répertoire de l'Opéra ?

○ Oui (1)

○ Non (2)

A.10 (*) Comment vos appareils (PC, Tablettes, Smartphones...) sont-ils connectés au routeur ? (Remarque : vous pouvez cocher plusieurs options)

☐ J'utilise un ordinateur (de bureau) fixe connecté par câble au routeur/LAN (1)

☐ J'utilise un ordinateur portable connecté par câble au routeur/LAN (2)

☐ J'utilise Tablet, et il est connecté par câble au routeur/LAN (3)

☐ J'utilise une tablette connectée sans fil au routeur/LAN (4)

☐ J'utilise un smartphone connecté sans fil au routeur/LAN (5)

☐ Autre (veuillez ajouter) (6) _____

A.11 (*) Quel type de connexion internet utilisez-vous pour l'enseignement à distance ?

☐ Fibre optique (1)

☐ ADSL (2)

☐ Réseau cellulaire haut débit 4G ou 5G (3)

☐ Autre (veuillez ajouter) (4) _____

A.12 (*) Quelle est la bande passante de votre connexion internet ?

☐ 10 Mbps ou moins (1)

☐ Entre 10 et 25 Mbps (2)

☐ 100 Mbps ou plus (3)

☐ Autre (veuillez ajouter) (4) _____

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Visualizza questa domanda:

If (*) Did you ever use distance learning in music teaching? = Yes

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B.0 **Apprentissage synchrone/asynchrone**

L'apprentissage synchrone fait référence à tous les types d'apprentissage dans lesquels les apprenants et les enseignants interagissent en même temps pendant le processus d'enseignement. Cela comprend les cours personnels, les réunions de groupe en ligne et en direct (classe entière ou groupe restreint).

L'apprentissage asynchrone est une méthode d'enseignement centrée sur l'étudiant. Elle est largement utilisée dans l'apprentissage en ligne. Dans l'apprentissage asynchrone, les enseignants mettent généralement en place un parcours d'apprentissage, quel les élèves s'engagent à leur propre rythme.

Visualizza questa domanda:

If (*) Did you ever use distance learning in music teaching? = Yes

And PRIVACY Read here our privacy policy The flag is mandatory in order to proceed with the survey. = I have read and understood the privacy policy and consent to the processing of my data in order to participate in the survey.

B.1 (*) Quelle approche utilisez-vous en enseignement à distance ?

○ Synchrone (2)

○ Asynchrone (3)

○ Formation mixte (1)

B.2 (*) Avez-vous déjà utilisé une approche théorique ou pratique ? (Remarque : vous pouvez cocher plusieurs options)

☐ Théorique (1)

☐ Pratique (2)

☐ Autre (veuillez ajouter) (3) _____

B.3 (*) Compte tenu de l'ensemble du processus d'enseignement, combien d'heures (en %) avez-vous ou votre établissement avez-vous consacré à l'enseignement à distance ?

○ Moins de 20% (1)

○ De 20% à 60% (2)

○ Plus de 60% (3)

○ Autre (veuillez ajouter) (4) _____

Fine blocco: Section B

Inizio blocco: Section C

C.1 **Outils pour l'enseignement à distance**

Nous avons listé quelques outils numériques qui pourraient être utilisés dans la pratique musicale. Les outils de la **liste A** ne nécessitent pas de compétences informatiques spécifiques. Les outils de la **liste B** nécessitent des connaissances et des compétences modérées en informatique. La **liste C** requiert des connaissances et des compétences avancées en informatique.

C.2 (*) Liste A - Quels outils utilisez-vous dans la liste suivante ?

☐ Streaming vidéo et audio (Youtube, Vimeo) (1)

☐ Enregistrement audio (Audacity, Reaper, format natif smartphone) (2)

☐ Dépôt de partitions (Petrucci IMSLP, Dépôt Finale, Dépôt Musescore) (3)

☐ Plateformes téléphoniques (Whatsapp, Telegram, Skype, autres) (4)

☐ Applications smartphone pour l'entraînement des débutants (ex : lecture de notes, entraînement de l'oreille) (5)

☐ Encyclopédies en ligne et référentiel d'articles (Gallica, Wikipedia, JSTOR, RILM) (6)

☐ Autre (veuillez ajouter) (7) _____

C.3 (*) Liste B - Quels outils utilisez-vous dans la liste suivante ?

☐ Traitement audio (matériel ou logiciel, par exemple : changement de tempo ou de tonalité) (1)

☐ Référentiel Web à usage général (GoogleDrive, OneDrive, autre) (2)

☐ Plateformes d'appels vidéo (Skype, Teams, Zoom, Framaestro, Jitsi Meet) (3)

☐ Édition de partitions historiques (Partify, Powerpoint, autre) (4)

☐ Édition et arrangement de partitions (Finale, Sibelius, Musescore, autres) (5)

☐ Tableaux blancs en ligne (6)

☐ Autre (veuillez ajouter) (7) _____

C.4 (*) Liste C - Quels outils utilisez-vous dans la liste suivante ?

☐ Applications avancées (recherche en cours : performances musicales en réseau comme Jamulus, JackTrip, SonoBus) (1)

☐ Technologie Midi & VST (2)

☐ Traitement du son en temps réel (InScore, Csound, Faust...) (3)

☐ Tutoriels préenregistrés pour les étudiants (4)

☐ Parties préenregistrées pour musiciens ou accompagnements de piano (6)

☐ Enregistrement audio/vidéo du processus pédagogique (étudiants et tuteurs/professeurs) (8)

☐ Applications d'édition et de partage de partitions (ForScore, MobileSheets...) (9)

☐ Autre (veuillez ajouter) (7) _____

Interruzione
di pagina

Visualizza questa domanda:

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D.1   **Enseignement   à   distance   :   avantages   et   inconvénients**

Cette approche pédagogique est relativement nouvelle dans l'enseignement de la musique : votre avis sera important pour l'élaboration du dispositif et des outils du projet Virtual Stage.

Visualizza questa domanda:

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D.2 (*) L'enseignement à distance soulève plusieurs débats quant à son efficacité. Veuillez lire les éléments suivants et choisir les formulations qui vous semblent pertinentes.

☐ Je pense que cette méthode d'enseignement n'est pas utile ou non applicable à la pédagogie musicale (1)

☐ Il y a des problèmes technologiques : je ne suis pas équipé (2)

☐ Il y a des problèmes technologiques : mes élèves ne sont pas équipés (3)

☐ Il y une carence dans l'enseignement : je ne suis pas formé (4)

☐ Je n'aime pas utiliser la technologie car cela demande trop de temps (5)

☐ Je n'aime pas utiliser la technologie car j'ai une façon de penser différente de celle des experts en informatique (6)

☐ J'aime travailler au contact des autres : la technologie est un frein aux contenus extra-musicaux dans la musique d'ensemble (7)

☐ J'aime travailler au contact des autres : la technologie est un frein à la qualité du son (8)

☐ L'enseignement à distance demande plus de concentration par rapport aux méthodes traditionnelles (9)

☐ L'interaction à distance est limitée malgré l'utilisation de la technologie (10)

☐ Je n'ai pas les moyens d'investir dans l'achat ou le renouvellement de matériel lié aux nouvelles technologies (13)

☐ Aucune de ces réponses (12)

☐ Autre (veuillez ajouter) (11) _____

Visualizza questa domanda:

If PRIVACY Read here our privacy policy The flag is mandatory in order to proceed with the survey. = I have read and understood the privacy policy and consent to the processing of my data in order to participate in the survey.

D.3 (*) L'enseignement à distance est apprécié dans la nouvelle pédagogie musicale pour plusieurs raisons. Veuillez lire les éléments suivants et choisir les formulations qui vous semblent pertinentes.

☐ Il permet une diffusion plus large des connaissances (13)

☐ Les élèves peuvent progresser à leur rythme (14)

☐ Il n'y a pas de limites physiques au processus d'apprentissage (15)

☐ Les étudiants et les enseignants sont libres d'enseigner et d'apprendre indépendamment de leur situation géographique (16)

☐ Plus besoin de déplacer d'instruments volumineux (piano, orgue, harpe, clavecin, contrebasse...) (17)

☐ Cela rend les horaires et l'organisation plus flexibles (18)

☐ Possibilité d'enregistrer les leçons et de revoir le contenu en ligne (19)

☐ Possibilité d'échange et de discussion avec un public plus large (forum, chat en temps réel, newsletters) (20)

☐ Possibilité de suivre l'apprentissage par de grands interprètes et pédagogues à distance (21)

☐ Facilité dans l'édition musicale, la disposition des parties musicales et le partage d'informations en temps réel pour les groupes de musique (22)

☐ Possibilité d'effectuer des recherches ciblées dans de grandes bases de données (24)

☐ Aucune de ces réponses (25)

☐ Autre (veuillez ajouter) (23) _____

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Inizio blocco: Section E

Nous serions heureux si vous partagiez avec nous à la fois une expérience positive que vous avez eue en utilisant l'apprentissage à distance en musique, et une expérience négative.

E.1 Expérience positive

_____

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Q59 Expérience négative

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Q31   **PRIVACY**

Le premier indicateur dans la réponse "J'ai lu et compris la politique de confidentialité et j'accepte le traitement de mes données pour participer à l'enquête" est obligatoire pour continuer, sinon il ne sera pas possible de répondre à l'enquête.
L'équipe du projet VIRTUAL STAGE vous remercie de votre coopération et vous rappelle de visiter notre site Internet à l'adresse suivante https://vstage.eu/ .

EU - Virtual Stage - Distance Learning in Music

Introduction

Intro.1

VIRTUAL STAGE je projekt financovaný EU v rámci odborného vzdělávání a přípravy ERASMUS+ KA2 na období 2021–2023, jehož cílem je rozšířit a zdokonalit využití dálkového studia v hudebním pedagogickém sektoru a zejména v opeře. Výsledkem projektu má být těchto 5 zásadních výstupů: 1. Analýza současného stavu: Digitální technologie v odborném vzdělávání a přípravě v oblasti opery;č 2. Nová metoda Virtual Stage pro distanční trénink v oblasti opery. Pokyny pro školení zpěváků; 3. Nová metoda Virtual Stage pro distanční trénink v oblasti opery. Pokyny pro školení instrumentalistů a dirigentů; 4. Úložiště Virtual Stage: digitální OER pro školení v oblasti opery; 5. eCourse - Úvod do metody Virtual Stage pro vývoj a poskytování distančního školení v oblasti opery. Vaši odbornost a zkušenosti považujeme pro konsorcium Virtual Stage za cenné a rádi bychom Vás pozvali k vyplnění online dotazníku. Vaší spolupráce si velmi vážíme. Rádi se s Vámi také podělíme o naše výsledky, takže pokud si nepřejete zůstat v anonymitě, vyplňte prosím své jméno a e-mailovou adresu. Se všemi daty bude zacházeno s maximální diskrétností. Děkujeme za spolupráci. Tým **VIRTUAL STAGE**

Privacy   **SOUKROMÍ**

Zde   si   přečtěte   naše   [zásady   ochrany   osobních   údajů](#)
První příznak je povinný, aby bylo možné pokračovat v průzkumu.

☐   Přečetl jsem si a rozumím zásadám ochrany osobních údajů a souhlasu se zpracováním
mých údajů za účelem účasti v průzkumu a chci dostávat aktualizace o projektu Virtual Stage (1)

☐   Nesouhlasím (4)

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Intro.2 **O** **dotazníku**

Účelem tohoto online průzkumu (~ 5 minut) je porozumět šíření digitální technologie v hudební praxi a pedagogice, se zvláštním zřetelem na prostředí opery. Těmito otázkami bychom chtěli zjistit, zda jste ve své profesní a pedagogické činnosti někdy využívali dálkové studium, jaký druh metodologie, nástroje atd.

Interruzione
di pagina

Inizio blocco: Section A

Některé informace o vás a vaší aktivitě

A.1 Jméno a příjmení (*nepovinné*)

○ Jméno (1) _____

○ Příjmení (2) _____

A.2 (*) e-mail

○ (*) e-mail (3) _____

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A.3 (*) Národnost

○　Česká (6)

○　Holandská (2)

○　Francouzská (3)

○　Italská (1)

○　Jiná (prosím přidejte) (5) _____

A.4 (*) Pohlaví

○　Ženské (1)

○　Mužské (2)

○　Jiné (3)

A.5 (*) Věk

○　Do 35 let (1)

○　Od 36 do 50 let (2)

○　Více než 50 let (3)

A.6 (*) Vaše instituce je ... (Poznámka: můžete zaškrtnout několik možností)

☐ Univerzitní hudební instituce (1)

☐ Hudební instituce přípravné úrovně (2)

☐ Sdružení pro výuku amatérské hudby, místní hudební škola nebo soukromé hudební vyučování, sborové sdružení (3)

☐ Sdružení pro hudební vystoupení (5)

☐ Jiné (prosím přidejte) (4) _____

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A.7 (*) Vaše role (Poznámka: můžete zaškrtnout několik možností)

☐ Manažer (1)

☐ Učitel (2)

☐ Hudebník (3)

☐ Technik (5)

☐ Výzkumník (6)

☐ Knihovník (7)

☐ Jiné (prosím přidejte) (4) _____

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A.8 (*) Využívali jste někdy při výuce hudby distanční vzdělávání?

○ Ano (1)

○ Ne (2)

Interruzione
di pagina

A.9 (*) Využili jste někdy dálkové studium v oblasti opery?

○ Ano (1)

○ Ne (2)

A.10 (*) Jak jsou vaše zařízení (počítače, tablety, smartphony ...) připojena k routeru? (Pozn.: můžete zaškrtnout několik možností)

☐ Používám stolní počítač a je připojen kabelem k routeru / LAN (1)

☐ Používám mobilní počítač a je bezdrátově připojen k routeru / LAN (2)

☐ Používám tablet a je připojen kabelem k routeru / LAN (3)

☐ Používám tablet a je bezdrátově připojen k routeru / LAN (4)

☐ Používám Smartphone a je bezdrátově připojen k routeru / LAN (5)

☐ Jiné (prosím přidejte) (6) _____

A.11 (*) Jaký typ připojení k internetu využíváte pro dálkové studium?

☐ Optické vlákno (1)

☐ ADSL (2)

☐ Širokopásmová mobilní síť 4G nebo 5G (3)

☐ Jiné (prosím přidejte) (4) _____

A.12 (*) Jaká je rychlost vašeho internetového připojení?

☐ 10 Mb / s nebo méně (1)

☐ Mezi 10 a 25 Mbps (2)

☐ 100 Mb / s nebo více (3)

☐ Jiné (prosím přidejte) (4) _____

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Inizio blocco: Section B

B.0 **Synchronní/asynchronní** **učení**

Synchronní učení se týká všech typů učení, ve kterých se studenti a učitelé během vyučovacího procesu setkávají současně. To zahrnuje osobní lekce i živá online setkání, na nichž se sejde celá třída nebo menší skupiny.

Asynchronní učení je výuková metoda široce používaná v online učení zaměřená na studenty. V asynchronním učení učitelé obvykle připraví vzdělávací cestu, po níž se studenti vydají svým vlastním tempem.

B.1 (*) Jaký přístup využíváte při distančním vzdělávání?

○ Synchronní (2)

○ Asynchronní (3)

○ Obojí (1)

B.2 (*) Využili jste distanční vzdělávání pro teoretickou nebo praktickou výuku? (Pozn.: můžete zaškrtnout několik možností)

☐ Teoretický (1)

☐ Praktický (2)

☐ Jiné (prosím přidejte) (3) _____

B.3 (*) Kolik hodin (v %) jste vzhledem k celkovému vyučovacímu procesu strávili Vy nebo Vaše instituce na dálkovém studiu?

○ Méně než 20% (1)

○ Od 20% do 60% (2)

○ Více než 60% (3)

○ Jiné (prosím přidejte) (4) _____

Fine blocco: Section B

Inizio blocco: Section C

C.1 **Nástroje pro distanční vzdělávání**   Uvedli jsme některé digitální nástroje, které by mohly být použity v hudební praxi.   Nástroje v **seznamu A** nevyžadují specifické dovednosti v oblasti informačních technologií (IT).   Nástroje v **seznamu B** vyžadují mírné znalosti a dovednosti v oblasti IT.   **Seznam C** vyžaduje určité pokročilé znalosti a dovednosti v oblasti IT.

C.2 (*) Seznam A - Jaké nástroje z následujícího seznamu používáte?

- [ ] Streamování videa a zvuku (Youtube, Vimeo) (1)

- [ ] Nahrávání zvuku (Audacity, Reaper, nativní formát pro smartphone) (2)

- [ ] Hudební úložiště (Petrucci IMSLP, Finale repos, Musescore repository) (3)

- [ ] Platformy založené na telefonu (Whatsapp, Telegram, Skype, další) (4)

- [ ] Aplikace pro chytré telefony pro začátečníky (např. čtení poznámek, školení uší) (5)

- [ ] Online encyklopedie a úložiště článků (Gallica, Wikipedia, JSTOR, RILM) (6)

- [ ] Jiné (prosím přidejte) (7) _____

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C.3 (*) Seznam B - Jaké nástroje z následujícího seznamu používáte?

☐ Zpracování zvuku (hardware nebo software, například: změna tempa nebo tonality) (1)

☐ Webové úložiště pro obecné účely (GoogleDrive, OneDrive, jiné) (2)

☐ Platformy pro videohovory (Skype, Teams, Zoom, Framaestro, Jitsi Meet) (3)

☐ Úpravy historických not (Partify, Powerpoint, další) (4)

☐ Úpravy partitur a aranžování (Finale, Sibelius, Musescore, další) (5)

☐ Online tabule (6)

☐ Jiné (prosím přidejte) (7) _____

C.4 (*) Seznam C - Jaké nástroje z následujícího seznamu používáte?

☐ Pokročilé aplikace (síťový software pro hudební vystoupení jako Jamulus, JackTrip, SonoBus) (1)

☐ Technologie Midi a VST (2)

☐ Zpracování zvuku v reálném čase (InScore, Csound, Faust ...) (3)

☐ Nahrané výukové programy pro studenty (4)

☐ Předem nahrané party pro hudebníky nebo klavírní doprovod (6)

☐ Audio/video záznam pedagogického procesu (studenti a lektoři/profesoři) (8)

☐ Aplikace pro úpravy a sdílení skóre (ForScore, MobileSheets ...) (9)

☐ Jiné (prosím přidejte) (7) _____

Interruzione
di pagina

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Fine blocco: Section C

Inizio blocco: Section E

D.1 **Dálkové studium: klady a zápory**

Tento pedagogický přístup je ve výuce hudby relativně nový: váš názor bude důležitý pro vývoj materiálů projektu Virtual Stage.

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D.2 (*) Dálkové vzdělávání vyvolává debaty o jeho účinnosti. Přečtěte si, prosím, následující položky a vyberte tvrzení, se kterými souhlasíte.

☐ Myslím si, že tato metoda výuky není užitečná nebo není použitelná pro hudební pedagogiku (1)

☐ Existují technologické problémy: nejsem vybaven (2)

☐ Existují technologické problémy: moji studenti nejsou vybaveni (3)

☐ Existují vzdělávací problémy: nejsem vyškolený (4)

☐ Nerad používám technologie, protože vyžadují příliš mnoho času (5)

☐ Nerad používám technologie, protože mám jiný způsob myšlení než IT odborníci (6)

☐ Rád pracuji v kontaktu s ostatními: technologie je bariérou pro mimohudební obsah v souborové hudbě (7)

☐ Rád pracuji v kontaktu s ostatními: technologie je překážkou kvality zvuku (8)

☐ Dálkové studium vyžaduje větší soustředění ve srovnání s tradičními metodami (9)

☐ Vzdálená interakce je navzdory použití technologie omezená (10)

☐ Nemohu si dovolit investovat do nákupu nebo obnovy nového technologického vybavení. (13)

☐ Nic z výše uvedeného (12)

☐ Jiné (prosím přidejte) (11) _____

D.3 (*) Dálkové studium je v nové hudební pedagogice oceňováno z několika důvodů. Přečtěte si prosím následující položky a vyberte tvrzení, se kterými souhlasíte.

☐ Umožňuje širší šíření znalostí (13)

☐ Studenti mohou postupovat vlastním tempem (14)

☐ Proces učení neomezují žádné fyzické hranice (15)

☐ Studenti a učitelé mají možnost samostatně učit a učit se nezávisle na své zeměpisné poloze (16)

☐ Není třeba stěhovat velké nástroje (klavír, varhany, harfa, cembalo, kontrabas ...) (17)

☐ Díky němu je časový rozvrh a organizace flexibilnější (18)

☐ Možnost nahrávání lekcí a prohlížení online obsahu (19)

☐ Možnost výměny a diskuse s širším publikem (fórum, chat v reálném čase, zpravodaje) (20)

☐ Možnost učení se od nejlepších umělců na světě (21)

☐ Usnadnění vydávání hudební produkce, rozvržení hudebních partů a sdílení informací pro hudební skupiny v reálném čase (22)

☐ Možnost provádění cílených výzkumů ve velkých databázích (24)

☐ Nic z výše uvedeného (25)

☐ Jiné (prosím přidejte) (23) _____

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Inizio blocco: Section E

Byli bychom rádi, kdybyste se s námi podělili o pozitivní i o negativní zkušenosti s distančním vzděláváním v hudbě.

E.1 Pozitivní zkušenost

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Q59 Negativní zkušenost

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Inizio blocco: Blocco 6

Q31   **SOUKROMÍ**
 První příznak v odpovědi „Přečetl jsem a porozuměl zásadám ochrany osobních údajů a souhlasím se zpracováním mých údajů za účelem účasti v průzkumu" je povinný, aby bylo možné pokračovat, jinak   nebude   možné   na   průzkum   odpovědět.
 Pracovníci projektu VIRTUAL STAGE vám děkují za spolupráci a připomínají vám, abyste navštívili náš   web   na   následující   adrese   https://vstage.eu/   .