

School of Chemistry

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Preparing for Online Teaching for S1 (& maybe S2!?) AY2020/21

Summary

Recommended Teaching Models:

1. Pre-record material + scheduled face-to-face/online contact
2. In-class lecturing, with streaming & recording

Technologies:

Canvas for module administration
Panopto for recording – at desk or in-class
Microsoft Teams for synchronous meetings

General Recommendations:

Record everything
Communicate continuously
Assess continuously
Encourage continuous feedback
Consider using existing online resources

Miscellaneous

Prioritise lecturing (scheduled contact) timetable
Promote consistency in lecturing models across courses
Consider intellectual property rights and copyright

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Undergraduate chemistry teaching in Semester 1 of AY2021 will be mostly or entirely online. Teaching staff will therefore need to revise their delivery methods (as well as assessments & possibly content) to pivot successfully to online teaching delivery. Success is taken to mean:

- (1) students learning is as good online as that from in-person teaching;
- (2) students remain engaged with their studies and feel a meaningful part of their class cohort;
- (3) that the time and effort required to adapt their material is manageable for teaching staff.

This document aims to set out principles, make clear recommendations, & identify a selection of teaching approaches & tools for staff to consider when preparing & delivering their teaching online. The principles identified below are adapted from a range of sources & informed by feedback from surveys of our students in S2. Some resources & links are listed at the end of the document.

Principles to apply in pivoting to online teaching

1. Communicate, Communicate, Communicate!

It is vital to clearly communicate your expectations about student work and engagement. This includes information about when students should have viewed lecture content, how often they should participate in synchronous events, and how much time they should spend on asynchronous activities. Setting these expectations will help establish a learning structure and routine. Teaching staff should also indicate when they are available to students and how long they will take to respond to email queries. Expectations about the tone and style of communication should be made clear at the start of the semester. Other supports such as peer discussion forums should also be pointed out.

2. Deliver teaching synchronously AND asynchronously

Teaching should be undertaken at timetabled hours (i.e., synchronously) but should be recorded (see below) for asynchronous learning. The lecture timetable provides an important learning structure for students, helping them organize their day, interact with classmates, and stay motivated and engaged with their work. Without peer interactions and support, many students will struggle to have the discipline needed to attend all lectures.

3. Record all lectures and teaching sessions

Lecture material needs to be available online (i.e., asynchronously) for students who have missed lectures. This could occur, for instance, if practicals overlap with some lecture periods, as well as for illness and other personal circumstances. In S2, many students indicated that they appreciated and needed having such materials available afterwards; conversely, students criticised the absence of recorded material when this occurred.

4. Break teaching content into short sections

Paying attentively over an hour-long online lecture is hard for most people. Best practice for online teaching is therefore to break teaching delivery into short segments of 5 to 20 min of coherent content. This content delivery can be interspersed with active and interactive work to retain student interest and foster learning.

5. Focus on student engagement

For both their education and their well-being, students need to engage regularly with their course and their peers. Their engagement can be evaluated based on learning analytics in Canvas to assess whether students are attending teaching sessions and whether they are communicating with classmates. Teaching staff should use these learning analytics to monitor student participation and encourage greater engagement, if necessary.

6. Design appropriate assessments

Online assessment will essentially be open-book. The focus of assessment should therefore not be on recall of facts; instead, more emphasis should be placed on student comprehension and evaluation. For MCQs, options such as questions with multiple correct options and question order randomisation should be considered. Guidance on marking criteria should be made clear at the outset of the semester.

7. Make resources available, accessible, and signposted

Module materials and resources should be clearly organised on Canvas. This is especially important for incoming students who are not familiar with Canvas. Students will also need to be informed about which platforms will be used for communication and content. Guidance on how to use these resources may be needed to maintain student engagement.

8. Review the use and format of recorded content

Online material should be reviewed before use to ensure that it translates properly online and that sound and video quality are acceptable. To help develop and maintain community, short introductory videos are a helpful means for lecturers to introduce themselves directly to their students. Moreover, Nordmann et al. advise that the instructor is visible in recorded content. Preparing material for a pivot to online learning will take significant effort, but the quality of videos for a temporary pivot need not match that of a fully online programme. Effort is better spent focusing on building community and student engagement than on optimising video quality.

9. Foster a classroom community

Students will miss interactions with each other and with the teaching staff. These cannot be fully reproduced online and working online will also be an isolating experience for many students. However, steps can be taken to create and foster an online learning community that will help students at this time. The online learning community can be fostered by simple techniques like welcome videos and question and answer sessions. Increased communication will also be necessary, especially at the beginning of term, even if little new information is being conveyed.

10. Recognise that pastoral support may be necessary

While most students will manage to adapt to the online environment, teaching staff need to be mindful that some students face challenging circumstances. These could include technology and poor internet access, stressful family situations, an unsuitable working environment, and the need for greater self-discipline. Teaching staff should be aware that students will need their support and understanding at this time.

Teaching Models

Based on discussions within TLSE and academic units, two main teaching models have emerged:

1. Record the lecture material and upload to Canvas, preferably before the relevant scheduled meeting; augment this with scheduled tutorial-style meetings either face-to-face or online.
2. Deliver the lecture in class, possibly to a subgroup of students, while streaming to others and recording for those who cannot do either option.

Variations of the above are possible to rebalance the in-class vs face-to-face contact. The majority of the TLSE recommend the recorded-material model of teaching, while recognising that in-class lecturing is feasible under some circumstances – for example with small class sizes.

The TLSE would recommend that all material, including live lecture presentation, be recorded (e.g. using Panopto); while this may not be universally welcomed by staff, it may be a necessity for students during the COVID-19 period.

Model Considerations:

- Both models can, to varying extents, support the blended learning approach being advocated within UCC: the live-lecture model, where feasible, is more aligned to traditional teaching and maximises the students' on-campus experience; recorded lectures will be necessary in many cases, e.g. where class sizes are large. Advantages and drawbacks of each approach are presented on page 7.
- The recorded lecture model can be achieved with a simple technology set. It should not require a steep learning curve. What it does require is a rethink of how material is taught.
- In light of the shortened assessment period in January, consider increasing CA or some alternative assessment strategies.

Recommendations

- Teach remotely from your work or home office. Teaching in a lecture hall is to be discouraged for several reasons. Using lecture halls increases disease transmission risks through greater physical contact with students, shared audio-visual equipment, and room ventilation. Lecture room capacity and social distancing will likely exclude some students from attending and give local students an advantage over classmates from further afield. It is also prudent to plan teaching delivery knowing that further closures are possible. Lastly, long sessions in a lecture hall will be tedious and a poor learning experience for students.
- Deliver content as short sections of pre-recorded video (5-20 min). You probably do this anyway with natural built in breaks. This will ensure better content and avoid most issues around internet bandwidth for both lecturers and students. The following are possible options for delivering teaching content:
 - RECOMMENDED - Panopto via Canvas
 - Embedded audio/video: - last resort; it's not great as you cannot easily pause
 - Other options 1) Video of handwritten presentation using a doc-cam/mobile or 2) use someone to video you with a mobile phone if you have to use a board.
 - Keep content and delivery to a maximum of 50 mins for a given online teaching session. It is important to give students a short break and be ready for the next lecture.
- Make teaching content available well before the normal start time of the lecture. The material should always be continuously available to students afterwards. Sharing lectures like this will help pace student learning and bring together much of the class at the same time, which in turn will help create a learning community.
- Incorporate active and interactive elements between sections of content delivery. Including a range of active elements and interactive elements in each teaching session will help sustain student engagement, keep students motivated and interested, and help foster a learning community in each module. These elements could include:
 - Individual problem solving — use worked examples but do not forget to make answers available at end (and keep available for students).
 - Canvas Quizzes (mostly likely used as CA weekly *via* Canvas)
 - Q & A — using Teams or discussion boards — this could utilize the new breakout rooms that Teams is getting over the summer.
 - Polls to test understanding (use Kahoot www.kahoot.com *via* Canvas or Mentimeter www.mentimeter.com *via* PowerPoint in Canvas)
 - Chemical Drawing type LTI's are feasible — more on this as it evolves.
 - Discussion boards are an option but are very static and don't encourage true engagement.
 - Group work (big groups/small groups) —as per Q&A above.
- Try to incorporate group work in the class in addition to questions for students to work on individually.
- Set a clear communication policy to let students know how to contact you and when to expect a reply. For example, aim to respond 2 working days. Module coordinators should liaise with module teaching staff and year coordinators to prepare a student workload document. It is important that the students' workload is as balanced as possible and that staff avoid excessive assessment or directed study.
A workload spreadsheet will be developed and shared.

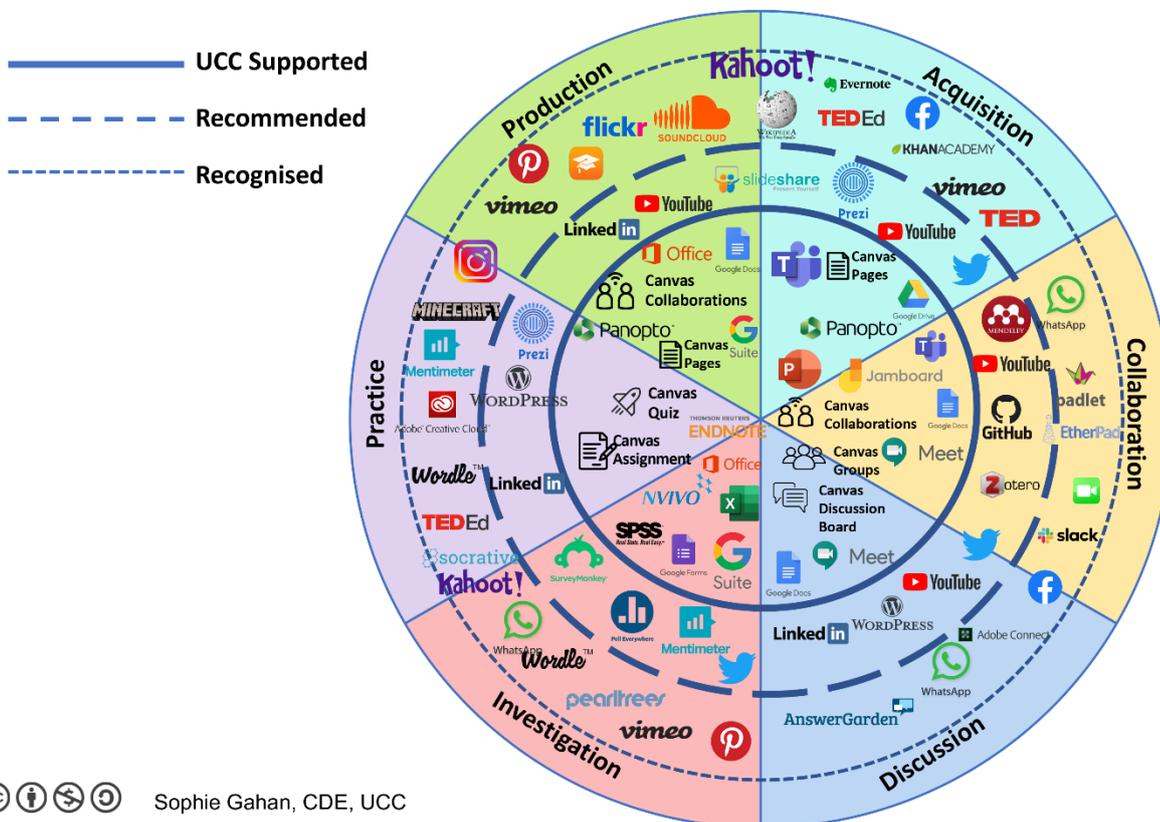
- Set aside enough time to adapt your current teaching material to produce an effective, online learning environment
- Do not be reluctant to engage with online teaching – this reluctance is easily conveyed to students, who might perceive themselves to be receiving a second-class experience. It need not be so. Much of the instructional content on MOOCs and on YouTube is excellent. We can aspire to something better and create a positive learning experience for students.

School level considerations

Create a short (~3 min) welcome video by the Head of School. Explanation of situation. Set clear expectations for students.

- Set clear communication policy guidelines for the School, Course, and Module to let students know how to contact who they need to and when to expect a reply e.g. aim to respond within 2 working days.
- Create a short welcome video from the module coordinator (and possibly other teaching staff at the start of their teaching).

Summary of online teaching tools



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Recorded Lecture Delivery	Live Lecture Delivery
<p>Strengths:</p> <ul style="list-style-type: none"> ○ Allows for innovative ways of course delivery ○ Resilient to COVID issues for University, staff & students ○ Suitable for all class sizes ○ Easy revision for students 	<p>Strengths:</p> <ul style="list-style-type: none"> ○ Easy transition: it is what staff and students are used to; materials already developed ○ Maximises staff-student interaction
<p>Weaknesses:</p> <ul style="list-style-type: none"> ○ Learning Curve – especially for staff who will need to revise material, make recordings, etc. 	<p>Weaknesses:</p> <ul style="list-style-type: none"> ○ Need Plan B, in the event of interruption of service ○ Need to consider impact of regulations, e.g. wearing of face masks and responsibility for same ○ Not suitable for large classes ○ Streamin reliant on technology, broadband, etc. ○ ITS/AVMS have made it clear that, with bare-bones budgets, equipment failure may not be quickly rectified
<p>Do:</p> <ul style="list-style-type: none"> ○ Keep recordings short and topic-specific ○ Keep it simple: choose a sufficient technology set, say Microsoft Teams & Panopto (unless you are tech-inclined, in which case ...) ○ Consider prior query submission, FAQs, etc in advance of online conferences ○ Consider engaging moderators to assist in remote query answering 	<p>Do:</p> <ul style="list-style-type: none"> ○ Adapt lecturing style: remain in range of camera and microphone; use document camera (if available) instead of whiteboard; repeat questions from students before answering ○ Consider engaging moderators to assist in remote query answering
<p>Don't:</p> <ul style="list-style-type: none"> ○ Assume that recorded material must be augmented with full lecture schedule 	<p>Don't:</p> <ul style="list-style-type: none"> ○ Assume that remote users will have the same experience as in-class
<p>Technology Requirements:</p> <ul style="list-style-type: none"> ○ Panopto (on PC/Mac) for recording; Canvas for distribution; Teams for conferences ○ Document Camera useful ○ Quality microphone useful 	<p>Technology Requirements:</p> <ul style="list-style-type: none"> ○ In-class Panopto for recording; Panopto for editing; Canvas for distribution; Teams for conferences ○ Document Camera [if available]

Resources and further reading

Centre for Digital Education

- CDE –offer a full consultation service for individual staff or departments - <https://www.ucc.ie/en/digital-ed/services-we-offer/>. Staff connect with the CDE and can ask questions about everything and anything relating to digital education.
- CDE – Teach Digi programme –now hold weekly videos and webinars - <https://www.ucc.ie/en/digital-ed/digital-education/teachdigi/> - this is the response as part of the IUA Enhancing Digital Teaching and Learning project, led by Clíodhna O'Callaghan.
- CDE – full Canvas training sessions have been ongoing since Feb 2019 and continue over the summer - <https://www.ucc.ie/en/digital-ed/services-we-offer/training/> - will also be working with AVMS on Panopto and IT Services on Teams training
- CDE - <https://www.ucc.ie/en/media/support/ovptl/keepsteaching/VideoRecordingTips-Thelen.pdf> provides some brief advice on lecture recording
- CDE - Teaching with Canvas online course - <https://ucc.instructure.com/courses/2054>
- CDE – Resources page on everything from Canvas to Panopto to Google forms to Slack, etc - <https://www.ucc.ie/en/digital-ed/resources,-technology-enhanced-learning/>
- CDE - In terms of Panopto, There has been a step-by-step guide on https://ucc.instructure.com/courses/2054/pages/5-dot-8-panopto-and-video-recording?module_item_id=67263 since last July. (The CDE will update this entire course as the summer progresses and we get feedback from staff through Teach Digi, the Learning Design workshops and the Canvas training sessions.)
- Do not forget UCC has an excellent Tier 1 Canvas support package – 24/7 Canvas support for all staff and students.

CIRTL

- CIRTL – Learning Design workshops – 90 minute collaborative workshop to support curriculum and learning design. These are offered weekly and also in response to programme level or team requests: <https://www.ucc.ie/en/cirtl/resourcesforstaff/learningdesign/>
- CIRTL – Weekly workshops on “Visualising Thinking” which showcases teaching approaches and tools to foster creative collaboration online <https://www.ucc.ie/en/cirtl/resourcesforstaff/>
- CIRTL – Digital Tools Wheel which outlines the digital tools supported by UCC, recommended tools and recognised tools. <https://www.ucc.ie/en/cirtl/resourcesforstaff/shortguides/shortguide1startingwell/>
- CIRTL – Weekly Short guides on Learning Enhancement <https://www.ucc.ie/en/cirtl/resourcesforstaff/shortguides/>

IT Services

- IT Services - Video collaboration – there is a really nice page hosted by IT Services on <https://www.ucc.ie/en/avms/video-collab/> that shows people how to perform different tasks with Teams, Panopto, Google Meet, Vidyo.
- [ITS Teaching and Working remotely \(tools\)](#): Microsoft Office 365, Google Suite for Education, and everything else. A great resource for those who want to review and learn about all of the tools we have available in UCC.
- IT Services - AVMS has been circulating all of the Panopto supports for the last few weeks - <https://www.ucc.ie/en/avms/lecturecapture/>. And there is the full suite of Panopto videos on <https://howtovideos.hosted.panopto.com/Panopto/Pages/Sessions/List.aspx#folderID=%221fcb4376-c65b-49f6-b051-a89b01793494%22>

AVMS

- AVMS – embedding Panopto recordings in Canvas
https://ucc.instructure.com/courses/2054/pages/5-dot-8-panopto-and-video-recording?module_item_id=67263
- AVMS – the 8 minute guide to Panopto:
<https://ucc.cloud.panopto.eu/Panopto/Pages/Viewer.aspx?id=510df7e0-de23-498a-8446-ab490012fd4d>

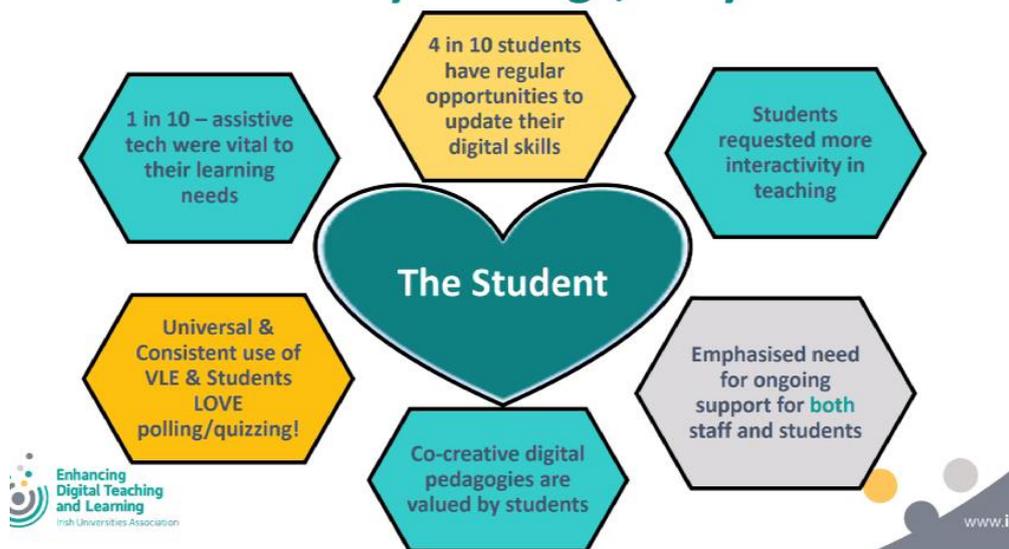
Pedagogical Background

Training Courses: Pivoting to Online Teaching: Research and Practitioner Perspectives
<https://www.edx.org/course/pivoting-to-online-teaching-research-and-practitioner-perspectives>

Nordmann, E., Horlin, C., Hutchison, J., Murray, J., Robson, L., Seery, M., & MacKay, J. R. D., Dr. (2020, April 27). 10 simple rules for supporting a temporary online pivot in higher education. <https://doi.org/10.31234/osf.io/qdh25>

Steinberg, L., “Expecting Students to Play It Safe if Colleges Reopen Is a Fantasy”, New York Times, 15 June 2020. <https://www.nytimes.com/2020/06/15/opinion/coronavirus-college-safe.html?referringSource=articleShare>

INDEX Survey Findings, May 2020



One slide summary: Turner K.L.; Hughes, M.; Presland K. Learning loss, a potential challenge for transition to undergraduate study following COVID19 school disruption. *J. Chem. Educ.* 2020, ASAP



Forgetting is a natural process, time since learning occurred is important.



Motivation is enhanced by end goals (especially exams).



Learning loss over the summer is well documented in school populations.



Summer learning loss greater for mathematical areas of subjects.



7/10 teachers feel 2020 entrants will have SK deficiencies compared to previous cohorts.



Teachers feel this is due to exam cancellations and lack of engagement since school closure



Teachers highlight organic transformations as likely to be most affected, followed by core P chem



Holistic approach to intervention, additional formative assessment, small group teaching & resources.

