Many students across the collegiate University are taught in classes and seminars. As Cambridge transitions to remote education, instructors are seeking out the new skills and understanding they will need to continue teaching effectively in a distance-learning context.

The purpose of this guide is to help those of you teaching classes and seminars to make this transition efficiently and effectively, and with a strong emphasis on your students’ learning experience. It is not necessary to transform your teaching for an online setting in this short amount of time. Your energy will be best spent focusing your students:

• How can you continue to facilitate your students’ learning as the collegiate University transitions to digital education?
• And how can you do so in a way that’s inclusive of all students?

To help you in this effort, this guide addresses the essentials you will need to know to quickly move your teaching online:

• Practical challenges: access to devices, connectivity and students’ learning environments
• Synchronous (live) and asynchronous (pre-recorded) teaching
• Suggestions for how to blend these two approaches
• Facilitating inclusive discussions in a digital environment
• Making the teaching and learning environment accessible

This guide also includes ideas and tools for refining your remote teaching should you have time to experiment with the many possibilities of digital education.
Delays in sounds and images also mean that it’s beneficial for instructors and students to have some sort of framework for guiding interactions, so that everyone is included. You may already have some ‘classroom management’ techniques that you can adapt and share with your students; you may find some ideas in ‘Supervising online: guiding inclusive discussions and interactions’.

For the parts of your class or seminar that you plan to teach synchronously, or live, you will need to decide on the accommodations you will provide for students who are unable to follow the session at the designated time. Students may be living in spaces which are shared with others, for example, family members, and illness or caring for others may restrict time available. Some students may be living in different time zones from you as well. Most digital platforms are equipped with simple recording mechanisms, which make capturing a session easy. You'll find an overview of the functionalities of different platforms, along with information about accessibility for disabled students, in ‘Selecting which tool’. You’ll find more detailed guidance specifically relating to disabled students, in ‘Guidelines for supervisions with disabled students’.

Try to factor student ‘availability’ into your planning and try to enable your students to let you know of any difficulties they experience – as well as practical ideas that they may have for working around them.

PREPARING TO TEACH ONLINE: i. Devices, connectivity and bandwidth

KEY POINTS

- There may be variation in the technologies available to your students
- ... and in the requirements of your students, including disabled students and those with neurodiverse profiles
- If you plan to teach live, you will need to plan accommodations for students who cannot connect at the designated times
- Try to keep things simple and flexible, with fall-back options in case of difficulties

We are assuming that students have access to some computing device and an internet connection. For many, there will be access to a desktop, laptop, or tablet; for some, the device that is available will be a smartphone.

The quality and type of network connection will also vary. In addition to normal variations, there is currently a huge increase in online traffic. Everyone is likely to have experienced difficulties, ranging from delays in the transmission of sounds and images to longer interruptions. Students in some countries (particularly China) have heavily filtered internet access. Be prepared for your preferred system not to work, or to stop working at some point. We’ve included some options that you can use if live teaching is interrupted, in this guide.
Before exploring the many options for remote teaching as well as the useful and creative tools at your disposal, it is worth considering some general differences between face-to-face and remote teaching. In an online environment, social cues as well as verbal and nonverbal feedback are absent or greatly altered. Whether you’re pre-recording a segment of your teaching or engaging live with students who may be muted and faceless, it can feel as though you’re speaking into a void.

A common consequence of this uni-directional communication is that it can take much longer to explain something than it does in person. The knowing nods, the engaged (or confused) faces you see when teaching in front of your students are gone in a virtual context and suddenly so are the cues you rely on to proceed with an explanation of something or to gauge your students’ understanding of the material. This lack of verbal and nonverbal interaction with students can be disorientating and can affect your timing. You’ll find some suggestions for ways of dealing with these challenges during ‘live’ interactions, as well as making the most of options presented by remote teaching and learning, in the next sections of this guide.
There are several ways to engage in online teaching: synchronously (live with students logged on at the same time); asynchronously (pre-recorded lectures or short segments which students can access at any time or within a given window of time that you establish); and, a blended version of these two modalities (mixing pre-recorded elements with live segments). There are pros and cons to each of these methods.

In the present circumstances, it may be helpful to consider pre-recorded elements for classes and seminars, for a number of reasons. Pre-recorded elements give flexibility both to students and to lecturers who may be affected by illness or the need to care for others. Furthermore, some of the elements that you would normally include in a seminar or class may be difficult to transfer to remote teaching and learning. You may find it helpful to refer to guidance we’ve written for those who will be moving supervision online, ‘Common supervision activities, some tools and some alternatives’.

Video conferencing can also amplify challenges for students and supervisors for whom English is not a first language, with hearing impairments and/or neurodiverse conditions such as dyslexia, dyspraxia, ADHD or Autism. You may find it helpful to refer to ‘Guidelines for supervisions with disabled students’.

Beyond these considerations, which are specific to the current situation, there are a couple of questions that are always relevant when deciding whether to teach live or to pre-record material:

• Is there certain material that students will need to engage with together, in real time? If so, does this require video conferencing, or could collaborative editing documents (such as Google Docs) provide a valuable alternative?
• Are there activities that students could work on, offline, before engaging with you in a ‘live’ session?

Your answers to these questions should help you determine when to broadcast live to your students and whether some parts of your teaching can be pre-recorded. You’ll find information about different tools, functionality and accessibility in ‘Selecting which tool’.
Moving classes and seminars online is to involve ‘live teaching’. The advantages to live teaching include interaction with and among your students, seeing your students (depending on the size of the class) and having them see you via webcam.

Synchronous teaching may, then, be a straightforward way to commence your remote teaching experience. Keep in mind, however, that teaching remotely is not a simple process of transferring your face-to-face teaching approaches to an online venue. It is likely that teaching and supporting students’ learning online may require more deliberate structure than you’re used to giving. Taking time in advance to identify what you think your students should learn and be able to do (for example, develop problem-solving abilities, or their capacity for interpretation or critical evaluation), will help you to make the most efficient use of the time you spend in a live session.

You may find it helpful to refer to the guidance we’ve written for those who will be moving supervision online, ‘Common supervision activities, some tools and some alternatives’. In addition, you’ll find further discussion below on the importance of structuring online discussions.

If you choose to teach synchronously, you will need to make accommodations for students who are unable to participate at the designated time. Disabled students with permission to record face-to-face teaching should be permitted to record online seminars or classes, to help to improve their learning. Students who wish to record a seminar or class should indicate this at the start of (or in advance of) the session. You should then ask whether the others are in agreement and confirm that the recording would be purely for study purposes and would not be posted online. Most digital platforms are equipped with simple recording mechanisms, which allow you to capture live teaching. You’ll find information about functionality and accessibility in ‘Selecting which tool’.

The most familiar options are:

- Teams
- Google Meet
- Zoom
OPTIONS FOR TEACHING ONLINE: iii. Asynchronous, pre-recorded sessions

KEY POINTS

• The difference between lecturing into a recording device and in front of students
• The need for a clear narrative when recording lectures
• Aligning voice and slide recordings and sound clarity

For classes and seminars, the practice of pre-recording lectures or brief teaching segments can be an effective and creative way of moving your teaching online. Indeed, combining asynchronous and synchronous modes of remote teaching is an approach many people find particularly appealing. You might consider posting short, recorded lecture segments that students watch on their own and then following that up with live sessions in which you further explore the material, facilitate interaction with students or guide them through an activity.

For many people, the practice of pre-recording lecture segments will be a completely new endeavour with seemingly no likeness to the standard face-to-face teaching with which you’re familiar. Reciting a lecture into a laptop or a mobile device while seated in your home office or dining room is indeed vastly different from presenting it in person to students. It has a podcast feel to it—while recording you will be speaking to an imagined audience and presenting ideas or uncovering problems/questions without the benefit of any kind of immediate feedback or even the opportunity to make eye contact with someone. This method can initially feel awkward or stilted, but it has a lot of creative potential. Further information and guidance on asynchronous lecturing can be found in the guide ‘Moving Lectures Online’.

Pre-recording teaching segments are particularly useful if there are fundamental concepts you need to explain and that students might want to refer back to for clarification. By pre-recording certain segments, you can design clear, succinct explanations—a video library of your field’s threshold concepts, if you like. Pre-recording fundamental definitions or ideas can also free you up to cover material in more depth or to proceed with interactive exercises in a live teaching session.
One of the most important teaching skills is the ability to guide students in discussion, or in shared problem solving – and to do so in a way that includes all students in contributing to and learning from the class conversation. Fostering inclusive interaction online takes forethought and planning as well as consideration of ‘inclusive teaching’ look likes in an online platform.

In online education, interactions can be slow or fragmented, as the non-verbal cues of in-person interaction are absent or altered. Delays in the transmission of sound and images can also make interactions feel stilted and you and your students may need to take a little time learn how to engage in discussion online and to become more confident in doing so. Video conferencing can also amplify challenges for students and teachers for whom English is not a first language, and many disabled students, for example those with visual and hearing impairments and neurodiverse profiles.

In this new setting, it is therefore particularly helpful to work on creating structure for discussions and problem solving. You might consider setting clear goals for discussion, thinking about what type of questions to use and when, and listening and responding to students thoughtfully. Using focused questioning and responding can lead to more equitable levels of contribution and increased levels of student-to-student interaction. Students – and teachers – are likely to feel more confident.

Online interactions rarely flow at a pace that in-person exchanges do. You may therefore may find it helpful to guide discussions by directing students to speak in a certain order or to respond to each other according to a sequence. We have developed some guidance on structuring discussions in the guide ‘Moving Supervisions Online’ and you may find that some of this can be applied in the context of classes and seminars. You’ll find more detailed tips in ‘Supervising online: guiding inclusive discussions and interactions’.

**KEY POINTS**

- Fostering inclusive interaction online
- The challenges of conducting group discussions online
- Creating structure and clear goals for discussions to achieve equitable levels of students participation

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ACCESSIBILITY: i. The requirements of disabled students and staff

KEY POINTS

- Live captioning and transcriptions
- Helpful guidance from the Disability Resource Centre
- Considering the accessibility of supporting documentation and guidance

There are some technological limitations, as well as important considerations concerning the requirements of disabled students and staff including those with neurodiverse profiles, such as dyslexia, ADHD and Autism. And, as anyone who has taken part in a multi-person video-call will know from their own experience, it takes time to learn how to take part in – and to guide – discussions and exchanges that include, rather than exclude, contributors.

There are some important differences in terms of accessibility for disabled students, in particular the availability of live captioning and the production of automatic transcriptions (important for students with hearing impairments, and also beneficial for those for whom English is not the first language). A comparison of the features offered by different video conferencing options, highlighting considerations relating to accessibility for disabled students, ‘DRC comparative assessment video conferencing’.

It is also important to consider the accessibility of any supporting documentation or resources you are asking your students to read or engage with as part of your teaching session. The DRC has guidance and advice on its accessible materials webpage.

We have developed more specific guidance for conducting inclusive discussions with students with Autism Spectrum Conditions, specific learning difficulties and mental health conditions, and with physical and sensory impairments and long-term health conditions, ‘Guidelines for supervisions with disabled students’.
Your immediate focus is likely on comprehending the essentials of remote education. However, if you have more time to plan and develop your remote teaching, there are several things you can do to enhance your students’ learning.

Attention spans are shorter in online learning contexts. Splitting your class or seminar into discrete ten or fifteen-minute sections will make it easier for students to follow and remain engaged. Asking a sense-making question, such as ‘How does today’s topic connect to what we discussed last time?’, also helps students to make connections. To give further focus to these activities, you could disseminate key questions or points prior to the session.

You could make creative use of the chat box during a live session by asking students to make comments, solve problems, pose questions, or answer your questions. If you do this, we recommend sharing with your students a session outline, a set of questions or a few problems to think about ahead of time. Remember, though, that it can be challenging and time-consuming to follow chat box activity during a live session. Instead, you could check the chats only at specific times, or limit yourself to only one or two minutes of reading or responding live to students’ activity in the chat box. If you use the chat box, copying its content post-session into a Word document and posting it alongside the recording of the class or seminar would allow students to review the questions and comments made.

You’ll find examples of activities, and tools, in ‘Common supervision activities, some tools and some alternatives’. Most digital platforms include a function to create small breakout groups, which you can activate automatically. As the host of the discussion, you can dip in and out of small groups helping to facilitate their discussions, before bringing the whole group back together. See our how-to guides section on forming and managing breakout rooms.
LEARNING FROM EXPERIENCE

For many staff and students, virtual education is a new experience, and figuring out what works can take time. Try to exchange and test out ideas or questions with others.

• Try to share questions, ideas and maybe resources with colleagues: doing so could help identify and address problems, could save time, and could even lead to innovation. You might also be able to set up an informal network of colleagues in your Colleges, Departments or Faculties.

• Try to collaborate with your students: talk with them about what you’re trying to do, ask them what’s working for them, what do they think could help to iron out difficulties or enrich their learning? Your students may be able to give you ideas about what’s working and how to engage with challenges
  
  o the ‘chat’ function within Teams, or Forums within Moodle, or collaborative editing documents could be a way for students to develop their ideas and share them with you and each other.

COMMEND AND RECOMMEND

Basic format: at the start of a teaching session, explain to the students that at the end of the session you will ask them for two brief comments on what they have found helpful and one thing that they think could be changed and why they think this would help. The balance of ‘commendations: recommendations’ (2:1) encourages constructive feedback.

You can decide whether you want to do this ‘live’, during a conference call, or whether you will post the questions below and ask students to respond in their own time.

Be ready to collect your students responses, think about their ideas and then explain at or before the beginning of the next supervision what you’ve decided to do, and why.

Q1: Please tell me about two aspects of today’s seminar / class that you found helpful and briefly explain why.

Q2: Please tell me about one aspect of today’s seminar / class that you think could be done differently and briefly explain why you think this would make a positive difference.
There are a range of options at teachers’ disposal, and a non-exhaustive overview with links to more information is provided below. Please note as indicated in the table that not all options are supported by UIS.

AbilityNet have created a useful seminar ‘How to Run Accessible Online Meetings for disabled people working and studying from home’.

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<tr>
<th>Teaching method</th>
<th>Suggested alternative for remote teaching</th>
<th>Software</th>
<th>UIS Support</th>
<th>Accessibility considerations</th>
<th>Requirements</th>
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| Lectures        | Record a video with audio / slideshow / screeshare / webcam / visualiser (document camera) as appropriate and share it with students to watch in their own time. | Creating videos:  
- Panopto desktop recorder (any combination of audio, webcam, slides, screeshare and visualiser (document camera))  
- Powerpoint recorder  
- OBS Studio  
- macOS or Quicktime | ✔ | Videos uploaded to Panopto can be enhanced with captions, chapters and bookmarks.  
PowerPoint now has a live captions/subtitles feature that can be used to create captions and transcripts | Staff: High-speed internet connection, mic and audio playback required.  
Webcam and visualiser (document camera) optional.  
Students: High-speed internet connection and audio playback required. |
|                 |                                         | Publishing videos:  
- Publish to a particular Moodle course by uploading video to Panopto. Only students enrolled on the relevant Moodle course can access the video. (Not limited to videos created with Panopto desktop recorder. Videos published from Panopto are covered by our terms and conditions.)  
- Upload videos to online storage and share the link with students:  
  o Google Drive  
  o OneDrive  
  o iCloud  
  o Dropbox | ✔ | Please do not send videos as email attachments or upload videos directly to Moodle. | Students: High-speed internet connection and audio playback required. |
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<tr>
<td>Lectures</td>
<td>Live stream audio / slideshow / screenshare / webcam / visualiser (document camera) and record the session for later reference (including students in different time zones, with caring responsibilities or incapacitated due to illness).</td>
<td>Live streaming and recording:</td>
<td></td>
<td>Panopto does not support captions during live streaming, but these can be added to a recording after it has been created, or by using the captions feature in PowerPoint.</td>
<td>Staff: High-speed internet connection, mic and audio playback required.</td>
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<td></td>
<td></td>
<td>• Panopto desktop recorder</td>
<td>✔</td>
<td>Teams &amp; Google Meet includes support for live automatic captions.</td>
<td>Webcam and visualiser (document camera) optional.</td>
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<td></td>
<td></td>
<td>• Google Meet</td>
<td>✔</td>
<td>Zoom does not support automatic live captions but captions can be added manually using the keyboard or by using the captions/subtitles feature in PowerPoint.</td>
<td>Students: High-speed internet connection and audio playback required.</td>
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<td></td>
<td></td>
<td>• Zoom</td>
<td>✗</td>
<td>Note: Microsoft Teams is not recommended for live streaming as the University’s license is restricted to 15 concurrent live stream events, meaning people cannot rely on it being available when they want it.</td>
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<td>Publish videos – as above.</td>
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<td>Guidance from DRC on making documents and slides accessible.</td>
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<td>Distribution of lecture materials</td>
<td>Files can be shared from the VLE or made available to download from online storage.</td>
<td>Moodle – materials are shared with all students enrolled on your course.</td>
<td>✔</td>
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<td>Standard internet connection</td>
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<td></td>
<td>Materials shared via the VLE are only available to students enrolled on the relevant course.</td>
<td>• Google Drive</td>
<td>✔</td>
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<td>When using online storage, you can use the sharing settings to control who has access to the materials.</td>
<td>• Microsoft OneDrive</td>
<td>✔</td>
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<td></td>
<td>For sharing multiple files using online storage, you may want to set up a shared drive.</td>
<td>• iCloud</td>
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<td>• Dropbox</td>
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<td>Publishing videos – as above.</td>
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<td>Please avoid sending large files by email.</td>
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| Where synchronous sessions are possible, use video conferencing tools. Video conferences can include a screenshare to show slides or other applications. Combine with virtual whiteboards for collaborative sessions. Sessions may be recorded if required for particular students or to make it available to participants that could not attend. Where synchronous sessions are not practical (e.g. due to time zone constraints or bandwidth issues) consider sharing a pre-recorded video and/or setting video assignments. | Video conferencing:  
- **Microsoft Teams** – add **Microsoft Whiteboard** to the channel if needed.  
- **Google Meet** – include a link to shared web **Jamboard** (virtual whiteboard) if needed.  
- **Zoom** | ✓ | Microsoft Teams currently provides more benefits to disabled users than other video conferencing/collaboration platforms, specifically the ability to have live captions in any session (and a time-stamped transcript available afterwards). For a comparison of the accessibility functions provided, see the [DRC’s comparative assessment](#). | High-speed internet connection, mic and audio playback required. Webcam and visualiser (document camera) optional. |
| Virtual whiteboards:  
- **Microsoft Whiteboard**  
- **Google Jamboard**  
- **AWW App**  
- **Whiteboard Fox (boards are public)**  
- **Miro (note that boards are public when using the free version)**  
- **Mural (additional cost)** | ✓ | Captioning as above. | Freedom Scientific have released a [FREE training course and some excellent cheat-sheets](#) for those that want to use Teams with JAWS. |
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| Essays and other assessments (excluding examinations) | Work completed on paper can be submitted to you online for marking and feedback. Handwritten work can be scanned to a single PDF file. The recommended apps address lighting and distortion issues for better legibility, and allow students to submit their work as a single PDF file which you can annotate. | Scanning handwritten work to PDF:  
- Adobe Scan (Android and iOS)  
- Microsoft Office Lens (Android and iOS)  
- vFlat (Android)  
- Evernote Scannable (iOS)  
- Scanbot (iOS)  

| Submitting work:  
- Moodle assignments  
- Google assignments  
- Microsoft Teams  
- Microsoft OneDrive  
- Google Drive  
- iCloud  
- Dropbox  
- Microsoft Lens  

| Providing feedback:  
- Microsoft Teams with OneNote plugin for collaborative editing  
- Microsoft Word  
- Google Drive  
- Adobe Acrobat Reader (all platforms – free)  
- Preview (for Mac – free)  
- Journal (for Linux – free)  
- Drawboard (for Windows – additional cost)  
- PDF Expert (for Mac or iOS – additional cost)  |
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<td>Sensus Access page (conversion tool which staff and students can use to create more accessible documents)</td>
<td>DRC accessible documents page as above.</td>
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HOW-TO GUIDES

We have curated some guides produced by academic and professional services colleagues, as well as drawing on some external resources. We’ve had some offers from colleagues to create further ‘How-to videos’, which we will add to this document. If you would like to contribute, please contact enquiries@cctl.cam.ac.uk.

SETTING UP CLASSES

We have created guidance on how to set up a session and invite students in:

• Conducting classes with Google Meet
• Conducting classes with Teams
• Conducting classes with Zoom

FORMING AND MANAGING BREAKOUT ROOMS

Zoom
The forming and management of breakout rooms is an inbuilt feature in Zoom, there is a video and step-by-step instructions to use this feature on the Zoom website.

Google Meet
Currently not available; however there is a work around for this by creating parallel hangouts.

Teams
Currently not available; Microsoft have the development of inbuilt breakout rooms as a priority and this feature should be available shortly. The work around for Google Meet can also be applied to Teams.
This introduction to moving classes and seminars online was developed by the Cambridge Centre for Teaching and Learning. We are grateful to academic and professional services colleagues who gave feedback and shared ideas. Our colleagues in University Information Services and the Disability Resource Centre were generous with their advice and time. The ourcambridge team provided invaluable design help.

We welcome comments and suggestions. If you would like to get in touch, please contact enquiries@cctl.cam.ac.uk.