

DISTANCE MUSIC TEACHING WITH AN ONLINE MEETING SYSTEM



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This guide deals with the technical aspects of remote music teaching in the current situation. At the end of this document, you will find a brief overview of the differences between remote and contact teaching. This guide consists of three sections: Technical aspects, Pre-lesson checklist, and Pedagogical aspects.

TECHNICAL ASPECTS

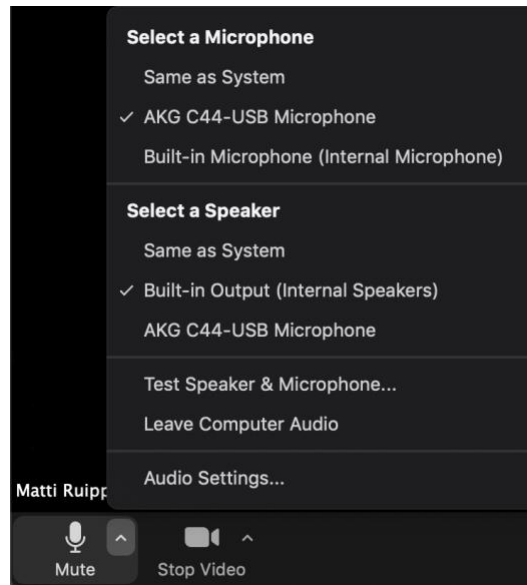
Aspect	Guidance
Network connection	<ul style="list-style-type: none"> Ethernet/fixed network is recommended. Sometimes, your mobile phone may provide more bandwidth (4G) than your wireless home network. Test your network speed with a browser-based test such as https://www.nopeustesti.fi. The recommended bandwidth should be around 2.0 Mbps for 1:1 or 3.0 Mbps for group calls (Zoom's recommendation; more bandwidth = better stability of connection). Using the <i>High Fidelity Music Mode</i> increases your bandwidth needs. If you are uncertain about the bandwidth sufficiency, try to avoid other network use (gaming, online TV streaming, etc.) in the premises during the lesson.
Online meeting system	<p>Zoom.us is the best option for music teaching:</p> <ul style="list-style-type: none"> Outperforms competitors with sound quality Enables sharing sound samples directly from your computer or mobile device to the recipient Enables stereophonic sound Enables sharing your iPad display directly to the recipient Practical function for dividing participants into small groups. <p>It is advisable to download the Zoom app to your computer. The desktop app provides better functionalities than the browser-based option. If you must use the browser-based version, Chrome is probably the best browser for this purpose.</p>
Terminal device	<ul style="list-style-type: none"> A computer is usually more powerful than a tablet or mobile phone. Zoom's <i>High fidelity music mode</i> (see Sound settings) is only available for computer use. If you are uncertain about the performance of your device, close all other apps and functions for the duration of the lesson. It is also advisable to turn off all notifications, automatic updates and synchronisation functions, as these may disturb the lesson. Zoom's <i>Original Sound</i> function is also available on tablets; see Sound settings for more information.
Camera	<ul style="list-style-type: none"> A separate camera mounted on a tripod or some other kind of stand is a better option than the computer camera. Even

	<p>inexpensive cameras (less than EUR100) are quite sufficient for the purpose.</p> <ul style="list-style-type: none"> • If you use the laptop camera, you can place it on an ironing board, for example. The mobile phone or tablet can be placed on a music stand. • Whenever possible, adjust the lighting so that the light source and/or window is in front of the participant (behind the camera). This supports the optimal adjustment of the camera's automatic lighting function.
Microphone	<p>A separate microphone is always better than your device's inbuilt microphone. The new <i>High fidelity music mode</i> is beneficial with an external microphone only. As it is impossible to test the other party's sound quality from your end alone, it is good to have a pre-lesson sound check and determine the optimal place for the microphone. (For more information, see Sound settings below.)</p> <ul style="list-style-type: none"> • It is advisable to use a condenser microphone, which can stand a little further from the sound source. • A separate digital recorder (<i>Portable Audio Recorder</i>) connected to the computer may also work in this setting. • For the microphone, you need a stand and a cable that is long enough. • Some microphones can be directly connected to the computer via USB. If your microphone does not allow this, you will need a separate sound card (<i>USB audio interface</i>). • Getting a USB-connected mixer might also be a good idea. This would provide you with several microphone channels, a line connector for an electric piano and a connection for a separate instrument. Moreover, the mixer would most likely enable tone adjustment and even the echo or compression of the vocal channel. Plus, it enables stereophonic output. For example, the Yamaha MG10 XU is a suitable USB mixer. • With a separate <i>Camera Connection Kit</i>, you can also connect your USB microphone to an iPad or iPhone. In this case, please note that the connector must be plugged into a power source; an iPad's power supply will probably not be sufficient. • There are also microphones that can be directly connected to the mobile phone with a Lightning or USB C plug. • The best choice for a one-on-one lesson is a monophonic, directional <i>cardioid</i> microphone. For band sessions, it is better to use a stereo-enabled microphone (these are probably more expensive than monophonic ones). If you have a stereophonic microphone, please see recommendations below. • There are also microphones with variable polar patterns. Recommendations: <ul style="list-style-type: none"> – The switch has the option <i>Cardioid</i> or the heart-shaped symbol or the text <i>Front</i>. This is a monophonic setting. It is a safe option that works in any situation. However, it does not provide the same kind of spatial effect as the other options. – The switch has the option <i>Stereo</i> or <i>Tight stereo</i> or a

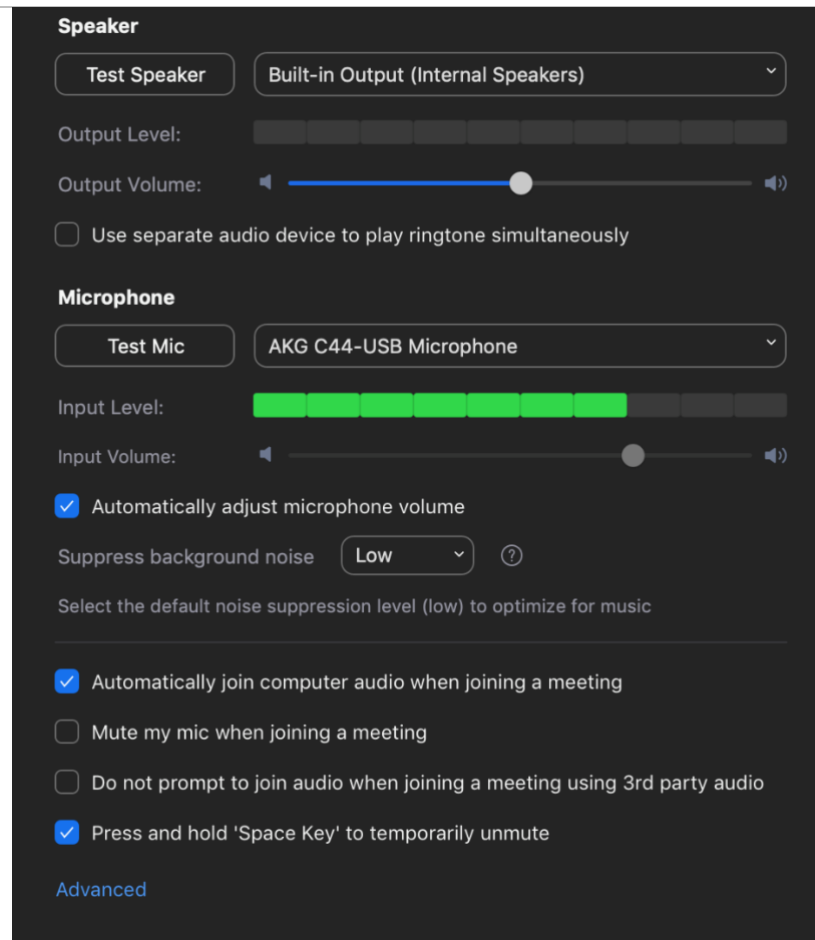
	<p>symbol with two overlapping circles. This is a setting for recording a stereophonic signal, which improves the spatial effect. If you use this setting, you must remember to select <i>Use stereo</i> from the sound settings (see below).</p> <p>– Further possibly available options include a circle symbol (<i>omnidirectional</i>), a symbol resembling the figure eight (<i>bi-directional</i>) or two overlapping figure eights (<i>Blumlein</i>), but these are rarely used in remote teaching. If you intend to use these settings, they must be tested with the other participant in advance.</p> <ul style="list-style-type: none"> • Examples of inexpensive USB microphones include Fifine Metal Condenser Recording Microphone and Røde NT-USB Mini. Microphone options in the price range of over one hundred euros include Røde NT-USB, Blue Yeti Studio Blackout, Audio-Technica AT2020 USB+, Audio-Technica AT2020 USBi and AKG Lyra. • Examples of microphones that can be directly connected to the mobile phone include Boya BY-DM100 Condenser Microphone, Røde VideoMic Me-L and Shure Motiv MV88. Make sure that your microphone is compatible with your phone. (In the future, a USB C plug will be required. It appears that this is the plug type that will be adopted for most mobile devices – at least for the time being.) <p>Always make sure that you can play in a quiet room in order to avoid audio disturbance. Excessive echo in the room can also hinder the outcome.</p>
Sound reproduction	<ul style="list-style-type: none"> • The incoming audio can be heard more clearly with earphones. It is advisable to use wired earphones (make sure the wire is long enough), as Bluetooth earphones often feature a disturbing delay in sound reproduction. • Furthermore, the earphones should be non-isolating so that you can hear yourself play. If you have noise cancelling earphones, you can move one earpiece away from your ear. • A set of quality loudspeakers is also a good option. However, there is a slight possibility of audio feedback. To avoid this, make sure that your microphone is not directed towards the loudspeakers. Zoom's <i>Echo Cancellation</i> function is quite reliable.
Sound settings	<p>Online meeting applications feature audio optimised for speech, i.e. the highest and lowest audio frequencies are filtered out. This, of course, is not at all optimal for music teaching. To ensure clear audio connections, Zoom has automatic volume adjustment (<i>Automatically adjust microphone volume</i>) enabled as default. This is a good feature when the speaker's distance to the microphone varies or tones of voice change. The automatic setting strives to raise the volume of quiet sections and level out major variation. However, in light of musical nuances, this is a harmful feature. These two points must be borne in mind when adjusting your sound settings. Zoom allows this.</p>

BASIC SOUND SETTINGS (= ADJUSTMENTS YOU SHOULD AT LEAST MAKE):

- In the Zoom (version 5.3.1) interface, you see a microphone icon in the bottom left-hand corner. Next to this icon, there is a menu launch button (arrow).



- Select *Audio Settings...*
- *Test Speaker* replays a short signal, which you should hear in the speaker selected from the menu on the right-hand side of the button. Use the slide control below to adjust the volume.
- In the *Microphone* field, you can select the microphone to use and test its functionality. When you speak, the Input Level indicator should flash. (The image features a situation of using an external USB microphone.)
- If the meeting will consist of speaking, keep the selection *Automatically adjust microphone level*. However, for music lessons you must uncheck this box. Otherwise, the volume will be jumping up and down due to the dynamic variation in music.
- In the *Suppress background noise* menu, the best setting is *Low*. With this setting, the application will not actively process any background noise, which will minimise its effect on the accents of music. This setting applies to background noise only. If your computer's sound card is not of very high quality, it may cause a disturbance. In this case, you must test other options for the session.

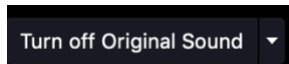


ADVANCED USE (= USE WITH A SEPARATE MICROPHONE AND SOUND CARD OR A USB MICROPHONE AND HEADPHONES)

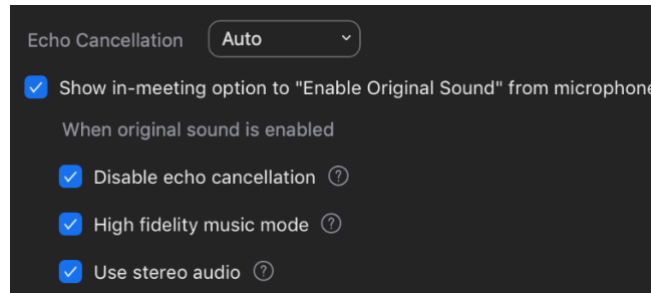
There is an *Advanced* button at the foot of the display. It launches some settings that should be checked and adjusted according to the situation. In music teaching, you should always have *Original Sound* enabled. The other options require a separate microphone and sound card or a USB microphone and headphones; when used without this additional equipment, these settings will only make things worse.

- *Echo Cancellation* should be enabled in a normal communication situation (*Auto*).
- Also select *Show in-meeting option to "Enable Original Sound" from microphone*. This setting will add a button for the *Original Sound* system to the main page. It clearly improves the sound reproduction quality, for example by preventing long sounds from breaking. Important note; This selection overrides the automatic level adjustment, background noise suppression and *high pass filter* possibly selected on the main page.

As a result, you should have a button saying *Turn off Original Sound* at the top left-hand corner of the main page.

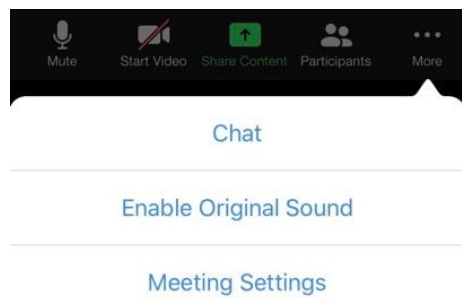


- Echo cancellation processes (changes) the sound; you can prevent this by selecting *Disable echo cancellation*. If you use this setting, you must use headphones. With loudspeakers, there will be too much disturbance.



- *High fidelity music mode* significantly improves the audio quality, but it is useless unless you have a good microphone, sound card and headphones. On the contrary, it may even increase disturbance. It also increases the need for bandwidth, as compressed audio requires more bandwidth (192 kb/s).
- *Use stereo audio* reproduces stereophonic sound. You can select this option if you have a stereo microphone and sound card or a stereophonic USB microphone. Most microphones are monophonic, and with them this option should not be used because it will lead to a situation where the recipient only hears the sound from one channel. Moreover, this selection also increases the bandwidth need.

In the iPad Zoom application, the *Original Sound* option is under the *More* menu.



Audio sharing: Zoom enables sharing music played from the computer, which is a practical feature for music teaching. To share audio, first click the *Share Screen* button at the foot of the video screen and then select *Share computer sound*. In addition, the *Advanced* settings include an option for sharing only the computer audio, not the screen. Always bear in mind the Finnish copyright legislation with regard to sharing music. The law interpretation is based on whether the audience is in the same space as the artistic work performed; this means that a copyright-

	protected piece of music cannot be shared in an online teaching situation without compensation.
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PRE-LESSON CHECKLIST

When you have set the above-described sound and video settings once, you can assume that they will also work in the following sessions. Things for participants to check before the start of each session:

- Is your microphone properly connected and working? If you can see flashing movement inside the microphone symbol in the bottom left-hand corner of your screen, everything is in order. “Can you hear me?” is an unnecessary question. Each participant responding to it only causes an extra load on the connection.
- Do you have the right setting for *Automatically adjust microphone level*? It must be *on* for speech-based meetings, *off* for music lessons.
- You should have a button saying *Turn off Original Sound* at the top left-hand corner of the main page.
- If you have echo cancellation turned off and *High fidelity music mode* enabled, you must have a separate microphone, sound card and headphones.
- Arrange your lighting so that the light source is behind the camera.
- If you intend to share material from your screen, open the file before the start of the session. If you want to share music from your computer, select *Share computer sound*.

PEDAGOGICAL ASPECTS

This section contains some pedagogical points that help manage teaching sessions.

Empathy	<ul style="list-style-type: none"> • Maestro Pinchas Zukerman has said in an interview (Donner 2003), “When you work don’t think about the computer. Think about the student.” • Empathy must be expressed clearly (Holmberg 2001). • Video sessions set limitations on visual and auditive communication: You don't have genuine eye contact and the acoustic feedback is different from that provided in a classroom. The teacher must observe the student's body language and carefully listen to what they say in conversations. Encouragement must be thoroughly verbalised. You should strive to understand what is going on at the other end. • Written communication also requires extra attention and observing the student perspective: How can you make your point unambiguously clear to the student? How do you organise the various tasks and activities on your learning platform? How do you create user-friendly websites and learning materials?
Instruction and feedback	<ul style="list-style-type: none"> • You should reserve a little more time for sessions than usual. • Proceeding through questions and answers is a productive method. • Comments cannot be made when the student is playing. They come across unclearly and cause confusion. • Ordinary systems do not allow for two people to play together. • The student has increased responsibility for the progress of each session as well as their studies as a whole.

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| | <ul style="list-style-type: none">• Supporting independent practicing is emphasised.• The role of video files and other such work methods increases in comparison with traditional classroom teaching.• All in all: new teaching methods are required, which can also be a good thing. It may give rise to new pedagogical innovation. Pedagogically oriented networking between colleagues supports the implementation of changes in music teaching. |
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To conclude, a quote from flutist Petri Alanko, who is a lecturer at the Sibelius Academy:
“This is a good time to focus on learning new things.”