

# Literature Search Results

**Research question or topic:**

“Guides, articles and eLearning about online and virtual learning and teaching during the pandemic including anything about pedagogical approaches”

**Name of person/ team requesting search:**

Helen Foster (Associate lead - professional development lead, London)

**Completed by:** HEE Knowledge Management Team (Katie Nicholas)

**Date:** 18<sup>th</sup> June 2020

**Please acknowledge this work in any resulting paper or presentation as:**

Literature Search: Online learning and teaching during the pandemic. Katie Nicholas. (18 June 2020). UK: Health Education England Knowledge Management Team

### Contents

Search comments .....	2
Search results .....	2
eLearning for Educators and Teachers.....	2
Journal articles.....	3
Guides to online conferencing software .....	21
Appendix .....	22
Sources and Databases Searched .....	22
Search Strategies .....	22
*Help accessing articles or papers .....	23
HEE Knowledge Management team contact details .....	23

### Search comments

This is an area where evidence continues to emerge. I have included links to some online courses and resources that might be helpful for virtual educators covering topics such as developing online teaching resources and using virtual scenarios as well as journal articles exploring various aspects of online learning during the pandemic both from student and educator perspectives and exploring the impacts on healthcare education. Finally, I have included links to guides for some of the available videoconferencing software and blog posts comparing their functionality. A full list of results is available below.

### Search results

#### eLearning for Educators and Teachers

[Develop your online teaching resources](#) The Open University

As the leaders in online distance learning, we offer a range of courses designed to help you take your teaching online. This includes our new Online Teaching microcredential, which we're offering at a reduced price for a limited time.

---

[How to teach online: providing continuity for students](#) Future Learn

Explore online teaching with this practical course for educators designed in response to the COVID-19 pandemic.

---

[How to teach courses online](#) Future Learn

- [Using virtual scenarios to create effective learning](#)
- [How to create great online learning](#)

## Online learning and teaching during the pandemic

- [How to learn online: getting started](#)
  - [The online educator: people and pedagogy](#)
  - [Blended learning essentials: embedding practice](#)
- 

[Learning to teach online](#) Coursera

---

[Virtual Teacher Specialization](#) Coursera

---

[Get interactive: practical teaching with technology](#) Coursera

---

[eLearning Ecologies: innovative approaches to teaching and learning for the digital age](#)  
Coursera

---

[Basics of inclusive design for online education](#) Coursera

---

[Advanced instructional strategies in the virtual classroom](#) Coursera

---

### Journal articles

[Study on students' perceptions for online zoom-app based flipped class sessions on anatomy organised during the lockdown period of COVID-19 epoch](#) June 2020, Journal of Clinical and Diagnostic Research

Introduction: In the present situation of containment for COVID-19 epoch, the physical classroom sessions in medical colleges were suspended by different Government advisories. Faculties have been guided by the university as well as institution to carry on the online teaching to the medical students. As the students were not present physically so flipped class model has been implemented using the Zoom cloud app for teaching Anatomy. Aim(s): To explore the perception of undergraduate students of Anatomy regarding online Zoom-app based flipped class sessions and to obtain the suggestions for improvement of such classes organised during the lockdown period of COVID-19. Material(s) and Method(s): Ten gross Anatomy topics and 10 histology slides (total 15 sessions; one session for each gross anatomy topics and five sessions covering two slides for each day) were discussed in flipped class mode. For each session the text materials were served to the students two days before. On the third day, face to face interactive classes were undertaken using the Zoom platform; for the entire 199 students of Anatomy. After completion of one month, students' perceptions were obtained by semi-structured questionnaire made with Google form. Result(s): Although the department has organised almost daily Zoom sessions with pre-shared study material; in flipped classroom

## Online learning and teaching during the pandemic

mode, but majority of the students opined for maximum three days per week Zoom sessions instead of every day's classes. Total 92% preferred the current strategy of advanced sharing of study material instead of concurrent sharing of text. Almost 93.5% students felt the study material helpful to them, 79% students found the Zoom sessions helpful for their doubt clearance. Strikingly, 53.36% students confessed that they failed to keep up with the progress of the classes in daily mode. There was a mixed reaction for continuing such mode of teaching in the post-lockdown era. The network connectivity became a broad issue as constrain to almost all of them to participate in online discussion platform. Conclusion(s): As the students and teachers were new in the online mode of teaching; so students feedbacks were felt need for future planning. The students had an opinion to lessen the number of classes so that they can cope up with the study material. However, majority of them wanted to move back to their classrooms rather than remain in the online mode of learning.

---

[Zooming-out COVID: Virtual clinical experiences in an emergency medicine clerkship](#) 5<sup>th</sup> June 2020, Medical Education Adaptations

In the setting of the novel 2019 coronavirus (COVID-19) pandemic, it has been challenging to provide medical students in the Emergency Medicine (EM) clerkship meaningful clinical experiences that would meet clinical course goals and objectives, as well as satisfy Liaison Committee for Medical Education (LCME) requirements. During the EM clerkship, students play an integral role in interviewing patients, formulating treatment plans, facilitating patient discharges, and counseling patients. Immediately available direct and indirect supervision are paramount to ensure student learning and safe patient care. The authors present a novel clinical educational experience for senior medical students in an EM clerkship that fulfills specific clinical course learning objectives, while still providing students the opportunity to interact live with patients. We designed a virtual clinical experience where students performed supervised 'virtual callbacks' for patients recently evaluated in the ED. Student feedback on this experience has been positive. Completing the COVID-19 callbacks decreased some of the clinical burden on the department. Patients, too, were grateful for the follow-up.

---

[We asked the experts: virtual learning in surgical education during the COVID-1 pandemic - shaping the future of surgical education and training](#) 14<sup>th</sup> May 2020, World Journal of Surgery

The outbreak of COVID-19 continues to generate profound effects on surgical education and training. Currently, surgical training programs must decide between arresting their surgical education curriculums and devising adapted versions. By halting their educational programs, a disservice is done to their residents, medical students, and the surgical community. In contrast, programs designing virtual learning alternatives to maintain their curriculums forge the future of surgical teaching [1, 2]. These new designs create durable programs, which are able to acclimate to a multitude of situations while continuing surgical education and training [3]. Prior to COVID-19, virtual learning was slowly mixing into pedagogical methods, creating blended learning [3]. Blended learning utilizes online resources to enhance didactic and clinical knowledge and reasoning skills [3]. In the surgical field, online resources are continuously created to tailor to the needs of specific education levels, medical students, residents, fellows,

## Online learning and teaching during the pandemic

and surgeons [4,5,6]. Due to the crisis, the incorporation of virtual learning in surgical education has exponentially increased.

---

[Learning to love virtual conferences in the coronavirus era](#) 18<sup>th</sup> May 2020, Nature

COVID-19 has provided an opportunity to rethink the scientific conference. If online meetings become the norm, how can researchers make the most of them?

---

[Pedagogical foundations to online lectures in health professions education](#) 29<sup>th</sup> May 2020, Rural and Remote Health

Professional and tertiary health professions education (HPE) has been markedly challenged by the current novel coronavirus (COVID-19). Mandates for training organisations to reduce social contact during the global pandemic, and make learning available online, provide an opportunity for regional, rural and remote clinicians and students to more easily access learning and professional development opportunities. Online lectures, while posing an opportunity for regional, rural and remote HPE, entail potential risks. Educators who are familiar with face-to-face pedagogies may find a transition to remote, digital interaction unfamiliar, disarming, and therefore they may not design maximally engaging lectures. The strategies used in a face-to-face lecture cannot be directly transferred into the online environment. This article proposes strategies to ensure the ongoing effectiveness, efficiency and engagement of lectures transitioning from face-to-face to online delivery. Cognitive learning theory, strategies to promote learner engagement and minimise distraction, and examples of software affordances to support active learning during the lecture are proposed. This enables lecturers to navigate the challenges of lecturing in an online environment and plan fruitful online lectures during this disruptive time. These suggestions will therefore enable HPE to better meet the existing and future needs of regional, rural and remote learners who may not be able to easily access face-to-face learning upon the relaxation of social distancing measures. Strategies to provide equitable HPE to learners who cannot access plentiful, fast internet are also discussed.

---

[Provisions of e-learning programmes to replace undergraduate medical students' clinical general practice attachments during COVID-19 stand-down](#) 18<sup>th</sup> May 2020, Education for Primary Care

Senior medical students at the University of Auckland, New Zealand spend most of their learning time in clinical attachments. Experiential apprentice-style training is traditionally recognised as an important aspect of obtaining competency. In March 2020 they were stood down from their general practice placements in the context of a national response to the COVID-19 pandemic. Acute conversion of their general practice education from experiential clinical exposure to online and offsite learning was required. This paper describes the steps taken and the underlying theoretical foundations for our expediently developed online course.

## Online learning and teaching during the pandemic

Our online learning programme has three online components, reflecting the domains of educational environment theory: asynchronous discussion forums; a symposium facilitating social interactions and teacher presence, and a portfolio facilitating personal goal aspects. The latter is underpinned by a multi-theories model of adult learning, built upon the scaffolding framework that supports our entire medical curriculum. Within this theory, we propose a five-stage model of learning. Learning from this experience contributes to the body of knowledge around online education, particularly in meeting the needs of a clinical attachment traditionally grounded in experiential learning. It is hoped that the mechanisms described here might be useful to other educators facing similar challenges.

---

[Accelerating education during COVID-19 through virtual learning](#) 26<sup>th</sup> May 2020, Aesthetic Surgery Journal

The curve has begun to flatten and many of us have returned to the office and the operating theatre. For many of us, this is likely the longest time in our careers without, seeing patients, performing aesthetic procedures and traveling to meetings. We are glad this is now in our rear-view mirror and we can return to work as normal or should we say what we hope will be a temporary new normal? We are proud of the educational efforts the Aesthetic Surgery Journal offered during the lockdown. Through the contributions of many of our lifelong peers and our editorial team, both ASJ and ASJ Open Forum quickly became a go-to resource during COVID-19.

---

[Enhancing engagement during live virtual learning using interactive](#) quizzes 21<sup>st</sup> May 2020, Medical Education

The COVID-19 pandemic has foisted unprecedented changes upon graduate medical education ranging from adjustments to patient care practices to adaptive modifications to educational activities. To comply with social distancing guidelines, in-person conferences and didactics have been suspended in most, if not all residency programs throughout the country. Many programs, however, have transitioned to live virtual platforms such as Zoom to continue educational activities. While live virtual learning has allowed for continued education, it presents its unique challenges. The impersonal nature of the virtual learning environment creates a propensity for detachment and disengagement. While the video function is turned off and the microphone is muted, a participant can completely disengage from virtual learning while still appearing to be present.

---

[Faculty development in a pandemic: so close yet so far](#) 20<sup>th</sup> May 2020, Medical Education

Conceptual advances in faculty development are broadening to emphasize the importance of relationships and social networks to faculty learning.<sup>1</sup> In-person events traditionally provide a venue for these relationships to develop and sustain. The onset of the Covid-19 pandemic forced the rapid acceptance of online platforms as the only approach for faculty interpersonal

## Online learning and teaching during the pandemic

connection. Within these virtual only conditions, a faculty development intervention was quickly created for a cohort of dispersed teaching faculty that could harness the power of relationships and social networks for faculty support and learning about the program's new format (online) and additional content (student stress).

---

[Smart learning for urology residents during the COVID-19 pandemic and beyond: insights from a nationwide survey in Italy](#) 20<sup>th</sup> May 2020, Minerva Urologica e Nefrologica

The COVID-19 pandemic represents a global emergency worldwide. Italy is one of the Countries that has been hit the most, facing since the beginning an urgent need to reshape the whole healthcare system to optimize resources. Urology has also been involved, not only regarding the prioritization of surgeries, but also the refinement of strategies to manage out-and inpatient activities [1,2]. In this context, the learning curve of Urology residents might suffer critical variations due to forced changes in training activities [3]. Indeed, we previously showed how the COVID-19 epidemic has substantially compromised the residents' daily exposure to both clinical and surgical practice [4]. As such, we believe pursuing the education of Urology residents through innovative learning tools has quickly become a key unmet need. Notably, several web-based technologies for smart learning are nowadays available. By using these instruments, education of Urology residents can potentially be maintained and even implemented, keeping learning from both a surgical and scientific perspective [3]. Aiming to provide insights from Italian Urology residents on such technologies for education purposes, we developed a 25-items, 48-hours, web-based Survey focused on both the modalities and contents of smart learning. For the purpose of this survey, we considered as "smart learning" the whole teaching activity carried out using virtual platforms or online communication channels. In addition, we divided the concepts of smart learning modality (the instrument for providing the information) and content (the actual information provided).

---

[Virtual learning during the COVID-19 pandemic: a disruptive technology in graduate medical education](#) 26<sup>th</sup> May 2020, Journal of the American College of Cardiology

In these unprecedented times, the world has braced itself for the pandemic of coronavirus disease 2019 (COVID-19) caused by the novel virus SARS-CoV-2 (1). The United States is seeing a surge in cases, and local authorities have taken aggressive measures to limit its spread through social distancing (2). U.S. hospitals are expected to see an increase in patients with COVID-19 in the coming weeks to months. Not only has this expanding threat led to growing clinical and administrative demands on physicians, it has also dramatically impacted resident and fellow education. Given the Centers for Disease Control and Prevention's recommendations to cancel large conferences and limit regular meeting sizes, our traditional model of person-to-person educational didactics, lectures, and chalk talks has been compromised (3). When considering the current state of graduate medical education, it comes as no surprise that the status quo is dominated by traditional didactic learning. This form of learning has now been challenged like no other time before, especially given the current public health measures being undertaken for the purpose of social distancing to mitigate the spread of COVID-19 (4). Consequently, the disruption of educational activities can have a negative impact on trainee wellness and their sense of community (5). In 2018, the American College of

## Online learning and teaching during the pandemic

Cardiology Fellows-in-Training Section Leadership Council proposed 3 novel educational strategies: personalized learning, adaptive learning with real-world situations and feedback, and the flipped classroom (6). Using these strategies and to heed the call for social distancing, the Brigham and Women's Hospital Fellowship in Cardiovascular Medicine developed a virtual learning platform using Microsoft Teams (Microsoft Corporation, Redmond, Washington). In this paper, we describe the capabilities, implementation, and challenges of virtual learning for cardiology fellows-in-training (FITs) and fellowship programs in the COVID-19 era and beyond.

---

### [Online learning in the time of COVID-19](#) March-April 2020, Travel Medicine and Infectious Disease

COVID -19 has had a significant impact on the practice of travel medicine, not surprisingly due to the various travel bans and restrictions by numerous countries, resulting in a lack of travellers seeking advice as the critical need to fight this new pandemic becomes ever more evident. Travel medicine practitioners around the world will have seen their travel clinics cease to operate. This may also have had significant impact, especially if running a specialist clinic in a dedicated setting. While some practitioners can be deployed to roles to help in the COVID-19 battle, others may have become de-skilled in general patient care, or indeed have some personal reasons for not being able to engage such work. At some point in time in the future however, travel medicine practice will be in even greater demand again and anecdotal discussion informs that in times of lull in the past such as during the Ebola outbreak in 2014, this is the case. So, who knows what might happen but realistically, provision of care may be in shorter supply due to some businesses ceasing to continue with the severe economic impact.

---

### [Distance learning in the era of COVID-19](#) 8<sup>th</sup> May 2020, Concise Communication

The novel coronavirus (SARS-CoV-2) pandemic has necessitated a dramatic shift in how our dermatology residents and fellows are educated. Distance or online learning has become the norm, and several national and international academic societies have combined resources to assure that continuing medical education occurs during this difficult time. The purpose of this communication is to review select online resources available to dermatology trainees and to encourage our colleagues to continue to advance our specialty through distance learning. There is no question that the novel coronavirus (SARS-CoV-2) outbreak causing the disease known as COVID-19 has dramatically changed lives throughout the world. Originating in China, the first case of pneumonia was reported on December 8, 2019 [1] and identified on January 7, 2020. It has since disseminated across the world. This global pandemic has necessitated a dramatic paradigm shift in terms of how we interact with each other. Many offices have either made the transition to teledermatology or greatly reduced their patient volumes to accommodate the widely accepted "social distancing" recommendation by the World Health Organization and the United States Centers for Disease Control and Prevention [2, 3]. Hospitals and practices are developing screening and contingency plans for clinical medicine. But what about the education of our colleagues and our trainees during this time of uncertainty?

---



## Online learning and teaching during the pandemic

[Experimental, ad hoc, online, inter-university student e-context during the pandemic: Lessons learned](#) 25<sup>th</sup> May 2020, arxiv

We are reporting on lessons learned from an e-contest for students held during the current pandemic. We compare the e-contest with the 10 previous editions of the same but face-to-face contest. While apparently the competition did not suffer because of being a virtual one, some disadvantages were noted. The main conclusions are: the basic interconnectivity means arise no serious technical issue, but the interconnectivity is more limited than the face-to-face one; online jury-competitors interactivity is poorer than face-to-face interactivity; human factors, higher uncertainties in the organization process, and less time to spend in the process for the local organizers are major limiting factors; concerns on the participation and evaluation fairness are higher; involuntary gender discrimination seems lower, but persists; there are serious concerns related to privacy, including differential privacy; some peculiarities of the presented topics and of the evaluation process emerged, but it is unclear if they are related to the online nature of the competition, to the extra stress on the participants during the pandemic, to other factors, or are random. While some conclusions may be intimately related to the analyzed case, some are general enough for being worth to other online competitions.

---

[Coronavirus disease \(COVID-19\) prevention: virtual classroom education for hand hygiene](#) May 2020, Nurse Education in Practice

Coronavirus disease (COVID-19), has spread rapidly in Asia, Europe, the Middle East and the Americas. Considering the recent outbreak of COVID-19, some precautionary measures have been announced, including campus class suspensions. Nursing campus courses have also been suspended, and there may be a learning gap between hand hygiene theory and clinical training for nursing students. A virtual classroom education approach may help address the learning gap by providing ongoing theoretical strengthening of hand hygiene during clinical nursing training. This editorial proposes a 3-step virtual classroom education approach to support nursing educators in online theoretical hand hygiene enhancement.

---

[Blended learning via distance in pre-registration nursing education](#) March 2020, Nurse Education in Practice

Prior to the Covid-19 global pandemic, we reviewed literature and identified comprehensive evidence of the efficacy of blended learning for pre-registration nursing students who learn across distances and/or via satellite campuses. Following a methodological framework, a scoping literature review was undertaken. We searched six databases (EBSCOHOST (CINHAL plus; Education research Complete; Australia/New Zealand Reference Centre); Google Scholar; EMBASE (Ovid) [ERIC (Ovid); Medline (Ovid)]; PubMed: ProQuest Education Journals & ProQuest Nursing & Allied Health Source) for the period 2005–December 2015. Critical appraisal for critiquing qualitative and quantitative studies was undertaken, as was a thematic analysis. Twenty-eight articles were included for review, which reported nursing research (n = 23) and student experiences of blended learning in higher education (n = 5). Four key

## Online learning and teaching during the pandemic

themes were identified in the literature: active learning, technological barriers, support, and communication. The results suggest that when delivered purposefully, blended learning can positively influence and impact on the achievements of students, especially when utilised to manage and support distance education. Further research is needed about satellite campuses with student nurses, to assist with the development of future educational practice.

---

[Learning at home during COVID-19: a multi-institutional virtual learning collaboration](#) 24<sup>th</sup> April 2020, Medical Education

1 What problems were addressed? Given the cancellation of all elective procedures with the coronavirus disease 2019 (COVID-19) crisis, many anaesthesiology learners are assigned to stay at home, limiting opportunities to learn in the clinical environment. We report on a novel use of existing resources to structure a daily nationwide learning experience, using Kotter's change management model (KCMM) to drive the process: (a) create urgency; (b) form a guiding coalition; (c) create a vision; (d) communicate the vision; (e) remove obstacles; (f) create short-term wins; (g) build on the change, and (h) institutionalise new approaches. In the field of anaesthesiology, we describe the use of the Anesthesia Education Toolbox,<sup>1</sup> an online learning management system with resources for in-person and asynchronous learning.

---

[Learning for all: guidelines on the inclusion of learners with disabilities in open and distance learning](#) 2016, Unesco

These guidelines take a contemporary standpoint on the increasingly technology-based approaches used to deliver education to persons with disabilities. In this regard, it recognizes the value of Open and Distance Learning (ODL) as one of the most sustainable methods for overcoming the educational barriers faced by persons with disabilities; it also highlights and illustrates the facets of an ODL-facilitated education system using Open Educational Resources (OERs); Free and Open Source Software (FOSS); and Open Access (OA)

---

[Innovation in response to the COVID-19 pandemic crisis](#) 23<sup>rd</sup> April 2020, Association of American Medical Colleges

The COVID-19 pandemic has disrupted all aspects of academic medical center missions. The number and rapidity of innovative responses to the crisis are extraordinary. When the pandemic has subsided, the world of academic medicine will have changed. The author of this Invited Commentary anticipates that at least some of these innovations will become part of academic medicine's everyday clinical and educational operations. Here, he considers the implications of exemplary innovations—virtual care, hospital at home, advances in diagnosis and therapy, virtual learning, and virtual clinical learning—for regulators, academic medical centers, faculty, and students.

See section on “Virtual Clinical Learning”

---

## Online learning and teaching during the pandemic

[How COVID-19 has changed student assessment for good](#) 15<sup>th</sup> June 2020, JISC

A new report from Jisc, [Emerge Education](#) and [QAA](#) (the quality assurance agency for higher education), [Assessment rebooted](#), explores how six universities have faced up to the challenge of updating assessment during Covid-19 lockdown, demonstrating how the sector can effectively use technology and innovation to transform exams now and into the future. For example, the [University of London](#) changed the process for 40,000 students sitting around 500 exams in 160 countries from solely paper-based and in-person exams to digital testing, which included [digital proctoring](#).

---

[Impact Of Sars-Cov-2 And Its Reverberation In Global Higher Education And Mental Health](#)  
June 2020, Psychiatry Research

BACKGROUND According to UNESCO's monitoring, more than 160 countries implemented nationwide closures, which impacted over 87% of the world's student population. Several other countries implemented localized school closures; should these closures become nationwide, millions of additional learners will experience education disruption. Universities from around the world have been uncertain about how long the coronavirus crisis will last and how it might affect the mental health of students and faculty. The psychological impact has been a critical disruptor, creating anxiety and uncertainty. METHOD The data were cross-checked with information from the main international newspapers. RESULTS By discussing online and distance education, the coronavirus opens an important and urgent issue that affects mental health - these are virtually unexplored topics, and their results have not been validated yet. Online education is not limited to distance education, as it regards a grouping of learning/teaching procedures completed in cyberspace. Blended learning was, thus, introduced as a tool in personalized learning to adjust to new realities. These are unprecedented circumstances, and we understand they create stress, favoring anguish and a fierce search for new knowledge acquisition. CONCLUSIONS Current research highlights that anxiety and depression, exacerbated by uncertainties and intensification of the information flow, will grow extensively. Negative physiological consequences of stress will manifest. For instance, loneliness, which will increase under these circumstances, seems to have a negative impact on education and, therefore, on psychological pain and suffering.

---

[Distance learning in the era of COVID-19](#) May 2020, Archives of Dermatological Research

The novel coronavirus (SARS-CoV-2) pandemic has necessitated a dramatic shift in how our dermatology residents and fellows are educated. Distance or online learning has become the norm, and several national and international academic societies have combined resources to assure that continuing medical education occurs during this difficult time. The purpose of this communication is to review select online resources available to dermatology trainees and to encourage our colleagues to continue to advance our specialty through distance learning.

---

[Provision of e-learning programmes to replace undergraduate medical students' clinical general practice attachments during COVID-19 stand-down](#) May 2020, Education for Primary Care

## Online learning and teaching during the pandemic

Senior medical students at the University of Auckland, New Zealand spend most of their learning time in clinical attachments. Experiential apprentice-style training is traditionally recognised as an important aspect of obtaining competency. In March 2020 they were stood down from their general practice placements in the context of a national response to the COVID-19 pandemic. Acute conversion of their general practice education from experiential clinical exposure to online and offsite learning was required. This paper describes the steps taken and the underlying theoretical foundations for our expediently developed online course. Our online learning programme has three online components, reflecting the domains of educational environment theory: asynchronous discussion forums; a symposium facilitating social interactions and teacher presence, and a portfolio facilitating personal goal aspects. The latter is underpinned by a multi-theories model of adult learning, built upon the scaffolding framework that supports our entire medical curriculum. Within this theory, we propose a five-stage model of learning. Learning from this experience contributes to the body of knowledge around online education, particularly in meeting the needs of a clinical attachment traditionally grounded in experiential learning. It is hoped that the mechanisms described here might be useful to other educators facing similar challenges.

---

[Letter: The impact of COVID-19 on the undergraduate medical curriculum](#) December 2020, Medical Education online

The coronavirus pandemic has impacted medical education globally. As universities seek to deliver medical education through new methods of modalities, this continuing of education ensures the learning of the future workforce of the NHS. Novel ways of online teaching should be considered in new medical curricula development, as well as methods of delivering practical skills for medical students online.

---

["The storm has arrived": the impact of SARS-CoV-2 on medical students](#) June 2020, Perspectives on medical education

In a few weeks, the global community has witnessed, and for some of us experienced first-hand, the human costs of the COVID-19 pandemic. There is incredible variability in how countries are choosing to thwart the disease's outbreak, sparking intense discussions around what it means to teach and learn in the era of COVID-19, and more specifically, the role medical students play in the midst of the pandemic. A multi-national and multi-institutional group made up of a dedicated medical student from Austria, passionate clinicians and educators from Switzerland, and a PhD scientist involved in Medical Education from Canada, have assembled to summarize the ingenious ways medical students around the world are contributing to emergency efforts. They argue that such efforts change COVID-19 from a "disruption" to medical students learning to something more tangible, more important, allowing students to become stakeholders in the expansion and delivery of healthcare.

---

[Zooming-Out COVID: Virtual Clinical Experiences in an Emergency Medicine Clerkship](#) June 2020, Medical Education

In the setting of the novel 2019 coronavirus (COVID-19) pandemic, it has been challenging to provide medical students in the Emergency Medicine (EM) clerkship meaningful clinical

## Online learning and teaching during the pandemic

experiences that would meet clinical course goals and objectives, as well as satisfy Liaison Committee for Medical Education (LCME) requirements. During the EM clerkship, students play an integral role in interviewing patients, formulating treatment plans, facilitating patient discharges, and counseling patients. Immediately available direct and indirect supervision are paramount to ensure student learning and safe patient care. The authors present a novel clinical educational experience for senior medical students in an EM clerkship that fulfills specific clinical course learning objectives, while still providing students the opportunity to interact live with patients. We designed a virtual clinical experience where students performed supervised 'virtual callbacks' for patients recently evaluated in the ED. Student feedback on this experience has been positive. Completing the COVID-19 callbacks decreased some of the clinical burden on the department. Patients, too, were grateful for the follow-up.

---

[The COVID-19 pandemic has changed education forever. This is how](#) 29<sup>th</sup> April 2020, World Economic Forum

- The COVID-19 has resulted in schools shut all across the world. Globally, over 1.2 billion children are out of the classroom.
  - As a result, education has changed dramatically, with the distinctive rise of e-learning, whereby teaching is undertaken remotely and on digital platforms.
  - Research suggests that online learning has been shown to increase retention of information, and take less time, meaning the changes coronavirus have caused might be here to stay.
- 

[Barriers to online learning must be removed to tackle COVID-19 crisis](#) 27<sup>th</sup> April 2020, JISC blog  
Whatever happened to the carefree hedonism of youth? That stereotype feels quite hollow at the moment. Under lockdown and unsure what the future will bring, today's students are burdened by worries, and the rapid move to online and remote learning prompted by COVID-19 is highlighting the divide between the haves and the have-nots.

---

[Virti Virtual Training](#) NHS Accelerator

Virtual training and patient education technology to support the COVID-19 outbreak, as part of TechForce Programme.

---

[The Distance Teaching Practice of Combined Mode of Massive Open Online Course Micro-Video for Interns in Emergency Department During the COVID-19 Epidemic Period](#) May 2020, Telemedicine Journal and eHealth

Objective: To observe and analyze the application effect of the combined mode of Massive Open Online Course (MOOC) micro-video during the COVID-19 epidemic period in the distance teaching practice of interns in the emergency department. Materials and Methods: The subjects of this study were 60 trainee nurses who conducted emergency nursing practice in Tongji Hospital Affiliated to Tongji Medical College of Huazhong University of Science and Technology from January 1 to February 29, 2020. At the time of the COVID-19 outbreak in Wuhan, they were divided into two groups: (1) the experimental group (combined mode of MOOC micro-video) and (2) the control group (traditional theory teaching combined with clinical practice

## Online learning and teaching during the pandemic

teaching). The differences of theoretical and practical examination scores and teaching satisfaction between the two groups were compared. Results: There was no significant difference in theoretical, practical, and total examination scores between the two groups, but in terms of teaching satisfaction, the overall satisfaction, the degree of easy understanding, the evaluation of teachers and learning results in the experimental group were higher than those in the control group, with statistical difference ( $p < 0.05$ ). Conclusion: Compared with the traditional teaching methods, the effect of combined mode of MOOC micro-video in emergency nursing practice is the same as that of traditional teaching methods, but the satisfaction is higher, so it is more suitable to be used in nursing practice during the COVID-19 epidemic period, so as to effectively reduce the cross-infection between doctors, nurses, and teaching staff.

---

[Coronavirus disease \(COVID-19\) prevention: Virtual classroom education for hand hygiene](#) May 2020, Nurse Education in Practice

Coronavirus disease (COVID-19), has spread rapidly in Asia, Europe, the Middle East and the Americas. Considering the recent outbreak of COVID-19, some precautionary measures have been announced, including campus class suspensions. Nursing campus courses have also been suspended, and there may be a learning gap between hand hygiene theory and clinical training for nursing students. A virtual classroom education approach may help address the learning gap by providing ongoing theoretical strengthening of hand hygiene during clinical nursing training. This editorial proposes a 3-step virtual classroom education approach to support nursing educators in online theoretical hand hygiene enhancement.

---

[Distance learning in the era of COVID-19](#) May 2020, Archives of Dermatological Research

The novel coronavirus (SARS-CoV-2) pandemic has necessitated a dramatic shift in how our dermatology residents and fellows are educated. Distance or online learning has become the norm, and several national and international academic societies have combined resources to assure that continuing medical education occurs during this difficult time. The purpose of this communication is to review select online resources available to dermatology trainees and to encourage our colleagues to continue to advance our specialty through distance learning.

---

[Online learning in the time of COVID-19](#) 2020, Travel medicine and infectious disease

COVID -19 has had a significant impact on the practice of travel medicine, not surprisingly due to the various travel bans and restrictions by numerous countries, resulting in a lack of travellers seeking advice as the critical need to fight this new pandemic becomes ever more evident. Travel medicine practitioners around the world will have seen their travel clinics cease to operate. This may also have had significant impact, especially if running a specialist clinic in a dedicated setting. While some practitioners can be deployed to roles to help in the COVID-19 battle, others may have become de-skilled in general patient care, or indeed have some personal reasons for not being able to engage such work. At some point in time in the future however, travel medicine practice will be in even greater demand again and anecdotal discussion informs that in times of lull in the past such as during the Ebola outbreak in 2014, this is the case. So, who knows what might happen but realistically, provision of care may be in shorter supply due to some businesses ceasing to continue with the severe economic impact.

[Practical approaches to pedagogically rich online tutorials in health professions education](#) May 2020, Rural and remote health

Health professions education in tertiary, industrial and other contexts often entails face-to-face small group learning through tutorials. The current novel coronavirus, COVID-19, has reduced face-to-face contact, and this has challenged how health professionals and clinical students can access training, accreditation and development. Online and other remote mechanisms are available to tutors and course designers; however, they might not feel comfortable with such affordances, in light of expectations to so rapidly change familiar teaching and delivery styles. This may result in the loss of interaction and disruption of peer learning, which are hallmarks of the small group tutorial. Collaborative learning is essential to develop and refine an emerging sense of belonging to a professional community through formal studies, and interactive learning is a requirement for some registered health professions to satisfy ongoing professional accreditation. Online media has been used to promote social learning in regional, rural and remote communities for some time. Strategies for learning activity design and tutor training are proposed to equip course designers and educators to support health professions education remotely, through the synchronous, online small group. This may herald a new era of increased access to training and professional development for non-urban learners, beyond COVID-19.

---

[Teaching in the time of COVID-19](#) May 2020, Biochemistry and molecular biology education

As COVID-19 sweeps the globe colleges and universities are opting to suspend face-to-face lectures and laboratories as a step to slow the spread of this disease. Rather than cancel their courses many instructors are working to deliver content and assess learning via distance learning and online pedagogies. As this shift to online may be occurring midsemester and somewhat unexpectedly, instructors and curriculum designers are struggling to make the transition quickly and smoothly. The urgency of the situation is not a call for lowering standards or changing learning outcomes. Rather, it is an opportunity to revisit our courses with a focus on the critical learning outcomes.

---

[Sustaining academics during COVID-19 pandemic: The role of online teaching-learning](#) June 2020, Indian journal of ophthalmology

On 11th March 2020, the World Health Organization (WHO) declared the COVID-19 caused by the 2019 novel coronavirus (2019-nCoV) a pandemic.[1] Currently, there are more than 3 million cases and one lakh deaths reported, and still counting.[2] This has brought radical changes in all aspects of our lives. Social distancing and restrictive movement policies have markedly deranged traditional educational practices. The time course of these changes is indeterminate. These have affected conventional in-person ophthalmic education and training. There is a pressing need to innovate and implement alternative educational and assessment strategies. The COVID-19 pandemic has provided us with an opportunity to pave the way for introducing digital learning in ophthalmology.

[Letter: Peer teaching medical students during a pandemic](#) January 2020, Medical Education Online

Our personal views about the challenges of continuing to deliver peer teaching during a pandemic. We are a group of 4th year medical students who are part of a student society which has delivered structured, highly formulaic peer-led teaching sessions for the past three years. During the COVID-19 pandemic, the reduced access to our normal clinical teaching highlighted the importance of peer-led teaching sessions. We wanted to continue with our peer-taught sessions but knew we would have to devise a new format to make our teaching accessible to our peers wherever they were. Here, we describe the challenges of online peer teaching during the COVID-19 pandemic and our reflections of the future implications to our group.

---

[The future of conferences, today: Are virtual conferences a viable supplement to "live" conferences?](#) June 2020, EMBO reports

During the COVID-19 pandemic, virtual conferences provide a much-needed alternative to cancelled meetings. Here are insights and lessons from organizing a virtual meeting.

---

[Covid-19 has changed how we teach students](#) April 2020, The Veterinary Record

'THE time has now come for us all to do more'. This was the plea from our prime minister on Monday 23 March. In response, innovation in veterinary education has suddenly occurred at a rate never seen before. Within days, the classroom curriculum evolved to online material delivered from lecturers' kitchen tables to students' homes. Teaching has been adapted so that it can still be delivered in this new reality, and staff are encouraging participation using a range of tools, chat functionality and video conferencing to create more dynamic sessions. Whether this has resulted in a 'better' learning environment is unknown, but it is certainly one that is better aligned to the ethos of the millennial generation. We have had better attendance at teaching sessions, better engagement and also better feedback. Of course there have been some challenges, but academics and students have adapted well. Hopefully we will keep all the good bits of this new reality, and the concept of learning 'any time, any place and on any device' will continue after the pandemic ends. Will this finally spell the end of the traditional lecture?

---

[Five tips for moving teaching online as COVID-19 takes hold](#) April 2020, Nature

In early February, Leonardo Rolla had two weeks to work out how to start teaching online. A mathematician at the National Scientific and Technical Research Council in Buenos Aires, Rolla also teaches maths for two terms each year at New York University (NYU) Shanghai in China. He had been visiting family when the outbreak of the COVID-19 coronavirus forced universities in China to shut, and he couldn't return to Shanghai. Rolla had never taught an online class. The transition required many hours of work and a lot of patience. He had to learn the technology and identify the best teaching tactics for his advanced linear-algebra class of 33 students.



## Online learning and teaching during the pandemic

Part of the problem was that his students are in a time zone 11 hours ahead of him. With technological help from colleagues at NYU Shanghai, he developed a strategy for teaching remotely from the other side of the world. Each day, using a program called VoiceThread, he records several short videos of himself explaining maths concepts, adding up to 15–30 minutes collectively. During their day, the students watch the videos on a website and, in turn, insert videos they make of their assigned theorem proofs, for example, or a question, a comment or a critique of a classmate's proof. Together, Rolla and his students produce an interactive, if asynchronous, class recording.

---

[Knowledge, attitudes, anxiety, and coping strategies of students during covid-19 pandemic](#) May 2020, Journal of Loss and Trauma

COVID-19 is a global concern affecting Higher Education Institutions (HEIs). This pandemic led to a strong reaction among students who experiences anxiety. This cross-sectional study aimed to examine students' knowledge, attitudes, anxiety, and coping strategies during the COVID-19 pandemic. Results showed that students possessed sufficient knowledge and high-risk perceptions. Non-medical prevention measures were perceived as highly effective. Students were satisfied with the government's actions to mitigate problems. However, an unwillingness with the online-blended learning approach was observed. Students utilized various ways to cope up with mental health challenges. It is necessary to address students' mental health during this COVID-19 pandemic among HEIs.

---

[Let COVID-19 expand awareness of disability tech](#) May 2020, Nature

Disabled people including myself have long campaigned for accommodations to help us live our lives. The COVID-19 pandemic shows that these are not as impractical as we have always been told. Supermarkets, restaurants and pharmacies (even outside cities) can deliver; remote working, medicine and education are possible for many; and social lives can be rewarding without requiring us to leave home. All around me, I see academic colleagues adopting disability-led hacks and long-sought accommodations. I wish everyone had thought about these workarounds —and about disabled people at all — earlier. When lockdowns end, we must not forget these lessons, not least because the pandemic will disable people, and the impacts.

---

[Pedagogy in a pandemic - COVID-19 and virtual continuing medical education \(vCME\) in obstetrics and gynecology](#) June 2020, Acta obstetrician et gynecologica scandinavica

The COVID-19 pandemic will go down in history as a global health crisis that caused significant loss of life and massive economic and social disruption. Our Obstetrics and Gynecology (OG) STs work on the frontline and need to be equipped with the knowledge to care for both COVID-19 and non-COVID-19 OG cases. CREATING A PROGRAMME While COVID-19 may be seen as a major disruptor to postgraduate education, it is also an opportunity to refine existing distance learning techniques into a Virtual Continuing Medical Education [vCME] program. POST-PANDEMIC PEDAGOGY The COVID-19 pandemic will eventually conclude and we will awake to a new post-COVID-19 era.

---

[COVID-19 Can Catalyze the Modernization of Medical Education](#) June 2020, JMIR Medical Education

Amid the coronavirus disease (COVID-19) crisis, we have witnessed true physicianship as our frontline doctors apply clinical problem-solving to an illness without a textbook algorithm. Yet, for

## Online learning and teaching during the pandemic

over a century, medical education in the United States has plowed ahead with a system that prioritizes content delivery over problem-solving. As resident trainees, we are acutely aware that memorizing content is not enough. We need a preclinical system designed to steer early learners from "know" to "know how." Education leaders have long advocated for such changes to the medical school structure. For what may be the first time, we have a real chance to effect change. In response to the COVID-19 pandemic, medical educators have scrambled to conform curricula to social distancing mandates. The resulting online infrastructures are a rare chance for risk-averse medical institutions to modernize how we train our future physicians-starting by eliminating the traditional classroom lecture. Institutions should capitalize on new digital infrastructures and curricular flexibility to facilitate the eventual rollout of flipped classrooms-a system designed to cultivate not only knowledge acquisition but problem-solving skills and creativity. These skills are more vital than ever for modern physicians.

---

[Redefining undergraduate nurse teaching during the coronavirus pandemic: use of digital technologies](#) May 2020, *British Journal of Nursing Abstract only*\*

During the current coronavirus pandemic, undergraduate nurse teaching is facing many challenges. Universities have had to close their campuses, which means that academics are working from home and may be coping with unfamiliar technology to deliver the theoretical part of the undergraduate nursing curriculum. Emergency standards from the Nursing and Midwifery Council have allowed theoretical instruction to be replaced with distance learning, requiring nursing academics to adapt to providing a completely virtual approach to their teaching. This article provides examples of tools that can be used to deliver the theoretical component of the undergraduate nursing curriculum and ways of supporting students and colleagues in these unprecedented times.

---

[Using Technology to Maintain the Education of Residents During the COVID-19 Pandemic](#) April 2020, *Journal of Surgical Education*

**BACKGROUND** The COVID-19 pandemic presents a unique challenge to surgical residency programs. Due to the restrictions recommended by the Centers for Disease Control and Prevention and other organizations, the educational landscape for surgical residents is rapidly changing. In addition, the time course of these changes is undefined. **METHODS** We attempt to define the scope of the problem of maintaining surgical resident education while maintaining the safety of residents, educators, and patients. Within the basic framework of limiting in-person gatherings, postponing or canceling elective operations in hospitals, and limiting rotations between sites, we propose innovative solutions to maintain rigorous education. **RESULTS** We propose several innovative solutions including the flipped classroom model, online practice questions, teleconferencing in place of in-person lectures, involving residents in telemedicine clinics, procedural simulation, and the facilitated use of surgical videos. Although there is no substitute for hands-on learning through operative experience and direct patient care, these may be ways to mitigate the loss of learning exposure during this time. **CONCLUSIONS** These innovative solutions utilizing technology may help to bridge the educational gap for surgical residents during this unprecedented circumstance. The support of national organizations may be beneficial in maintaining rigorous surgical education.

---

## Online learning and teaching during the pandemic

### [Virtual Read-Out: Radiology Education for the 21st Century During the COVID-19 Pandemic](#)

June 2020, Academic Radiology

Technologic advances have resulted in the expansion of web-based conferencing and education. While historically video-conferencing has been used for didactic educational sessions, we present its novel use in virtual radiology read-outs in the face of the COVID-19 pandemic. Knowledge of key aspects of set-up, implementation, and possible pitfalls of video-conferencing technology in the application of virtual read-outs can help to improve the educational experience of radiology trainees and promote potential future distance learning and collaboration.

---

### [Provision of e-learning programmes to replace undergraduate medical students' clinical general practice attachments during COVID-19 stand-down](#)

May 2020, Education for Primary Care

Senior medical students at the University of Auckland, New Zealand spend most of their learning time in clinical attachments. Experiential apprentice-style training is traditionally recognised as an important aspect of obtaining competency. In March 2020 they were stood down from their general practice placements in the context of a national response to the COVID-19 pandemic. Acute conversion of their general practice education from experiential clinical exposure to online and offsite learning was required. This paper describes the steps taken and the underlying theoretical foundations for our expediently developed online course. Our online learning programme has three online components, reflecting the domains of educational environment theory: asynchronous discussion forums; a symposium facilitating social interactions and teacher presence, and a portfolio facilitating personal goal aspects. The latter is underpinned by a multi-theories model of adult learning, built upon the scaffolding framework that supports our entire medical curriculum. Within this theory, we propose a five-stage model of learning. Learning from this experience contributes to the body of knowledge around online education, particularly in meeting the needs of a clinical attachment traditionally grounded in experiential learning. It is hoped that the mechanisms described here might be useful to other educators facing similar challenges.

---

### [Medical and Surgical Education Challenges and Innovations in the COVID-19 Era: A Systematic Review](#)

June 2020, In vivo

The aim of this systematic review was to identify the challenges imposed on medical and surgical education by the COVID-19 pandemic, and the proposed innovations enabling the continuation of medical student and resident training. A systematic review on the MEDLINE and EMBASE databases was performed on April 18th, 2020, and yielded 1288 articles. Sixty-one of the included manuscripts were synthesized in a qualitative description focused on two major axes, "challenges" and "innovative solutions", and two minor axes, "mental health" and "medical students in the frontlines". Shortage of personal protective equipment, suspension of clinical clerkships and observerships and reduction in elective surgical cases unavoidably affect medical and surgical education. Interesting solutions involving the use of virtual learning, videoconferencing, social media and telemedicine could effectively tackle the sudden cease in medical education. Furthermore, trainee's mental health should be safeguarded, and medical students can be involved in the COVID-19 clinical treatment if needed.

[The impact of COVID-19 on the undergraduate medical curriculum](#) December 2020, Medical Education Online

The coronavirus pandemic has impacted medical education globally. As universities seek to deliver medical education through new methods of modalities, this continuing of education ensures the learning of the future workforce of the NHS. Novel ways of online teaching should be considered in new medical curricula development, as well as methods of delivering practical skills for medical students online.

---

[Zooming-Out COVID: Virtual Clinical Experiences in an Emergency Medicine Clerkship](#) June 2020, Medical Education

In the setting of the novel 2019 coronavirus (COVID-19) pandemic, it has been challenging to provide medical students in the Emergency Medicine (EM) clerkship meaningful clinical experiences that would meet clinical course goals and objectives, as well as satisfy Liaison Committee for Medical Education (LCME) requirements. During the EM clerkship, students play an integral role in interviewing patients, formulating treatment plans, facilitating patient discharges, and counseling patients. Immediately available direct and indirect supervision are paramount to ensure student learning and safe patient care. The authors present a novel clinical educational experience for senior medical students in an EM clerkship that fulfills specific clinical course learning objectives, while still providing students the opportunity to interact live with patients. We designed a virtual clinical experience where students performed supervised 'virtual callbacks' for patients recently evaluated in the ED. Student feedback on this experience has been positive. Completing the COVID-19 callbacks decreased some of the clinical burden on the department. Patients, too, were grateful for the follow-up.

---

[Adapting to a new reality: COVID-19 coronavirus and online education in the health professions](#) May 2020, Rural and remote health

The current novel coronavirus, COVID-19, has effected a significant change in the way industry-based and tertiary health professions education (HPE) can occur. Advice for strict, widespread social distancing has catalysed the transformation of course delivery into fully online design across nations. This is problematic for HPE, which has traditionally relied on face-to-face learner interaction, in the form of skills laboratories, simulation training and industry-based clinical placements. The transition to online-only course delivery has brought with it a need to address particular issues regarding the construction and delivery of quality curricula and education activities. It is in this context that regional, rural and remote health professionals and academics can provide invaluable insights into the use of technology to overcome the tyranny of distance, promote high-quality online HPE and enable the ongoing development of communities of practice. This article is the first in a series addressing the risks and opportunities in the current transition to online HPE, providing practical solutions for educators who are now unable to embrace more traditional face-to-face HPE delivery methods and activities.

### Guides to online conferencing software

- [Microsoft teams video training](#)
- [Zoom Rooms User Guide](#)
- [Skype for business help and learning](#)
- [Cisco webex end user guides](#)
- [Slack getting started](#)
- [Microsoft Teams vs. Zoom comparison: which is right for you?](#) Uctoday
- [Comparing Zoom, Microsoft Teams and Google Meet](#) Fourcast
- [Best video conferencing software for business in 2020: Microsoft Teams and more Zoom alternatives](#) ZDNet

## Appendix

### Sources and Databases Searched

Google, NHS Evidence, the Open University, Coursera and FutureLearn were searched. Healthcare Databases Advanced Search (HDAS) was used to search the following databases: Medline; HMIC; CINAHL; Embase and PsycINFO. Google Scholar was used to citation match and find further relevant papers.

### Search Strategies

Key words included: “online learning”; “virtual classroom\*”; “smart learning”; “flipped classroom”; Zoom; webex; Team\*; Skype; “distance learning”; “blended learning”; “virtual learning”

For a full list of terms searched see the strategies embedded below.

**Google** (["online learning" OR "virtual classroom" OR "smart learning" OR "flipped classroom" OR "distance learning"](#)) AND ([coronavirus OR "covid-19"](#)) 18/6/20

### HDAS



266.%20HDAS%20Strategy%20Online%20a

Searching the literature retrieved the information provided. We recommend checking the relevance and critically appraising the information contained within when applying to your own decisions, as we cannot accept responsibility for actions taken based on it. Every effort has been made to ensure that the information supplied is accurate, current and complete, however for various reasons it may not represent the entire body of information available.

## **\*Help accessing articles or papers**

Where a report/ journal article or resource is freely available the link or PDF has been provided. If an NHS OpenAthens account is required this has been indicated. If you do not have an OpenAthens account you can [self-register here](#). If you need help accessing an article, or have any other questions, contact the Knowledge Management team for support (see below).

## **HEE Knowledge Management team contact details**

You can contact the HEE Knowledge Management team on [KnowledgeManagement@hee.nhs.uk](mailto:KnowledgeManagement@hee.nhs.uk)