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AMEE guide to ethical teaching in online medical education: AMEE Guide No. 146

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ABSTRACT

The Covid-19 pandemic necessitated *Emergency Remote Teaching* (ERT): the sudden move of educational materials online. While ERT served its purpose, medical teachers are now faced with the long-term and complex demands of formal online teaching. One of these demands is ethical online teaching. Although ethical teaching is practiced in face-to-face situations, online teaching has new ethical issues that must be accommodated, and medical teachers who wish to teach online must be aware of these and need to teach ethically. This Guide leads the medical teacher through this maze of complex ethical issues to transform ERT into ethical online teaching. It begins by setting the context and needs and identifies the relevant fundamental ethical principles and issues. It then guides the medical teacher through the practical application of these ethical principles, covering course design and layout (including the curriculum document, implementation, on-screen layouts, material accessibility), methods of interaction (synchronous and asynchronous), feedback, supervision and counselling, deeper accessibility issues, issues specific to clinical teaching, and assessment. It then discusses course reviews (peer-review and student evaluations), student monitoring and analytics, and archiving. The Guide aims to be a useful tool for medical teachers to solidly ground their online teaching practices in ethical principles.

KEYWORDS

Ethics; medical education; emergency remote teaching; ERT; online teaching; e-learning

Introduction

Covid-19 and emergency remote teaching

In 2020, the Covid-19 pandemic led to an unprecedented shift in medical education from face-to-face teaching and learning to online teaching and learning. Although online teaching and learning in medical education had existed for several decades in the form of *e-learning*, it had usually been preceded by detailed preparation and management, small steps, pilots and then carefully-controlled growth (Ellaway and Masters 2008; Masters and Ellaway 2008). The 2020 shift was different and was best described as *Emergency Remote Teaching* (ERT) (Hodges et al. 2020).

As explained by Hodges et al., there are many differences between ERT (sometimes called *Pandemic Pedagogy* (Schwartzman 2020)) and what is normally considered good online learning, but, in essence, the priority of ERT was to get the teaching materials online and get the classes up and running with as little loss of continuity as possible. Frequently, with little guidance to teachers, the aim was to mimic face-to-face teaching activities as closely as possible by replacing them with online equivalents (Stojan et al. 2021).

Practice points

- After Emergency Remote Teaching (ERT), medical teachers are faced with new ethical issues directly related to formal online education.
- This Guide identifies relevant ethical principles, and then guides the medical teacher through their practical application in the online world, covering course design and layout, material accessibility, methods of interaction, feedback, clinical teaching, assessment, course peer-reviews, student evaluations, and analytics.

ERT was necessary, and, in many instances, the results were remarkable. A problem, however, is that working without the luxury of careful pre-planning, management and piloting has resulted in courses' meeting the requirements of ERT, but lacking in the solid grounding that one would normally associate with e-learning (Stojan et al. 2021). In most instances, quite understandably, there was little chance for reflection and extension of learning in the

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new environment, and among the issues incompletely addressed are the ethical issues inherent in online learning. While Stojan et al.'s review does show that many teachers were aware of the ethical issues (specifically imposed upon teachers and learners because of the pandemic), they were seldom in a position to cope with these complexities. There was also the realisation that many solutions to ethical dilemmas were short-term only.

The future of medical e-learning

Although institutions may look to a future in which face-to-face education once again becomes the dominant mode of education, the experience of ERT has shown that online education is possible, and, in some cases, preferable, and so there will undoubtedly be a desire from both teachers and learners to use e-learning to an extent that was greater than pre-2020 (Stojan et al. 2021) (One should also consider the possibility of Covid-19 variants, future novel viruses or other events that may require a sudden shift to greater e-learning). Whatever the format of the e-learning, whether hybrid, HyFlex (Beatty 2007, 2019; Abdelmalak and Parra 2016), or entirely online, the widespread use of medical e-learning will become more structured and more formal than is characterised by ERT.

Ethics in online medical education

In all medical education, ethical principles (described in more detail below) have long received attention. Formal online learning not only needs to include these, but also has to recognise that the online environment introduces new ethical issues, and the ethical medical educator will need to be aware of these and ensure that online education is conducted ethically.

Ethical online teaching requires a reassessment of a range of educational issues and (sometimes even common) online activities, such as the construction of course administration information documentation, delivery of such information, communication systems controlled by the institution (e.g. the Learning Management System (LMS)), communication systems outside the institution (e.g. private or commercial mobile apps, social media), live-class recording, material accessibility, electronic material quality (including text, images, video, audio), licensing, online assessment and proctoring, course evaluation, and student tracking. In addition, the clinical teaching environment opens a host of new complexities involving student and patient safety, privacy and confidentiality.

These activities and the associated ethical needs and the associated ideals, however, should be balanced by reality, in order to ensure that medical educators have realistic expectations of their own behaviour and are not over-burdened.

The need for, and aim of, such a guide

Unfortunately, it is not unusual to find entire texts dealing with online education that have little mention of ethics at all. In addition, unlike research, it is not routine for medical education institutions to have Education Ethics Committees or Institutional Review Boards (IRBs) that specifically review the ethics of online courses, and so the medical educator transitioning to online teaching is left with little guidance on the ethical issues that need to be addressed.

In light of a need for ethical guidance in online medical education, the aim of this Guide is to alert pre-clinical and clinical medical educators to the ethical issues in online medical education and to guide them through the decisions that they will have to make in order to ensure that their online teaching is guided by the best ethical practices.

The Guide will begin with a general introduction to the most commonly-cited ethical principles, and will then be structured along the lines of the general process that a medical teacher would go through as they construct a new online course or modify an existing ERT or face-to-face course for the online environment. The elements of planning, construction, delivery, and assessment will form the context, and will be set within the technological activities; the focus of this Guide, however, will not be on all aspects of e-learning, but rather on the ethical issues that are raised by the related activities, and how to approach them within the context of online medical education.

The broad ethical principles applicable to online medical education

Although this Guide focuses on the practical implementation of ethical behaviour in online medical education, it is necessary to revise the most pertinent ethical principles and their impact on online medical education. For practical ease of use, we have kept this list short. For more details, the reader may wish to consult other texts from which we have drawn ideas, such as the *International Medical Informatics Association* (IMIA) *Code of Ethics for Health Information Professionals* (International Medical Informatics Association 2016), and (Anderson and Simpson 2007).

- *Transparency, disclosure and informed consent*: ensuring that there is full disclosure about the course layout and requirements, gathering, storage, sharing of data, and ensuring that consent when required, is truly informed.
- *Equality, equity, diversity and accessibility:* ensuring that the online system does not unfairly discriminate against students, take into account a diversity of circumstances and backgrounds, and ensures that the course materials are easily accessible by all students.
- *Guard against excess:* ensuring that only necessary information about students is gathered.
- *Privacy and security*: ensuring that the teacher and institution take all reasonable steps to keep private and secure all information gathered about students and patients, and maintains their anonymity.
- *Do no harm*: taken from Hippocrates (Hippocrates 1957), this is a common guiding principle in medicine; modern-day interpretations cover physical harm and psychological stress.
- *Possibility:* Ensuring that the institution requires an ethical standard from all that is possible to achieve.

In the sections below, we will see the areas in which these are particularly relevant.

Table 1. Some pertinent laws affecting materials' accessibility for students.

Location	Title & citation	Comments
European Union	*General Data Protection Regulation (GDPR)* (European Parliament 2016)	Covers general protections of data security, storage, sharing, and longevity.
USA	*Americans with Disabilities Act (ADA)* (US Dept. of Justice 2021)	Introduced in 1990, this law "prohibits discrimination and guarantees that people with disabilities have the same opportunities as everyone else to participate in the mainstream of American life." (US Dept. of Justice n.d.) This is a broad law affecting all (including faculty).
USA	*Section 504 of the Rehabilitation Act of 1973* (US Dept. of Labor 1973) with amendments.	This has a particular bearing on institutions that receive funding from the US government.
International	*The Declaration of Helsinki* (World Medical Association 2013)	Although this more directly pertains to research subjects, it also has a direct bearing on students (and more so when they are used as medical education research subjects).
International	*The IMIA Code of Ethics for Health Information Professionals* (International Medical Informatics Association 2016)	As both faculty and students are working with electronic data, they are considered to be Health Information Professionals (HiPs), and so should be aware of the pertinent ethical issues directly related to electronic information.

Course planning

Laws, guides and policies

Before designing a course, course designers should be aware of a range of standards that need to be accommodated in order to ensure the ethical course design. These will relate to the most obvious ethical issues as listed above. Rather loosely, these standards can be divided into three groups: laws, design guides, and institutional policies.

Laws

The relevant laws differ from country to country, and so may not be applicable to all teachers. Even when the medical teacher falls outside the jurisdiction of these laws, however, they can be useful guides when designing courses. Table 1 gives a listing of some of the most pertinent laws.

In addition, some training is available through the Kansas Accessibility Resource Network (KASN) (free, with registration) (https://ksarn.org/free-training/) and extra tips from the University of Minnesota (https://accessibility.umn.edu/what-you-can-do/start-7-core-skills).

Design guides and rubrics

In addition to laws, there are several guides and rubrics that can be used to help shape one's course. Most of these are designed for overall course design, but many of the specifics focus on the accessibility of materials. Three that will be of particular value are:

- *Quality Matters (QM)*: (https://www.qualitymatters.org/. . . .). This site provides an extremely good and comprehensive set of tools for online education. At the very least, their rubric for higher education (https://www.qualitymatters.org/qa-resources/rubric-standards/higher-ed-rubric. . . .) can be used by individual instructors for self-evaluation and for broader peer-evaluation. The rubric might be daunting for somebody starting on the journey, so novices may wish to progress slowly; for those who have been using ERT, conversion of your material according to QM guidelines will go a long way in ensuring that your course meets basic ethical standards (Much of the material on the QM site is not free, and copyright restrictions exist, so users should be aware of what may be used).
- *Anstey and Watson's rubric* (Anstey and Watson 2018) is also very useful and is available through a Creative Commons (CC BY-NC-SA 4.0) licence.
- *National Standards for Quality Online Learning (NSQ)* (https://www.nsqol.org/. . . .) which uses the QM material, also offers in-depth guides.

For a discussion of other standards and rubrics, see (Martin et al. 2017). As instructors move away from rubric-based instructional design, they may wish to formalise their material, and also understand the principles behind many of these rubrics. For these, useful starting points for familiarising oneself with the pertinent theories would be (Clark and Mayer 2003; Sandars et al. 2015; Picciano 2021).

Institutional policies

Most institutions have policies covering the correct use of their electronic systems, including data protection, privacy, and the specific usage of the LMS. It is necessary for both teachers and students to be aware of these so that they do not run afoul of the institution.

In addition, individual departments and courses may have extra rules regarding acceptable behaviour. It is important that all concerned are made aware of these. Departments should inform their teachers and students, and it would be a good idea for curriculum documents to refer to these also (as outlined below) (If departments do not have these, then the ethical teacher could take a hand in formulating them).

In all of these, however, it is also crucial to balance a desire for ethical behaviour with realistic expectations. Two typical examples are:

- While it is desirable to ensure that students are not exposed to unacceptable images projected from other students, teachers should remember that, when we teach online, we are in students' homes. As a result, it is possible that students will unintentionally broadcast images or audio of aspects of their lives that would otherwise be unacceptable in a face-to-face classroom. This might be the result of (intentional or unintentional) background interference from other people in the

student's home or a simple ill-advised event. An understanding reaction from the teacher and institution, rather than a fierce response, would be preferable.
- Institutional online behaviour terms and conditions that are ill-thought-out, or based on broad industry software standards, can have serious consequences for teachers and learners. For example, making it an offence to send or receive offensive material: this automatically means that opening such a message posted into the LMS course bulletin boards or forums is an offence. The only sure prevention method against committing an offence, then, is to never read anything posted into the forums, which immediately lessens the educational value of the course. If such policies exist, it would be wise to raise this with the correct institutional channels, so that they may be changed.

Institutional administrative and support structures

In face-to-face education, individual teachers frequently work alone, and administrative and technical staff are present on the periphery, frequently unobserved by students. In online education, however, the very medium of instruction is controlled by technical and other staff who may be guided by ethical imperatives that do not always align themselves with the pedagogic needs of the teachers. As a result, many of the items discussed below may be beyond the control of individual teachers and even departments, and may need to be delicately negotiated with others who see their prime concern as the smooth-functioning of software and file servers.

Areas of possible conflict may include:

- Teachers and students who are largely untrained in online education having to adapt and adjust to an ever-changing environment;
- Teachers' desire to use extra non-standard software and plugins, fonts, layouts in order to ease accessibility, but which may be contrary to LMS themes and templates;
- Institutions' requiring teachers and students to use their own hardware and software technology for teaching and learning;
- Institutions' time tables, course sections and class sizes that have evolved to suit face-to-face teaching imposed into an online environment and expected to work;
- Institutions' demands for standards on teachers and students without supplying the necessary support, and
- Institutions' and teachers' data practices that may conflict with ethical educationally ethical requirements.

In clinical teaching, other issues around patients arise, and are dealt with later in this Guide.

Social media and third-party software

Online medical education can be enhanced by the use of social media and third-party software and websites, some of which may not normally be considered educational, and some may be guided by ethical principles from other jurisdictions. Whether proprietary, free or open-source, software developers and vendors may wish to gather data about the use of their software, and the specifics of these activities may lie buried in the software's Terms and Conditions. It is imperative that the medical teacher and the institution be aware of these conditions, and make decisions about the software suitability, based upon those conditions. If there are areas that may be of concern to students, the students should be made aware of this.

Course design and layout

Transparency, disclosure and informed consent: Curriculum outline

Before one can consider the physical course layout, it is necessary to meet the ethical requirements of transparency, disclosure and informed consent. To do this, one will require a *Curriculum Outline* document that is available to students, and clearly identifies:

- The standard features of the course, such as the course description, pre-requisites, learning objectives, attendance policies, assessment information, week-by-week/module-by-module details, expectations of student participation, minimum technological requirements, and coordinator/instructor/s contact details and hours. If students may be in different time zones, then schedules must give times in all of those time zones (If there are too many to be practical, then one can use an online look-up table that students can access). Take into account any daylight-saving time changes.
- Institutional and course policies that relate to online interactions, netiquette, session recording and sharing.
- Institutional and course practices regarding the gathering and storage of student data. This needs to cover: which data are collected, why they are collected, storage methods, duration and sharing (including with and by third parties), and whether any form of cross-site tracking and data de-anonymisation are applied.

To meet the ethical requirements of transparency, rather than assume that the students have read the *Course Outline* document, it should be discussed with the class at the beginning of the course, so that students can be as informed as possible. Within a reasonable period (e.g. a week or two), students should electronically indicate that they understand all the terms of this document. Material changes to this document during the course's term should be indicated to the students.

Transparency, disclosure and informed consent: Implementation

Once the ethical guidelines are understood, they need to be implemented in the physical course design and layout. In many cases, the online teacher will be working within an LMS or other system over which they have limited control. As a result, there will be limits to what the individual teacher can accomplish, but, as indicated in the section on *Institutional administrative and support structures* above, sometimes changes can be negotiated. In some cases, teachers may have access to instructional designers, but this is not the norm, and teachers have to frequently work by themselves.

Nevertheless, there are many things that can be done. In this section, ethical principles of *Equality, Equity, Diversity and Accessibility* are also pertinent, and one should remember that the vulnerable and disadvantaged students become even more so when education relies on technology, especially personally-financed technology. In most cases, these principles are reasonably technically easy to apply, and the correct implementation of these actions can have a significant impact on course material accessibility.

On-screen layouts

- Tabs instead of scrolling. Some LMSs are known for their "Scroll of Death" which slows student access and also uses extra bandwidth. Using a tabbed theme or template significantly improves student access times and eases navigation. Tabs can also be colour-coded to indicate the current week/topic, previous weeks/topics, and special items such as examinations.
- Headings, indentation and spacing of items. These are especially important when there are many items listed so that they can be clearly read.
- Text font type, size and colours. Colours should be used carefully, ensuring that all students can easily read the text. For an introduction to some of the technical issues on colour combinations and standards, see the WC3 Guidelines (WC3 2016), especially Sections 1.4.1, 1.4.3 and 1.4.4 and (Rello and Bigham 2017). For more advanced work, Google's page on Material Design (https://material.io/. . . .) can be consulted.
- File types and sizes. File types and file sizes should always be clearly indicated so that students are forewarned of necessary software and download implications for files they access.
- Although the current research is inconclusive, there are anecdotal reports that using a free font like *OpenDyslexic* (https://opendyslexic.org/. . . .) helps people who have dyslexia to read more easily. If you have students with dyslexia, and they are struggling to read your notes, then you may consider recommending they install the fonts and plugins.

  The font looks like this, **and supports bold** *and italics also.*

- Special activities, such as quizzes and extra reading materials should be clearly indicated.
- Screen readers can read the < alt > text on images, so all images should contain such text in order to clearly describe the image. This is always important, but especially so if images are used in place of standard, written text. If images are used in assessments, care should be taken to ensure that the < alt > text does not identify the question's answer.
- If possible, test the layout with a screen-reader. A useful and free screen-reader is NVDA (https://www.nvaccess.org/. . . .).
- Gender issues, especially a preference for particular gender-specific pronouns, should be considered. In clinical cases, genders should be related to pertinent criteria, and, where not relevant, should be balanced.
- Overall, discussions about staff, students and patients in general, should avoid specific references to gender, age, race, etc., unless they are directly pertinent to the topic.
- There may be standard and common best practices in online education that are culturally inappropriate. To balance best practice against cultural sensitivity (especially if one is unfamiliar with the relevant culture), one should consult with cultural experts and with the students themselves.

Course and materials accessibility

It is essential to ensure that the teaching materials are easily accessible by students. As has long been recognised in medical practice (Maxwell 1984), accessibility to a service is a complex process. In order to ensure student access to materials, the following steps can be taken:

Software

- Student unfamiliarity with special software tools will have an immediate negative impact on students' ability to access and engage with the course materials. As far as possible, the course should require the use of commonly-used tools, and should provide instructions (in the form of notes and videos) on any new tools. Courses should also attempt to use not more than two synchronous video instruction tools.
- While a variety of delivery methods and tools can be used to ensure that the correct tool is being used for the correct task, care should be taken to not overwhelm students, especially when tools are used simultaneously in a class.
- To ensure that students can more easily utilise the materials, care should be taken to avoid non-standard file types. If non-standard file types are used, then links to the relevant free software required for those files should be provided, and technical support and/or training on that software may be required.
- Videos should be available to be both streamed and downloaded to meet the preference of the users.
- Care should be taken to keep file sizes to a minimum, in order to reduce download times, without compromising quality. This is especially important if these are used during time-restricted assessments when download times are affected. Here are some tips on file optimisation (See Supplementary Appendix 1: Technical "How To" for technical guidance on how to use the software mentioned):

  - Obscure media files should be converted into more common file types by using the tool Adapter (for Mac and Windows).
  - Images should be reduced without compromising image quality. Free image editing software Paint.NET, Photopea, or TinyPNG can be used. In addition, a rather quick-and-dirty way (with less flexibility, but it does the basics) is to use MS Office.
  - If saving a PowerPoint presentation as a video, use **File** | **Export** (rather than **File** | **Save As**) so that the screen resolution can be reduced.

  - All video files should have clear subtitles. The free, open-source video editor Kdenlive can insert subtitles.
  - The quality of audio files can be improved using free, open-source Audacity.

- MS-Word has an in-built accessibility checker. For more details on how to use it and tips for making your MS-Word documents more accessible, see https://support.microsoft.com/en-us/office/make-your-word-documents-accessible-to-people-with-disabilities-d9bf3683-87ac-47ea-b91a-78dcacb3c66d. . . . .

Language and culture

- Student language levels in prepared materials need to be accommodated. This is especially important because of the reliance on asynchronous teaching without obvious feedback. For language-checking, although automatic systems that check language difficulty are not fool-proof, they are useful. See Supplementary Appendix 1 for details.
- Cultural sensitivities of material need to be accommodated. The particular issues will be related to the specific circumstances, but we can recommend a few papers that will begin the process of alerting teachers to the issues. These include (Liu et al. 2010; Torras and Bellot 2017; Kumi-Yeboah 2018).

Volume of the material

- In the rush to convert from face-to-face to online, most instructors moved all their material online and made few adjustments to the *amount* of material. This is understandable, as the view is that this is the material that needs to be mastered in order to qualify as a health professional. Online learning requires different levels of concentration, however. One only has to think of the differences in the concentration required between face-to-face meetings and online meetings and imagine attending several hours of online classes every day, leading to online learning fatigue. For this reason, it is necessary to reduce the amount of material delivered, be more succinct, have fewer illustrative examples and interesting anecdotes, and give more frequent breaks, especially in classes that go over an hour.
- The discussion of content leads to a discussion of time, specifically screen-time. Before the pandemic, researchers were concerned about the health impact of prolonged screen-time, although the results of studies are mixed (Victorin 2018; Orben and Przybylski 2019; Lanca and Saw 2020). Computer vision syndrome (CVS), digital eye strain (DES) and other physical problems have been widely studied, and some have shown a strong association with prolonged screen-time (Sheppard and Wolffsohn 2018; Al Tawil et al. 2020; Sánchez-Valerio et al. 2020). The American Optometric Association recommends the 20-20-20 rule ("take a 20-second break to view something 20 feet away every 20 minutes")(AOA n.d.). Many other studies were concerned about the amount of time medical students spent online, even to the point of labelling heavy Internet usage by medical students as an "addiction" (Masters et al. 2021), and current employment guides recommend a 5–10 minute break every hour, and "Ideally, users should be able to choose when to take breaks." (HSE n.d.)
  Given these concerns about screen-time harm, it is then strangely and disturbingly ironic that global medical education switched to screen-based learning when it suited medical education institutions and teachers, leading to far greater online time than before. Previously, class schedules had been designed for face-to-face time, and, in the transition, there is no indication that these were reduced (Stojan et al. 2021). While the screen-time issues may have sometimes been over-stated, and the "addiction" has been shown to be poorly defined, (Masters et al. 2021) there is still a concern about the amount of time students spend viewing a screen, and ethical medical teachers need to be aware of it, and require an appropriate amount of screen time from their students (and themselves), in order to mitigate possible harm.

Institutional issues and support

- With the range of Operating Systems (OSs), the institution needs to clearly indicate which are supported, and individual teachers must ensure that all materials are in a format that can be accessed by all of the officially-supported OSs.
- As far as possible, specialised software required by the students should be either free or covered by a University licence (If web-based, it is also necessary to test the software on different browsers). Failure to do so punishes the ethical student or encourages unethical student behaviour as they attempt to obtain pirated (and high-risk) versions of the software.
- Citing, referencing and copyright issues need to be considered. In face-to-face teaching, some liberties are taken and forgiven; in online courses, these are expected to be more strictly enforced, and the rules governing these should be of the same as, or higher than, the standard we expect from our students. Copyright issues, in particular, may have legal implications, so access to the institutions' legal department may be required. In some instances, institutions or even states have particular rights to use copyrighted material as long as it remains within the LMS.
- Related to the above point, it is essential that you are familiar with your institutions' rules and laws regarding the intellectual property of materials you produce, materials produced by other parts of the institution, and data that are generated. It is not enough to get vague assurances on these issues, as they can have serious consequences for your use of material. This becomes increasingly important when working with patient data.
- During ERT, many teachers came to realise that teaching online required a reassessment of their teaching strategies and approaches, and online teaching requires educational approaches for which they were not trained. As a result, educational workshops and other training interventions focusing on educational theory

will be required. Although the focus will be on institutional support, peer support from colleagues can prove invaluable, as long as it is performed in a non-judgmental manner, with the approach of collegial support. Without these, there is the risk that teachers will follow their hunches, without being aware of the damage they are doing. This will be especially important in areas where the teaching methods are non-standard lectures (e.g. PBL, TBL) (This is dealt with in a little more detail near the end of this Guide).
- Similar to the point above, far greater technical support and training will need to be available. Many staff will have discovered technical tricks for themselves, but there is a need to fill in the gaps and also to move towards best practices in the use of technology. Failure to do so will result in technology use, but poor, and even harmful, use.

Securing one's own profile

Somewhat contrasted to ensuring material accessibility, there is the ethical imperative of maintaining security. During ERT, medical teachers found themselves using their personal devices for work-related purposes, and this introduced new concerns. Steps to take include:

- Ensure that private devices at home are not accessible to other residents in the home; where they are, ensure that different profiles exist on these, with time-outs.
- Home devices and accounts must be secured with industry-standard passwords, and these should be changed regularly (or if you suspect they have been compromised). This is particularly important for mobile devices that are increasingly used to access online education systems.
- All sensitive data, especially if stored on external drives, should be encrypted.
- Ensure that home networks are properly secured (at the very least, the firewall should be activated), access to Wi-Fi modems should be password-protected, and Bluetooth connections should be activated only when in use.

Methods of interaction

In general, there are two methods of educational online interaction: synchronous (live interaction, usually through live video systems like Big Blue Button, Google Meet, Microsoft Teams or Zoom), usually in the form of an interactive or non-interactive lecture (Stojan et al. 2021), and asynchronous (e.g. pre-created presentations or videos). In some cases, both might be used simultaneously.

Each format raises ethical issues that need to be addressed, and some of these are dictated by physical reality. For example, a study by Binks et al. (2021) indicated that many students preferred synchronous classes. That study, however, was performed among students from some extremely well-resourced medical schools in the USA and UK, mostly using PBL as their teaching method; as such, they may not reflect the reality for all teachers across the Globe. This is particularly pertinent if students are located in rural areas that are traditionally technologically less well-resourced than urban areas, and more susceptible to power outages and Internet disruptions. As a result, pre-recorded lectures, either as video or PowerPoint with embedded audio (or live lectures that are then recorded and posted to the LMS) are sometimes preferable (Mann et al. 2020; Nkomo and Daniel 2021).

For ethical online teaching, then, both options have to be considered. When teaching synchronously, your own ethical behaviour is paramount. Although it would be naïve to believe that one's own ethical behaviour will automatically translate into ethical behaviour by students, it is hypocritical to behave unethically and demand ethical behaviour from your students. Issues to consider are:

Prior to the class

- Ensure that all expectations about attendance, forms of address, student and patient confidentiality, dress codes, behaviour, microphone and video settings, engagement, breaks, etc. have been clearly stated in the *Curriculum Outline* (discussed above). In the earlier part of the course, remind students of the most important of these in the class.
- If you intend to record the session, ensure that this is also stated in the *Curriculum Outline*, and advise your students when you turn on the recording (Many systems do automatically advise and display an indication that recording is in progress, but you should verbally state this, also). Some countries and institutions may have stricter (e.g. paper) legal requirements regarding informed consent, and you will need to conduct your interactions within those requirements.
- Ensure that your *Curriculum Outline* also contains information about students' recording of activities, and their behaviour regarding what they may do with your recordings.
- Ensure that any invited speakers are fully aware of the ethical issues, and are in agreement with them.
- Arrive well before the time, so that you have time to open the class area, check that the link to the class is working (use a test student account for this – do not trust the "Student View" that exists in some LMSs), and open up any folders, files and software that you will need during the class (A tip, especially while waiting for students: always assume that your microphone is on and your screen is being broadcast, otherwise you may have a nasty shock).
- Be aware that some settings affect other functionality. For example, in Zoom, using point-to-point encryption disables cloud recording although recording to your computer is still possible.
- Download any files and access any websites that you will require the students to download or access during the class – this will ensure that the correct files are available, that you can put them in the correct folders, and that sites are functioning. If you are using your personal computer, ensure that no inappropriate files or folders are visible.
- Display a holding page (even if it is simply a PowerPoint slide) that gives the course name and topic for the class. This will reassure students that they are in the correct class as they enter.

- Open the chat area, and keep an eye on it in case students are having problems and need to contact you (Also ensure that you monitor other communication channels, in case the students cannot enter the teaching area at all).
- Set all participants to "mute," but allow them to unmute if they choose.

During the class

- A decision will need to be made on your video camera transmission. Although many students prefer to see your video image, it does consume band-with, so you may wish to have your camera on only before and as you start class, and then turn it off once the class begins.
- Student camera settings are more difficult. Although the interaction is frequently improved if students' cameras are on, this may be unnecessarily intrusive. In addition, there is some research indicating that workers are more fatigued when cameras are on ("Zoom fatigue") (Fauville et al. 2021; Shockley et al. 2021), so, unless it is absolutely necessary, one should consider permitting students to turn off their cameras. You will need to balance your institutions' rules, personal preferences and the students' wishes.
- When replying to questions asked in the chat area, always use the student's name before answering the question. There may be legal, institutional, or agreed-to forms of address, and these need to be followed.
- Occasionally, a student will raise their hand to comment or ask a question. After the point has been satisfactorily addressed, the student may forget to remove the raised hand (sometimes termed a "legacy hand"). This can result in some embarrassment for the student, so, after the point has been addressed, the teacher can manually lower the hand (That the teacher will do this should be made known to the students as part of the online class etiquette).
- If using any type of small group work, ensure that you (or tutors) are able to devote similar time to each group.

After the class

- If the class requires students to divulge personal information, then use a system that permits *end-to-end* (or *point-to-point*) encryption, and check the final recording to see if it requires editing before posting it to the class.
- Some synchronous systems allow for automatic or manual live captions; others create a text transcript that is available after the meeting. Although that transcript will have errors, it is surprisingly accurate, if the teacher speaks clearly (Some names, however, may have problems. Given the nature of the system, this is unlikely to cause offence; if it does, then a simple Search-and-Replace can correct these).
- As soon as possible after the class, the recording (and the transcript and chat files) should be made available for the class.
- If, during the class, confidential or other unacceptable disclosure of material was made, then the video should be edited before posting. A useful and free video editor is Kdenlive (https://kdenlive.org. . . .).

When teaching asynchronously, please refer to the section above on file formats to ensure that all your files can be viewed. In addition:

- The aim of pre-recording is not to make things easier for the teacher. In some cases, it will be a great deal harder to maintain one's presence, and ensure that the necessary materials' accessibility for all students is maintained. With no immediate student feedback, it is unwise for the novice to prepare recordings too far in advance, as student feedback will allow the teacher to easily correct recording errors for future recordings.
- Tracking student activities, and taking immediate action, is essential (more on that below), as students who fall too far behind will have great difficulty in catching up.
- The opening screen of the recording should give an accurate indication of the time expected, and any other activities that are associated with this class. This will allow students to properly budget their time for each session, and also to ensure that they can properly prepare for the session beforehand.

Other interactions must also be considered. In addition to formal classes, you will have interactions with your students through other media, sometimes built into the LMS, and other times external. Some things to consider are:

- Reference has already been made to language levels in the materials. When communicating with students through forums and email, one must remember that courtesy language signals (which, in spoken interactions, would be identified in an audio tone) are often missed, especially by non-mother-tongue speakers (or mother-tongue speakers from a range of backgrounds), and may come across as rude when reading written text. Be extremely careful in your phrasing. Ensure that filler-phrases (e.g. "I'm afraid that . . . .") do not cause confusion.
- When reading your students' communication, keep an open mind, and be slow to take offence at seeming rudeness. Generally, when people are using an unfamiliar language, they tend to focus on the message, and the grammar and courtesies are lost. Words like "Please" are sometimes implied in the tone rather than by a word, so "I want . . . " is an equivalent of "Please may I have . . . ". In English, as with most languages, there are important differences between similar-meaning words and phrases (e.g. "I don't care"/"I don't mind"; "It's not my problem"/"It's not my fault"), and these significant differences are not immediately apparent to all. In addition, the distinction between spoken and written is not always clear (so, apart from text-message abbreviations, words like "gonna" and "wanna" may be seen as inappropriate to some, but perfectly acceptable to others). The safest route is always to assume that the person does not intend offence.
- Non-institutional messaging apps frequently display telephone numbers, so may have ethical issues of privacy. A particularly useful free app is *Band* (https://band.us/en. . . .) which works like any messaging app, but does not display telephone numbers, and has a wide host of extra features that are useful for teachers. When using any app (as with any external software), one should take care to ensure that the data-sharing policies are well-understood and acceptable.

- Private email can also be used, but care should be taken when answering student questions about course content. To ensure that no student is unfairly advantaged, copy-and-paste the question (without identifying the student) into a course forum message, followed by the answer. This not only ensures that all students see the question and answer but also reduces the number of duplicates of emailed queries.
- Be wary of accessing too many online areas where your students congregate, as it can lead to the "creepy-treehouse effect."

Feedback to students

Feedback to students is a crucial part of any medical education (Harden and Laidlaw 2013), and is more so in online education, as it plays a vital role in ensuring that students are properly informed of their formative and summative progress in the course and their skills' development. This is especially important if much of the course is taught asynchronously. To perform feedback in a manner that ensures student development, several things can be done:

- Live, one-to-one sessions can be held, and these can prove valuable. Some issues to consider:
  - Set virtual office hours. This will emphasise that the course has a set structure, and students should utilise it.
- In many cases, the discussion will be in-depth, and both you and your student will want to concentrate on the discussion rather than taking notes. If the student is happy with your making a recording, then make one, and share it with that student as soon as possible.
- Encryption. As these sessions will usually involve discussions around grades, personal performance, and possibly deeply personal information, end-to-end encryption is recommended.
- Live, one-to-many sessions are also valuable:
  - For giving general feedback on assignments and tests.
- Similar to the one-to-one, the virtual office and recording is preferable.
- General, regular feedback also serves an important role:
  - This should be per week or, at the very least, fortnight (if modules are longer).
- This does not have to be text only, and pre-recorded audio and/or video feedback can be useful, more so, if the course is largely taught asynchronously.
- This can be used as a brief introduction of what to expect in the next week.

Supervision and counselling online

Depending on the institutions' resources and students' preferences, contact from the ethical medical teacher may have to go beyond feedback, and into areas of deeper supervision and counselling. Every institution will have its own rules and policies, but there are several factors that the teacher should consider:

- Regular and scheduled meetings with students are an important element of online teaching. They help the student to realise that they are part of organised activity, not simply working on their own, and it helps teachers to understand their students. It also gives the students the opportunity to raise issues or problems which may not simply be academic. It is helpful if these issues are raised in a one-to-one conversation.
- Sometimes, just as in face-to-face contact with students, we realise that an issue has arisen, or been disclosed in a group setting which needs to be covered more closely with an individual student. It is best if this can be done privately. It might be sufficient to invite the student to join you in a "breakout room," during the next period of a group or independent activity. If you feel that this may draw attention to the student, or may require a more detailed discussion, then rather invite the student to a private one-to-one session through a private chat message, text message or email.
- It is essential that these sessions are encrypted.
- Most institutions would expect that you make a record saying that you had spoken with a student, although institutions vary as to whether they expect you to give any detail of the conversation. There are three considerations, that would apply in the same way that they would normally apply in face-to-face meetings:
  - The student must always know what information you are intending to record, how it will be used and who will see it, and you can only proceed with their consent.
- You will also need to be clear to yourself, and to the student if you feel that a referral to a more competent or experienced colleague would be helpful.
- Students can, of course, refuse help. In which case you will need to record the fact that support was offered and declined.

Deeper accessibility issues

The important ethical principle of accessibility has already been raised, and it goes much further than has been discussed above. Making teaching material accessible is the first step, but, if students do not have the technical expertise, training or legal right to access the required material, and do not understand the extra interaction demands of online learning, then accessibility is compromised. These three issues should be considered in more detail:

Student technical expertise. Reference has already been made to files and ease of use. It is a common fallacy that all students are naturally familiar with technology; many are not, and many have no interest in it. In addition, some students are working in isolated areas, and will not have easy access to instructional material on computer software or access to technical support. As a result, it is imperative that supporting material and staff are available to students. Given that many assignments are set to be submitted after holidays and/or late at night, after-hours support should also be available (In fact, the institution needs to be aware that, in the world of the online student, the concepts of "working hours" and "after-hours" are vaguely familiar, but quaintly old-fashioned concepts).

Student peer-work. Highly-interactive online courses can generate a large amount of student work, either in the forums or in formal assignment areas. This does offer the opportunity for formative student peer-learning, reviewing, and assessment, but students must be properly trained and coached in the processes involved. Student tutors should be trained on how to interact with students in an online course and how to deliver the relevant information to them as different ways of teaching can be applied in the online teaching setting like interactive whiteboards, PowerPoint presentations, etc. Further, students and student tutors should familiarise themselves with the software used in online teaching (e.g. Zoom or Microsoft Teams).

Students' accessing copyrighted references. Just as one should avoid using expensive software that should be purchased by students, one should also avoid referring to texts and articles that are hidden behind paywalls. In many cases, there is no alternative, but the department should then attempt to ensure that the university library, through a proxy service, allows the students online access to their materials. If this is not done, then students will pursue other means to access these materials.

Issues specific to clinical teaching

Patients are often a crucial part of clinical teaching. When including patients in the online teaching, some special points need to be considered by the teachers. Some points to remember:

- The software used has to fulfil the formalities of data protection (see reference to the laws and policies outlined above).
- Students should be reminded of patient confidentiality by the teacher at each session. This exceeds the usual confidentiality and includes issues like ensuring no other person is in the room with the student and the placement of the monitor. In this context, students should ensure that they participate in online teaching while in a quiet and undisturbed place.
- Student recording of the process is strictly prohibited.
- Institutional recording is frequently prohibited unless special circumstances exist. Under these circumstances, it would be best to be guided by your institutions' research ethics principles.
- In addition to any university regulations, clinical site-specific regulations concerning storage and provision of patient videos in the LMS must be accommodated.
- The patient needs to be informed about possible risks connected to data safety or human misconduct and also informed about the steps taken to protect their identity (As a result, the informed consent form needs to be explicit, even if a little technical).
- Patients need to be fully informed about their commitment and possible worst-case scenarios so that they can engage in the shared decision-making process as they would in any clinical situation.
- With any form of online ward-rounds, apart from securing the personal space of the teacher and the student, great care must be taken to secure the patients' private space, in order to avoid unintended information broadcast, as people in hospitals frequently forget to take care of their privacy (e.g. a private letter lying on the bedside table).
- The securing of the personal space also applies to the background and protecting nearby patients and visitors. Most hospitals have more than one bed per room, and neighbours and visitors could unintentionally be filmed (or overheard) without their knowledge, let alone consenting.
- On a more technical note, when teaching online ward-rounds, one should pre-test the technology to take into account issues like the instability of the clinical network, potential incompatibility of the teaching network and the clinical one, or balancing the convenience of easily transportable equipment (e.g. a mobile tablet or phone) against reduced functionality (e.g. microphone of the table or phone not good enough to capture a patient's voice clearly against the usual hospital background sounds).

Student assessment

Having accurate and valid assessments has long been a concern in medical education, and ERT introduced further complications, specifically online assessments completed remotely, that left many educators struggling to balance fairness and validity. Various guidelines were introduced (e.g. (García-Peñalvo et al. 2021)) that attempted to deal with grade weightings, student identification, continuous and repeated assessment. In addition, there were concerns about the types of assessment questions (e.g. faculty now losing their well-established and previously-protected banks of MCQs), how to conduct more practical exams (e.g. OSCEs, OSPEs, vivas), and how to ensure that group project grades properly reflected the members' contributions.

Probably the greatest unresolved ethical issue related to online assessment is online proctoring. Online proctoring (either by common video tools or by specialised software) was initially widely adopted during ERT but resulted in a backlash from faculty and students (Feathers 2021) to the extent that many schools removed or reduced the amount of proctoring performed. The ethical issue is not so much proctoring (because that is performed when students are on campus), but a breach of privacy that comes with monitoring and recording events in a student's home, frequently their very personal spaces, such as bedrooms. A common practice would be to survey the entire environment, essentially snooping in a student's bedroom; this would surely be abhorrent to most ethical teachers (Although "consent" may be given, this consent is largely given under duress: if students do not agree, they might not be able to complete their degree).

Some institutions may decide to outsource the proctoring process, which then raises more ethical problems; if institutions do this, then they should ensure that they do not abrogate their ethical responsibility. Some systems use Artificial Intelligence to monitor students' head (including face, eye and lip) movement. The ethics of this are extremely delicate, and, in all cases, one should ensure that any alarms are referred to a trained human proctor for fair adjudication. If there is a suspicion of cheating, then it should be dealt with according to the standard procedures that would be followed if the students were taking the examination on campus.

A possible alternative to proctoring is the concept of an open-book exam. Open-book exams are viable, but, in order for them to be successful, there are several issues that need to be considered. Among these are:

- Because closed-book exams have been used for so many years, they are the norm, to the extent that most people do not speak of "closed-book exams," but just "exams." As a result, the entire institution's syllabus and methods of teaching are aimed at these.
- In addition, the examination schedule and methodology are aimed at closed-book exams. The schedules are set for a particular time-frame on the assumption that there will not be a consultation of texts; questions are set in which answers that need support do not have to be strongly referenced; indeed, many current examinations are marked by automated systems (either through a paper-based optical mark reader, or LMS or similar system.) To ensure ethical assessment, switching to open-book exams would require entirely different questions. In addition, new resources, including newly-trained (and paid) markers are required. Without these, the massive extra burden of setting and grading hundreds of exam questions with current resources is unsustainable, and there is the danger that the question-grading becomes a mark-to-the-rubric exercise, which is simply a more difficult and opaque form of MCQs.

For clinical assessment, OSCEs raise particular issues that will be impacted by institutional practices. Apart from the range of ethical issues raised above, more information on running online OSCEs, these texts will prove valuable: (Hannan et al. 2021; Hopwood et al. 2021; Shehata et al. 2021).

Course peer-review (teacher)

Just as online medical teachers must *teach* ethically, they have the right to be *peer-reviewed* ethically. Prior to ERT, most educational peer-review was aimed at face-to-face teaching activities, and applying these expectations and metrics to evaluate the online teacher is unethical, as these metrics frequently ignore the demands of online teaching, and also measure inappropriate aspects. There are several illustrative examples:

- The earlier discussion of correct file types does not emphasise the reality: frequently, medical online teachers are working in isolation, and have to perform file manipulation by themselves, needing to teach themselves new skills unrelated to face-to-face teaching. So, the simple act of getting correct and accessible file types may be a daunting task for many educators. Peer evaluation of face-to-face teaching ignores this because this is not an issue in face-to-face teaching.
- Peer-evaluation of face-to-face teaching ignores any extra accessibility initiatives such as teachers' using third-party communication apps, social media, online communications, or their being available electronically outside "working-hours."
- Successfully creating high-quality and interactive online lessons with electronic breakout rooms and then bringing the entire class together again, is far more difficult than quickly assigning a small group activity in a face-to-face class, so the online teacher who uses electronic breakout rooms for small group work needs to be evaluated differently.
- It is also far more difficult and time-consuming to create a smooth, interruption-free, high-quality lecture recording than it is to deliver that lecture as a single face-to-face event.

Perhaps far more seriously, if online teachers follow the recommendation of reducing the formal, synchronised time-tabled class time, this will be detrimental to the evaluations if the peer-evaluators use face-to-face time-table schedules to measure workload and effort. The measurement of Full-Time Equivalents (FTEs) in online teaching is vastly different from face-to-face teaching and needs to be recognised in the peer evaluation. In most cases, the process of reducing a 50-minute class to 35–40 minutes, while retaining the quality and ensuring student preparedness requires enormous effort; it would be ethically unconscionable for the successful online teacher to then be penalised because they are teaching for less time.

If the institution has access to experts in online peer evaluation, then these should be used. Given the enormity of the task, however, there is the likelihood that these are not easily available, and so evaluation sheets will need to be created. At this stage, documents such as the Quality Matters, or self-developed lists based on the items above and then supplemented with context-specific items can be used. In addition to the documentation and course layout, members should be comfortable enough to invite other staff to their live online classes (although student consent may be required; if not required, students should at least be informed). These documents should, however, be a guide, a document framework on which to base conversations, give opinions, ask questions, and raise questions about difficulties. This process could be supported with online discussions in messaging apps.

Overall, and similar to face-to-face peer-evaluation, the process should be conducted within an atmosphere of supportive collegiality, perhaps with mentors (if available), building up to more formal processes, and ensuring that these are recognised by the institution for purposes of contract renewal, promotion and tenure.

The advantage of the online environment is that the peer-evaluation group can be expanded beyond the department, institution or even the country. Although external people may not have a full grasp of the environment, their perspective will still be useful. One would, though, have to take care in ensuring student consent and confidentiality.

Student course evaluations

Student course evaluations are frequently a problem because of low response-rate and they are also open to abuse. The low response-rate of electronic course evaluations is well documented (Guder and Malliaris 2013; Luo 2020). In addition, as these evaluations are typically performed at the end of the semester, they have no direct benefit for the students, and may not impact on the course

(by the time the course is run again, many of the comments are forgotten). As a result, these evaluations may frequently become a check-box administrative exercise.

The ethical medical teacher should aim to use student evaluation comments when they can have the greatest benefit to the course, and that is while the course is running. The online environment affords this opportunity. Rather than having repeated formal evaluations, however, the better way is to have a single, open-ended question at the end of each week (or fortnight, at most) in which students can comment on what they liked, did not like, they felt worked and did not work.

For the greatest impact, the form should be anonymous, and the answers should be visible to all students. Anonymous visibility encourages a similar approach to the collegiality of the teacher peer-review, in which the "evaluation" of the course becomes a discussion among colleagues, with the aim of improving the course. It also allows the teacher to clarify seemingly arbitrary or obscure management or educational decisions, and these are addressed early in the course before they become festering areas of discontent (which may be unfairly reflected in the end-of-course evaluation).

In addition, the online environment allows for immediate anonymous feedback during or immediately after live online classes. This can be performed through poll tools. Such tools exist in many LMSs, or within the video tool itself, or externally.

Student monitoring and analytics

Monitoring student activities is a crucial component of the educational feedback loop. In face-to-face education, it is generally relatively easy to monitor students' attention by watching body posture and facial expressions. Even in large classes, especially when broken into small groups, monitoring can be done without much effort.

Online learning introduces new complications, however, and the desire to replicate the physical process usually leads to equivalent activities, such as teachers' insisting on cameras and polls (in live sessions), electronic registers, and tracking file downloads. Once these are in place, educators realise that the electronic world actually offers a far greater opportunity to gather data about student behaviour online, and these become widely and increasingly used (Dietz-Uhler and Hurn 2013; Kew and Tasir 2021). The focus is frequently on monitoring/analysis and prediction/intervention.

There are, however, several ethical concerns that need to be addressed, and the desire to monitor must not be permitted to override basic ethical principles, such as students' and patients' informed consent on data gathering, guarding against excessive data-gathering, privacy and security, and balancing these demands against what is possible. We need to remember that the goal is improved education, not police-style surveillance.

That students should be aware of all these processes in the course, has already been addressed in the early part of the document. We also, however, have to consider the ethical *usage* of these data. Sometimes sophisticated Artificial Intelligence tools can be used, but most medical teachers do not have easy access to these. At a reasonably simple level of technology, LMSs can track file downloads and activity completion, and exporting these data into a spreadsheet with simple formula can inform the teacher of the percentage of required or recommended activities that have been performed by students. From there, either a manual or an automated process can send emails to selected students, informing them that they are falling behind.

This is an extremely useful administrative feature, but the ethical medical teacher needs to be careful about how the data are interpreted, and this is particularly important because these data are usually referred to as "Learning Analytics" (Dietz-Uhler and Hurn 2013). This unfortunately broadly-applied term is sometimes interpreted as implying that the number of files accessed tells the teacher how much the student has learned. While file accesses and activities can give a broad indication of student activity, and should not be ignored (therefore the mailing of students as described above), one should also take into account that learning can, and does, occur elsewhere: an obvious point is that students frequently form learning groups, so one person may download the necessary files and then share them among the group. In addition, the temptation to gather everything possible must be resisted, and, guarding against excess, the teacher and institution should gather only what is needed – behind every IP address is a real student or patient.

Once gathered, these data must be carefully protected by encryption, and care should be taken to ensure that anonymous data cannot be de-anonymised. Data should be stored for a limited time only: relevant laws and policies will determine this period, but, in the absence of guidance, 3–5 years is generally considered a reasonable maximum time. When these data are to be used for formal research, then a new ethical area of concern opens: ethical digital scholarship. This area is too large to be discussed here and has been covered in another AMEE Guide (Masters 2020).

Archiving and managing the record content

Although institutions officially "end" or "close" courses, the online world offers an opportunity, and an expectation, for learning materials (including recordings of live classes) to be available for a much longer time. The educational need for this in online learning has been recognised for many years (Masters and Gibbs 2007), but ERT has forced the issue on a much larger scale than before. Managing the material as it shifts from being accessible to all to archived for historical purposes is not a technically *difficult* process, but it does introduce ethical problems, specifically related to privacy, security and accessibility. The institution is unlikely to have long-term storage capacity, and even if it does, the points below should be considered.

- The material should be properly identified and arranged in folders and other logical groupings.
- Sensitive material (e.g. grades) must be encrypted.
- Material should be uploaded into cloud services. Although free cloud services exist, these are frequently quite limited in storage capacity. If institutional funds are not available for purchasing extra space, then individual teachers may have to pay for this privately

(Alternately, some services allocate space based on email accounts, so the teacher may wish to create new email accounts). If the teacher leaves the institution, however, then long-term accessibility must be negotiated with the institution.
- Institutional policies on copyright and the availability of materials will need to be accommodated.

The road ahead

As we near the end of the Guide, readers may wish to begin applying the suggestions, but may also feel rather overwhelmed by the immense load that this document appears to place on their shoulders. It is at this point that the important ethical principle of *Possibility* needs to be applied. *Possibility* recognises that, as much as a person or institution would like to do everything, resources, including time, are limited.

As a result, start small: you cannot do everything at once in all your courses. Begin by selecting a small course, and work through the processes outlined above, applying those principles that can be achieved with minimal effort and time. In many cases, you will find that some of the work has already been done and simply needs to be formalised, categorised and documented. Identify other more resource-intensive areas that you would like to address, but cannot at the moment. Flag them, and return to them later. It may take several iterations of your course and may require input from a range of others before you have your final product. Every small improvement is still an improvement, so do not be daunted by the task ahead, and rather acknowledge the path already walked.

Conclusion

The transition from face-to-face teaching and learning to ERT was a sudden and harsh experience for many medical teachers and learners. ERT's focus on delivering content as quickly as possible meant that best practices were not always followed. As teachers and learners move into a new phase in which online learning will become more common than before ERT, there is a need for the ethical concerns of online teaching and learning to be addressed.

This Guide has highlighted these ethical concerns and has shown how they can be best addressed; the aim has been to assist medical teachers to complete the process from ethical face-to-face teaching, through ERT, to ethical online teaching.

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Ethics approval

No research on humans or animals was conducted for this work, so ethics approval was not required.

Disclaimer

In this Guide, of necessity, the authors refer to many software products and tools. Except where explicitly stated, we have no affiliation (commercial or otherwise) to any of these, and mentioning them does not necessarily imply recommendation, and recommendations are based on personal experience only.

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Glossary

Emergency Remote Teaching: A temporary shift of teaching materials and activities from face-to-face teaching to online, remote teaching, with a focus on getting the materials to the students in an effort to reduce disruption to education.

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