

HOW TO TAKE MEET AND CODE ONLINE

**A brief guide for organizing and running online coding events
for children and young people**

July 2020

Get started!

Learning together online is different from learning in real-time. However, if you can learn in real-time, you can learn digitally. Take heart and try and create exciting experiences for yourself and others.



WHY THIS GUIDE?

Whether you're online or offline, every project begins with an idea

This idea guides our decisions about how to best achieve our goals. All the questions along the way, (Who do I create educational content for? What is the goal? How many people should be able to participate? What are the best formats, methods and tools? What resources do we have?), become even more important, especially with the restrictions and possibilities in digital education. Since the pandemic has accelerated remote work and learning, we have an opportunity to use this situation to utilize the full potential of digital tools.

With this guide, Meet and Code Online, in cooperation with Junge Tüftler, we want to encourage and enable European educators in the non-profit sector to get started or support engagement to create and implement impactful, sustainable and

playful coding online seminar, tailored to their target groups. Therefore, the following provides a practical overview over all aspects of online seminars including recommendations, tips and tricks, and information on further materials.

We start by diving right into the technical issues – there are decisions you'll need to make before your first online seminar takes place. Data security is closely connected, therefore we summarize its most important aspects. The journey continues with organizational aspects before, during and after your events. This is followed by some key didactics and methodical advice. Next, we present a small selection of coding tools that we've found helpful. Finally, we connect possible formats with the tools introduced in this manual.

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TECHNICAL SET-UP

A central decision is the conference-tool

There are dozens of tools with very different shapes and options, in a fast-growing field that changes daily.

Besides the most important criteria, which are your individual requirements, we picked out three conference-tools that we feel deserve to be highlighted for a broad range of scenarios in online education. Criteria include: composition of performance, technical possibilities, usability and data-security.

TIP: BigBlueButton (BBB)

We've had great experiences with BBB and feel it offers the best mix of performance, features, usability and data-security. It's free, open source and is perfect for educational purposes.

	Jitsi	BigBlueButton	Zoom
CAPACITY (RECOMMENDATION)	around 15 people, depending on server	around 100 people, depending on server	up to 10.000 people, depending on package
LICENSE	open source (Apache)	open source (LGPL)	proprietary, USA
PRICE	free	free	basic free, otherwise price depends on package
HOSTING	selfhosting	selfhosting	cloud-based (SaaS)
PUBLIC INSTANCES	yes, a lot	yes, some	no
PLATFORMS	all desktop OS, iOS and android (app is not open source)	all desktop and mobile OS	macOS and MS Windows, all mobileOS
BEST BROWSERS	Chrome (no software installation)	Chrome, Firefox (no software installation)	Firefox, Chrome (software installation strongly recommended)
REGISTRATION	no	yes for host, no for the participants	yes for host, no for the participants
PARTICIPATION BY PHONE	yes, if implemented	yes, if implemented	yes
LANGUAGES	a lot, but not all European	some European	five European

If you miss a feature which is not implemented in the conference-tool you have chosen, you can help yourself with additional tools - a small selection of them can be found down in the 'running the online seminar'-section.

Features

All conference-tools presented come with basic features like audio and video chat, public and private text chat, screen-sharing and recording. They can all be integrated in a Moodle learning environment.

Jitsi is the most basic tool, while BBB and Zoom offer a lot more, but with slightly different features, like a collaborative whiteboard and/or texting-tool, polls, upload presentations and/or other documents and the possibility to define different roles. These give you more control over the process, if needed.

There's not enough space here to list all characteristics, please take a look at the tools' websites or get an overview on Wikipedia (https://en.wikipedia.org/wiki/Comparison_of_web_conferencing_software). If you miss a feature that is not implemented in the conference-tool you have chosen, you can choose additional tools. A small selection of these can be found in the 'running the online seminar' section.

Further information

BigBlueButton

- user guide BigBlueButton: <https://docs.bigbluebutton.org/>
 - demo version BigBlueButton: <https://demo.bigbluebutton.org/gl/>
 - tutorial videos: <https://bigbluebutton.org/html5/>
- public instances of BigBlueButton (Germany)
- city of Ulm: <https://bbb.ulm.dev/b>
 - collection of chaos computer club: <https://pads.ccc.de/bbbliste>

Zoom

- user guide Zoom: <https://support.zoom.us/hc/en-us>
- demo version of Zoom: <https://zoom.us/test>
- tutorial videos: <https://support.zoom.us/hc/en-us/articles/206618765-Zoom-Video-Tutorials>

Jitsi

- user guide Jitsi: <https://jitsi.github.io/handbook/docs/intro>
 - demo version: <https://meet.jit.si/>
 - YouTube channel: <https://www.youtube.com/c/JitsiOrg/featured>
- public instances of Jitsi (Germany):
- noncommercial (Germany): <https://scheible.it/liste-mit-oeffentlichen-jitsi-meet-instanzen/>
 - partly commercial (international): <https://github.com/jitsi/jitsi-meet/wiki/Jitsi-Meet-Instances>

Meet and Code also recommends the use of Microsoft Teams as a tool for online events:
<https://www.microsoft.com/en-us/microsoft-365/nonprofit/office-365-nonprofit>

As a non-profit organization, you can find software donations, discounted licenses, and much more on the IT platform of the founding partner TechSoup Europe. More information here:
<http://www.techsoupeurope.org/all-partners/>

TIP: working in small groups

Central features for educational use are so-called 'break-out-rooms' for terminated small-group-units. In one session you can have up to eight in BBB and up to 50 in ZOOM, depending on the number of participants in the small groups. The solution for Jitsi, which does not implement this feature, is to create multiple links in advance.

Important:

European data protection law stipulates that every institution must record, in writing, their need to use online conference software before use. This implies the purpose of use, the appropriateness of a tool for your purpose and that your choice meets the best data security standard possible.



DATA PROTECTION

The European General Data Protection Regulation (GDPR) offers a great framework to meet data security concerns. Therefore, services located within the EU should be utilized over others. If EU services do not meet your requirements, look for standards like the privacy-shield-certificate (which is held by Zoom) and/or conclude a contract that obliges a service provider to follow the European data security standard. By self-hosting open-source software, you are responsible. Don't forget to add the necessary information to your general data privacy statement on your organization's website. For more information, see the link below or ask a data security official.

Protective actions while use – the basic rules

- Generate and use as little personal data as possible
- End-to-end-encrypted services are preferable
- The transfer of any personal data should only happen with the consent of a fully informed person and must be justified
- If you plan to publish recordings or plan on storing data, ask for an agreement in written form
- When recording data, offer people a chance to change their real name into an alias. Note: This can be changed during the session in Jitsi and Zoom, but in BigBlueButton people have to restart
- Control the participation in your online seminars with a password to avoid misuse or harassment

Further informations

- General Data Protection Regulation official site: <https://gdpr.eu/>
- Some tips from the Irish Data Protection Commission:
<https://dataprotection.ie/en/news-media/blogs/data-protection-tips-video-conferencing>

PLANNING AN ONLINE CODING EVENT

TIP: second device

Participating with a second device can be very convenient, enabling you to switch fast if you have technical issues, or if you need a second perspective in the room, for example: showing things like robots moving – don't forget the mute button to avoid feedback.

Announcement of the event

- Online event communication can focus on digital tools such as email-newsletters and social media-postings
- Consider that people's behavior in the online space tends to be hastier and more short-term: announcements can be made at shorter notice, with long-term planning reminders are important. Since registration is very simple and non-binding, the rate of spontaneous cancellation/ non-participation is also higher

Self-preparation

- Know your tools: choose a format and methods that fit the content and get familiar with all technical equipment (soft and hardware) so you feel confident when using it
- Make a full "tech-check" with every person involved in the seminar, for example external experts
- Connect your computer with LAN cable (instead of using Wi-Fi or, less reliable, a mobile internet), because this provides you with the best and most stable bandwidth. Note: even a LAN-connection can fail - then it is good to have a mobile device for setting up a hotspot
- Be mindful of the setting in which you will perform your online seminar: what will be seen in the background? Is there any noise or disturbance around you? How is the lighting situation, are sound and video-quality good? Is the atmosphere inspiring?
- Prepare a presentation that guides you and your participants through the session

- Always conduct group online seminars with two people (one primary moderation and one co-moderation for technical stuff, side-communication in the chat or helping with visualization)

Preparation for participants

- Send out an info-package/email in advance that contains: the agenda, the presentation, work materials for participants, technical requirements, devices, browser, headphones, the link to the meeting room with password and, if needed, a consent form for legal guardians
- Add a telephone-number (and maybe chat services) where people can reach you or your co-moderator, in case they have serious problems with entering the video-conference-room, or if technical issues occur during the session
- Ideally every participant should have his or her own device (this diminishes side-conversations/ noise and fosters concentration), unless co-working on one device is an explicit part of your concept

Implementation (organizational advice)

- Mute everyone in the beginning and don't start your video before you are ready
- Start with a technical introduction of the core functions so that everyone feels comfortable with the conference tool
- Ask everyone to use a headset and to stay on mute when not speaking
- If internet performance problems appear ask everyone to switch off their video

- Ask participants to close everything on their devices that is not needed for the online seminar (in favor of a better performance) and to switch off or mute all other devices, e.g. chat-notifications (for better concentration)
- Make sure everyone knows that they can be seen and heard as long as they have these functions enabled to avoid awkward incidents
- Talk about rules of speaking and participation:
 - how do people show when they want to speak? (raising hands, using signs in the picture or in the chat)
- Don't forget to take proper breaks where people can really leave the screen and/or move (you can also offer meditation with eyes closed or gymnastics: shake, stretch or dance)
- Plan enough time for feedback and explicitly address how people felt about participating

TIP: start and end early

Schedule an official tech check with all participants 15 minutes before the online seminar to help with technical issues and to ensure a punctual start. If everything works as it should, even better. Then people can use the time to get a drink and make themselves comfortable. It's better to close the session a few minutes early than to run late. This gives people a good feeling about their use of time.

Post-processing

- Send out a thank-you message and attach possible outcomes, further learning resources or information for upcoming events
- If you did not have sufficient time during the online seminar, ask for feedback
- Evaluate the whole process with your team

Further resources

- 10 Steps for planning a successful webinar:
<https://www.techsoup.org/support/articles-and-how-tos/10-steps-for-planning-a-successful-webinar>
- webinar about making webinars from TechSoup Europe:
<https://www.youtube.com/watch?v=Bz2L1C2pNBc&feature=youtu.be>
- a collection of helpful topics for online training:
<https://www.trainingforchange.org/tools/?topic%5B2%5D=2&searchbox=>

RUNNING THE ONLINE SEMINAR

TIP: If you translate analogue formats into digital consider that online seminars need more time, and perhaps shorten the content. Think about how translation impacts every building block and the whole experience.

Didactic advices

Grown-ups

For grown-ups we recommend longer sessions of up to five hours, including a big break of at least 30 minutes and some small breaks in between. With adults you can work in bigger groups of up to 20 people. The online seminar contains a longer self-learning phase where participants work with material like tutorials and/or in small breakout-rooms. In this case the moderator can remain in the background as a tutor. A change of methods and tools can also be very helpful.

Children

For children we recommend a maximum of two hours including a break of at least 10 minutes. Children work best in small groups (up to 10), with a lot of interaction, strong presence of moderators and as little additional material and change of tools as possible.

General recommendations

- Stay human, especially because it's so technical
- Stay calm: despite the best preparation, glitches can always appear
- Keep it simple: concentrate on the tools you really need to avoid stress
- Address all senses: visual, auditory, kinetic, cognitive – variety rules
- Be interactive: people learn better by doing than by listening to others
- Nobody should talk longer than five minutes in one piece without any possibility of interaction
- Use presentations more as a guiding tool than a textbook
- Less is more: if possible, split your content into several sessions
- The longer a session takes, the more and/or longer breaks are needed
- Keep an eye on the transfer: what is useful for participants' real lives?

Transfer of methods from offline to online. Some examples:

Introduction



As we cannot meet physically and people are in so many different places and situations, and in different time-zones, to capture the essence of everyone's different realities fosters a warmth and connection to oneself and with others.

You could ask people to show an object that represents their mood or ask people to describe where they are sitting at that moment, or simply share what the weather is like at their location.

If you have more time and want to know something about the background or expectations of the participants, you can draw a scale on a whiteboard and ask their opinions, feelings or facts. For even more interaction you can ask people to sort themselves into groups with a question like, "How much coding experience do you have?" They'll need to engage with each other based on this.

Go-rounds



Go-rounds are difficult since the order of the videos is shown to every participant differently. You can solve this by asking one person to start and move on to the next person when they have finished (that way they also learn the names of others). Otherwise you can visualize a circle on a whiteboard. Ask everyone where they want to be seated and to remember the names to the left and right of them.

Big groups



Sometimes it won't be practical for each person to answer questions individually. In these instances, you can use the chat function, a pad or an interactive whiteboard so that everyone can see different contributions. You can use these tools to text, scale, mind map, brainstorm or cluster together and save the outcomes. You can also send the outcomes to everyone afterwards. If two people run an online seminar, your co-moderator can also directly modify the presentation while people speak.

Warm-ups



As this guide is especially for coding online seminars, think about analogue programming games to dive directly into the topic. We generally prepare snippets of an algorithm with a chain of movements and sounds, distribute them to participants and let them perform it together. The Evergreen programming language also works online: let participants program without writing code. They could, for example, create an algorithm for brushing teeth or paint something. One funny classroom example: <https://www.youtube.com/watch?v=leBEFaVHlIE>

Capture moods



Our perception of the atmosphere is strongly limited by screens, so enquire on a consistent basis about how participants are feeling by asking them to show their mood with a thumbs up or down, with polls or other tools.

Tools besides the Google Suite. Some examples:

Pads



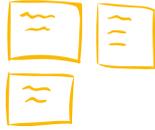
Pads are wonderful basic open-source collaborative text-tools. There are many you can use without making an account or login, e.g. Yopad (<https://yopad.eu>). Some require you to create an account, which also means you can save all your notes long term, e.g. Foepad (<https://pad.foebud.org/>). One advantage of BBB is that it has a pad already implemented.

Presentations



The French non-profit-association Framasoft offers a whole bunch of collaborative open-source-tools (<https://framasoftware.org/en/full#topPgcloud>). To create presentations, besides your favorite offline software, you can use the basic Framaslide or the powerful proprietary software Prezi (<https://prezi.com/>) alone or in teams.

Boards



A free and anonymous kanban-board for collaborative project-management, besides other useful tools, can be found on the open-source-platform Cryptpad (<https://cryptpad.fr/>). Complex proprietary boards with nice graphics and loads of functions include Miro (<https://miro.com/>, free editing only with account or to watch anonymous) and Mural (<https://www.mural.co/>, not free, but other people can then edit anonymously).

Further Informations

- recommended for online moderation: <https://www.leadinggroupsonline.org/>
- a collection of how classical methods work online: <https://trainings.350.org/for/meeting-facilitators/#online-facilitation>
- digital warm-up guide for boards: https://berlin-innovators.com/wp-content/uploads/2020/03/Digital-Warmup-Guide_v1.1_eng_03_2020.pdf
- online warm-ups and energizers: <https://www.mural.co/blog/online-warm-ups-energizers>

Polls, ratings and quizzes



Polls, ratings and quizzes for opinions, games and feedback can be created nicely and quickly with the proprietary software Mentimeter (<https://www.mentimeter.com/>, free to edit and share in a basic version). For more complex learning games and quizzes as a teacher you can get free access to the amazing tool Kahoot (<https://kahoot.com/>).

CODING-TOOLS

This list of examples focuses on tools that work easily in a browser or application, without the need for extra hardware.

Visual programming: Scratch

<https://scratch.mit.edu/>



Even if most of you already know it, Scratch is too great to not mention here. It's a cost- and advertisement-free coding platform and software from the University Massachusetts Institute of Technology (MIT). It focuses on enthusing children from eight years and up for coding in a very playful and creative way to bring their ideas into being. There is a well-moderated online community around

Scratch that values a mix and share culture. With a teacher account you can also manage classes. You can find endless educational resources and extensions (e.g. for motion tracking or machine learning). For the current version (Scratch 3.0) you need an updated browser (any except Internet Explorer), or you can download it on your computer for offline use. For Android tablets there is also an

app. For younger kids from age four the ScratchJR app is more suitable. This app concentrates more on storytelling and is available for Android and IOS tablets. Another great thing about Scratch is that it can be easily combined with other free software (e.g. for sounds <https://soundplant.org/>) or hardware like Makey Makey (also from MIT, <https://makeymakey.com/>) or Lego WeDo. Additionally the company Makeblock developed their own version of Scratch under the name mBlock to run their educational modular robot mBot (<https://www.mblock.cc/en-us/>).

Virtual Reality / Augmented Reality: Cospaces

<https://cospaces.io/edu/>



Cospaces is a great starting tool for creating 3D rooms, stories and games, which you then can enter via the free app on smartphones or tablets. If you want to visualize the 3D rooms you created in Virtual Reality, you will need VR-glasses. You can buy some or build them yourself out of cardboard (many manuals can be found on YouTube). Cospaces runs in every modern browser, on Android smartphones and tablets as well as on iPhones and iPads. Learners can start quickly with ready-made objects and functions and get into the next level by programming with visual blocks or even TypeScript. The company provides no age recommendation, but we had good experiences using

cospaces with children age 10 years and up. Teachers can manage classes and projects, however students would need to log in. The free version is very limited. For costs of the pro plans take a look at their website. It is generally possible to buy an account for an entire classroom and share it with different groups, as long as not everyone is online at the same time. It is a fantastic tool to imagine and prototype future environments.

Programming Apps: App Lab from code.org

<https://code.org/educate/applab>



App Lab is a programming environment, suitable for young people from age 13 that have some basic programming experience. If learners lack previous knowledge you can start with some introductory lessons on the same platform, which we also highly recommend. On code.org you can also manage classes, plan lessons and create logins. This is convenient if students don't have or are too young to have their own account. App Labs runs on any modern browser, on computers or laptops. Tablets are not supported. Participants can remix projects or build their own ideas by coding and designing the interface. The apps can be viewed from smartphones via a link or qr-code and run on the platform-servers. This means they do not get installed on devices. This tool is great for prototyping and de-mystifying app development.

Further informations

- learning materials from EU Code Week: <https://codeweek.eu/resources>
- EU Code Week Webinar: Coding from home: <https://www.youtube.com/watch?v=Gu6xTUR3qOQ&t=1s>
- Meet and Code Inspiration Library: <https://meet-and-code.org/gb/en/inspiration-library>
- <https://code.org/>
- <https://appcamps.de>
- <https://tueftelakademie.de/>
- Meet and Code recommends the visual programming language Snap!: <https://snap.berkeley.edu/about>

EDUCATION FORMATS

Finally, we would like to suggest a possible way for you to think about and choose the right conference tool for the format that best suits your purpose. Here are some examples on how to use this chart:

- Is your focus on social interaction and the relationship with the participants and do you have a small group? Jitsi might be the best choice as this is exactly what it is made for and it offers the greatest way to protect data.
- The strength of BBB lies particularly in all kinds of interactive educational formats for medium size groups.
- If you want to offer people an opportunity to participate in a bigger group in one session, you need a more powerful tool like Zoom.

Small groups and/or emphasis on social relation and interaction

Monitoring

Learning support and counselling for individuals over a longer period of time. Self-guided learning processes in the form of fixed, regular consultation-hours where attendees can drop in at.

Blended learning

Regular short online meetings over a longer time span with inputs and tasks for constant learning groups, which can be fulfilled autonomously. Subsequent meeting focus on Q&A, helping each other, monitoring the learning progress and continuing with the next step. Projects can be individual or collaborative.

Workshops

Single or multiple sessions up to several hours for medium size groups with strong focus on interaction. May contain the whole range of technical/ methodical possibilities. Can be individual or collaborative.

Interactive lectures

Big groups with up to a hundred people, with moderation or experts in the center, with some interactive parts.

Impulses

Short standalone introductory lectures, e.g. to introduce a certain tool or new material. Appropriate especially for individuals who are not connected in a group context.

Jitsi

BigBlueButton

Zoom

Big groups and/or emphasis on content and information

READY? READY!

Although there is still so much more to say...

...about the complex interplay of technology and education, practice, human potential and constraints, we hope to have packed a solid toolbox with which you can dive into the world of online seminars. Even the best advice can never replace doing it yourself. Have fun and enjoy great experiences.

Next step

Find out how **Meet and Code** can further support you with your online coding events. Go to the website to apply for a grant during the registration period or to read about coding events all over Europe. Learn about the Meet and Code Award and find further resources and inspiration.

More

www.meet-and-code.org and on [Facebook](#) | [Twitter](#) | [Instagram](#).

Imprint

This guide was brought to you by

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in cooperation with Meet and Code in July 2020.*

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