

Don't Panic: The Hitch-hiker's Guide to Online Teaching



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Feel free to use any of the content in the guide with my permission. There's a Microsoft Word version of the document here: <http://www.damiantgordon.com/Guide-2.docx>
Any suggestions or comments are most welcome, email me Damian.X.Gordon@TUDublin

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INTRODUCTION

This guide is designed to help people move onto on-line teaching and learning, in light of the ongoing COVID-19 virus situation. Many thanks to Svetlana Hensman and Diarmuid O'Callaghan for their suggestions and advice on putting together this guide. This is a companion document for the *Hitch-hiker's Guide to Online Assessment*: <http://www.damiantgordon.com/Guide.pdf>. The lesson plans from this guide can also be found here: <http://www.damiantgordon.com/Guide2.pdf>

Setting the Scene

One of the many challenges of this pandemic has been having to teach from home, and to find a way of delivering these lectures in as professional a way as possible. Over the past few months I've spoken to lectures who have taught in their attics, their basements, their bathrooms, their closets, and probably the best idea I've heard, in their cars. Finding a quiet space isn't always possible, but having a microphone that has an on/off switch gives you more control over what the students have to hear. So I use a LEDLUX VH500S Headset, so I have a mute button easily accessible, and I like the idea of have only one earpiece so that I can hear things in my environment, to be able to be aware of anything that could become an issue, e.g. the dog wants to go for a walk.



If you aren't sure if you need a microphone or not, test how well your laptop microphone is working by recording about five minutes of you speaking, using something like Screencast-O-Matic¹, and if the audio gets lower and higher, or if there are small gaps of missing audio, you definitely need some type of microphone.

Something else to consider is the background behind you when you are teaching, so have a look at the view through your camera, to see what the students will see. Some software allows you to overlay a background on the image, but it depends on how much mess you have behind you. If you can, try to put all the mess behind the camera, and if not a greenscreen in the background can also cover up the mess. So you can get greenscreen material, and a stand with clamps to hang it on, but I think the circular ones that fit over the back of a chair are very neat.



By Shannon Wheeler, with cartooncollections.com



¹ <https://screencast-o-matic.com/>

Something else worth thinking about is the lighting in the room you are teaching in. Very often regular incandescent bulbs appear to give off a yellow hue on the screen, so a simple lighting solution is to get an LED lamp (sometimes called Sun Lamps or SAD Lamps), as they give off a much brighter and purer white light, and that can really make a difference.



Something else that will be obvious if you have a look at yourself in the camera will be that you will see the angle that you are appearing on the screen. Some people teach sitting on the bed, with their laptop on their laps, so the camera is point upwards, and you look like you are looking down at the screen, which can look awkward to the students. Something worth considering is a laptop stand which raises up the camera to eye level and makes the scene much more natural looking for the students. Below are a couple of examples of laptop stands:



Some laptop cameras have a poor resolution, so you might consider a webcam, which can make the view for the students a lot clearer, below are the Wansview Webcam and the Papalook Webcam, both of which give high quality images. If the webcam is detachable you can take your students for a walk around your room, and if you want to draw diagrams on a piece of paper (using a thick black marker is a good idea), you can use the webcam to allow the students to see you do this.



So what should you wear when lecturing? Probably the same as you would wear when you are normally lecturing, something a bit professional looking, and definitely not your pyjamas, and probably not clothes covered in food(!)

One final thought, if you are going to be teaching at home for several months, you need to make it as suitable as possible for you. I think it's important to consider your *Health and Safety*, try to make your teaching space as ergonomic² as possible so that you don't end up with backstrain or RSI.

² https://www.hsa.ie/eng/Workplace_Health/Manual_Handling_Display_Screen_Equipment/Guidance_Documents/Ergonomics/

Engaging Students Online

Some things that make online lectures more engaging for students:

- **Ownership:** The more that the students feel they have a stake in your module, the more engaged they will feel, so what can you do?
 - Negotiate with them – negotiate their assignments (the marking criteria, the content requirements, the format of the assignment, the deadlines), negotiate the teaching (giving them a choice in terms of one topic per semester, giving them a choice of how content is being delivered, peer-taught or self-taught)
 - Give the students opportunity for self-assessment; let them take multi-choice questions, grade their own participation, or grade their own labs or forum postings given a marking criteria, rate their own performance on different tasks.
 - If there is content that some students already know, allow them to skip those lessons, or better yet, teach those lessons
 - Allow the students to give feedback on the module on a regular basis, not just at the end of the module, but every week or two, allow them to do this anonymously, and you have time to make changes based on this feedback for this classgroup.
- **Currency:** No, I don't mean you should pay the students to be engaged, but that might work; what I mean is to create some content that is very current and up-to-date, maybe something about how data is being used in the COVID-19 crisis, or the potential impact of Brexit on IT organisations. Provide links to newspaper articles, company websites, policy documents, and opinion blogs ... make it real!
- **Diversity:** We know that different students learn best in different ways, so we can look at ways of making your content more diverse; the approaches we have mentioned already: videos, podcasts, presentations, games, documents and searching are all diverse kinds of approaches that will help address a diversity of learner needs. The types of activities you can ask them to do include tasks around; planning, designing, practicing, acquiring skills, solving problems, creating, personal growth, and teamwork.
- **Motivation:** Educators distinguish between students who are motivated by external factors; things like their parents, the desire to get a good job, getting good results (this is *extrinsic motivation*), and other students are motivated by internal factors; the desire to learn as an end unto itself, the desire for self-growth, personal enjoyment (this is *intrinsic motivation*).
 - Things that can encourage an extrinsically motivated student include rewards like Digital Badges, recognition, assignment and exam results, merit awards.
 - Things that can encourage an intrinsically motivated student include rewards like creating assignments with no marks, asking students to come up with new solutions to problems, create a vision for the class.
- **Surprises:** You don't need to tell the students everything about your module on the first day, you should keep them guessing by hoping things a few things back, if there is a topic that's going to be really fun in the middle of the semester, keep it as a surprise. If you are going to have a guest lecturer (or two) come into class (which can be easier online) this is something that the students will love, but keep it as a surprise. If you are going to do a fun activity later on in the semester, keep it as a surprise.
- **Break the Ice:** If you can create a few fake students that you can control, use them to ask the first question, or be first to volunteer for an activity. This works best with First Year students.

Encouraging Participation Online

Some things that helps students participate in an online setting:

- **Create Trust:** Create a clear set of communication guidelines; communicate early and often with the students; be supportive of the students; send messages at a consistent time, in the same format, and give good feedback; Get students to speak to each other on reasonably inconsequential topics first; explain the value of diverse perspectives; tell the students that the most important rule in your module is ... and get them to type into the chat: "be kind".
- **You are a Supermodel:** You, as the lecturer, need to model the behaviour you want to see in your students, you should share your own screen, you should show them how you put together a comment on the discussion boards, or the chat. If you are teaching programming, you should write a program live, and deliberately make some small mistakes, and when you are finished, before you compile, ask the students: "*Can you see any mistakes?*" Do this every time you show yourself coding, and then if a student is showing their screen and makes a mistake, they can say they were copying you.
- **Make it Clear:** Take the time to explain to the students *why* it is really important that they participate in online activities; you can say things like:
 - "*Any issues you are having, or questions you have, there will be at least another 50% of the rest of the class that are going through the same thing, so if you can't do it for yourself, do it for other people*" or
 - "*As your lecturer, I need to see the progress of the class, and in this online setting the only way I can do it is to see your screen, so help me out*".
- **Start Small:** Don't ask students to do anything too complex in the first week, start off but getting them to type in "Hello", "Yes" and "No" into the chat. In the following weeks get them to write a sentence in the forums that doesn't require any preparation. In the next few weeks get them to share more detailed content that requires some preparation. Finally ask them to share their screens with you.
- **New Places:** Create an additional classroom session called "The Canteen" and a forum called "The Noticeboard". "The Canteen" is their session; they can log in whenever they want to, but put a notice on the room that they can discuss any topic they want but nothing to do with the module. "The Noticeboard" is a forum where you put up all the important documents related to the module, also encourage students to ask questions about the assignments and module topics in this forum. Also, encourage the students to answer each other's questions.
- **Breakout Rooms:** Put the students in smaller groups in breakout rooms, and get them to share their screens with each other in those groups first, and then ask them to share their screens in the main classroom.
- **Recognition:** There are always very good students who are excellent contributors, encourage them by sending an email directly to them, thanking them for their input.

Universal Design: A Reminder

We've already spoken about the importance of Universal Design in the companion document "*The Hitch-hiker's Guide to Online Assessment*": <http://www.damiantgordon.com/Guide.pdf>. Creating content that is accessible to as wide a range of students as possible is an ethical and professional imperative, as well as resulting in the development of much better teaching content. I've included the key guidelines again below as an appendix, please read it.

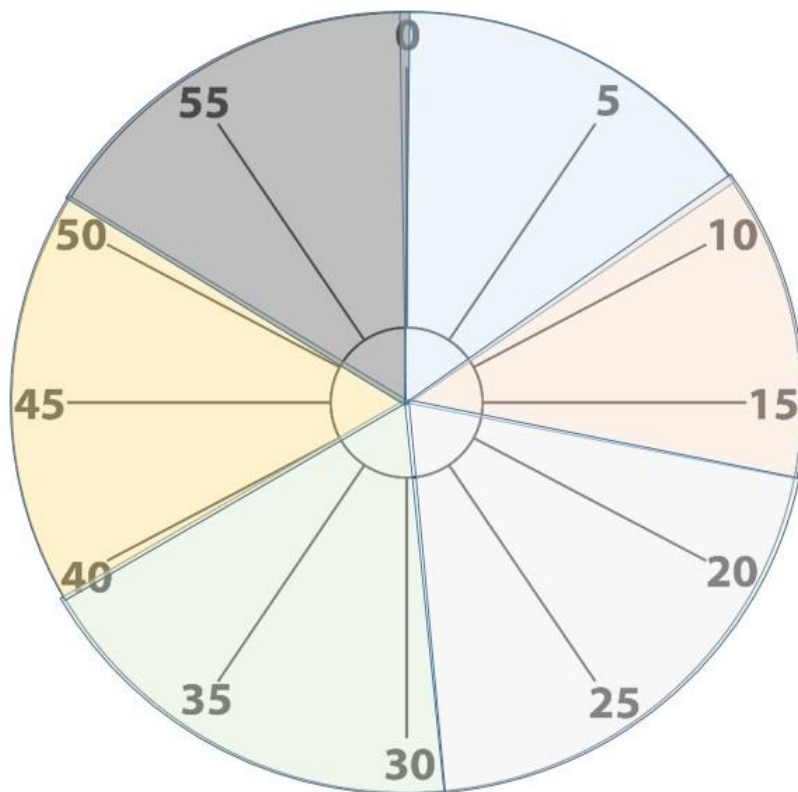
The Six Thinking Hats Technique

Edward de Bono developed a technique originally intended for meetings to have participants take six different points-of-view or interpretations of information during the meeting. The technique can be used in a range of situations as a framework for thinking, and in particular for communication tasks, to help focus on the thinking process. The Six Hats facilitates the separation of different interpretations of information at different times, e.g. separating facts from opinions, positive from negative, practical from creative. Each of the Six Hats has a colour associated with it which helps describes the function of that particular hat. The hat associated with overviews is blue like the sky. The hat associated with facts and figures is white like computer printouts. The hat associated with being positive and sunny is yellow like the sun. The hat associated with cautious and judgemental is black like judicial robes. The hat associated with creativity and growth is green like all things in nature. The hat associated with passion and personal is red like the heart. When using the 6-Hats technique in a meeting situation people spend different phases of the meeting in different modes of parallel thinking, notionally wearing different hats. Each of the six hats represents a unique way of dealing with an issue, or communication style, the hats are distinguished by colour as follows;

White Hat (Logical)	Red Hat (Emotional)
<ul style="list-style-type: none">• Separates fact from speculation• Specifies action needed to fill gaps• Assesses the relevance and accuracy of information	<ul style="list-style-type: none">• Gives permission to express feelings, hunches and intuitions• Does not require justification• Can be used to help make a decision
Black Hat (Critical)	Blue Hat (Facilitator)
<ul style="list-style-type: none">• Explores why an idea may not work• Must give logical reasons for concerns• Points out difficulties	<ul style="list-style-type: none">• The role of the facilitator• Focuses and refocuses thinking• Makes calls for decisions
Yellow Hat (Positive)	Green Hat (Creative)
<ul style="list-style-type: none">• Explores the benefits of an idea• Must give reasons why an idea is valuable or might work• Reinforces creative ideas and new directions	<ul style="list-style-type: none">• Encourages a search for new ideas• Seeks to modify and removes faults from existing ideas• Makes time for creative effort

In this way, attention can be paid to each aspect of an issue and dealt they can be dealt with separately. In the lessons presented below, different phases of the lesson are coloured based on the Six Thinking Hats.

ONE HOUR ON-LINE LECTURES



ONE HOUR ONLINE LECTURERS WITH INCREASING INTERACTIVITY

One Hour On-Line Lecture – Almost No Interaction

THEME	TIME	DESCRIPTION	Total
Introduction to Class	3 minutes	Welcome everyone, any notifications, any instructions for class, any business to tie up since last class.	3 minutes
Introduction to Topic	4 minutes	Overview, helicopter view of topic, main ideas, not too much detail, but main themes.	7 minutes
Details – Part 1	20 minutes	Facts and figures, processes and procedures, diagrams and descriptions, all the key information.	27 minutes
Break	5 minutes	<i>“We’re going to take a 5 minute break now, I going for a cup of tea. I’ll be playing some music in the interim. So we’ll see you at [CurrentTime + 5 minutes]”</i> . Put up picture of a forest, or some nature-y thing over the break.	32 minutes
Details – Part 2	20 minutes	Facts and figures, processes and procedures, diagrams and descriptions, all the key information.	52 minutes
Summary	2 minutes	“Everyone type in one word, one phrase, one idea, that they heard during the class, anything you can remember”. Lecturer reads words as they are appearing on the screen.	54 minutes
Closing	2 minutes	Final thoughts, homework, reminders	56 minutes

One Hour On-Line Lecture – A Little Interaction

THEME	TIME	DESCRIPTION	Total
Introduction to Class	3 minutes	Welcome everyone, any notifications, any instructions for class, any business to tie up since last class.	3 minutes
Introduction to Topic	4 minutes	Overview, helicopter view of topic, main ideas, not too much detail, but main themes.	7 minutes
Interaction	6 minutes	<p>“Does anyone know anything about [<i>this topic</i>]?”</p> <ul style="list-style-type: none"> • [Chat] Type “Yes” or “No” in the chat • [Voting] Vote on Question 1 <p>“Now I’ve already mentioned that everyone is going to have to speak at least once during this module, so if you answered yes, and want to say something about [<i>this topic</i>] just type “me” into the chat.</p> <p>“OK, we’ll hear from Alice, then Bob, then Claire. Alice, can you unmute your mic?”</p>	13 minutes
Details – Part 1	12 minutes	Facts and figures, processes and procedures, diagrams and descriptions, all the key information.	25 minutes
Break	5 minutes	<p><i>“We’re going to take a 5 minute break now, I going for a cup of tea. I’ll be playing some music in the interim. So we’ll see you at [CurrentTime + 5 minutes]”.</i></p> <p>Put up picture of a forest, or some nature-y thing over the break.</p>	30 minutes
Details – Part 2	12 minutes	Facts and figures, processes and procedures, diagrams and descriptions, all the key information.	42 minutes
Interaction	2 minutes	Take a vote or use the chat for something else.	44 minutes
Benefits	3 minutes	Advantages, boons, reasons why this is a good thing, and worth discussing.	47 minutes
Shortcomings	3 minutes	Disadvantages, banes, why it isn’t always a good thing, and what the critics say.	50 minutes
My View	3 minutes	You, as lecturer, bring in your experience, your perspective, your view on things. What you like or don’t like about the topic	53 minutes
Summary	2 minutes	“Everyone type in one word, one phrase, one idea, that they heard during the class, anything you can remember”. Lecturer reads words as they are appearing on the screen.	55 minutes
Closing	2 minutes	Final thoughts, homework, reminders	57 minutes

One Hour On-Line Lecture – Some Interaction

THEME	TIME	DESCRIPTION	Total
Introduction to Class	3 minutes	Welcome everyone, any notifications, any instructions for class, any business to tie up since last class.	3 minutes
Introduction to Topic	4 minutes	Overview, helicopter view of topic, main ideas, not too much detail, but main themes.	7 minutes
Interaction	6 minutes	<p>“Does anyone know anything about [<i>this topic</i>]?”</p> <ul style="list-style-type: none"> • [Chat] Type “Yes” or “No” in the chat • [Voting] Vote on Question 1 <p>“Now I’ve already mentioned that everyone is going to have to speak at least once during this module, so if you answered yes, and want to say something about [<i>this topic</i>] just type “me” into the chat.</p> <p>“OK, we’ll hear from Alice, then Bob, then Claire. Alice, can you unmute your mic?”</p>	13 minutes
Details – Part 1	12 minutes	Facts and figures, processes and procedures, diagrams and descriptions, all the key information.	25 minutes
Break	5 minutes	<p><i>“We’re going to take a 5 minute break now, I going for a cup of tea. I’ll be playing some music in the interim. So we’ll see you at [CurrentTime + 5 minutes]”.</i></p> <p>Put up picture of a forest, or some nature-y thing over the break.</p>	30 minutes
Interaction	10 minutes	Show a video, or give the students a search task, or ask them to listen to a quick podcast, or to run a simulation.	40 minutes
Interaction	4 minutes	[Chat] Get students to post a three sentence summary of their findings.	44 minutes
Benefits	3 minutes	Advantages, boons, reasons why this is a good thing, and worth discussing.	47 minutes
Shortcomings	3 minutes	Disadvantages, banes, why it isn’t always a good thing, and what the critics say.	50 minutes
My View	3 minutes	You, as lecturer, bring in your experience, your perspective, your view on things. What you like or don’t like about the topic	53 minutes
Summary	2 minutes	“Everyone type in one word, one phrase, one idea, that they heard during the class, anything you can remember”. Lecturer reads words as they are appearing on the screen.	55 minutes
Closing	2 minutes	Final thoughts, homework, reminders	57 minutes

One Hour On-Line Lecture – Loads of Interaction

THEME	TIME	DESCRIPTION	Total
Introduction to Class	3 minutes	Welcome everyone, any notifications, any instructions for class, any business to tie up since last class.	3 minutes
Introduction to Topic	4 minutes	Overview, helicopter view of topic, main ideas, not too much detail, but main themes.	7 minutes
Interaction	6 minutes	<p>“Does anyone know anything about [<i>this topic</i>]?”</p> <ul style="list-style-type: none"> • [Chat] Type “Yes” or “No” in the chat • [Voting] Vote on Question 1 <p>“Now I’ve already mentioned that everyone is going to have to speak at least once during this module, so if you answered yes, and want to say something about [<i>this topic</i>] just type “me” into the chat.</p> <p>“OK, we’ll hear from Alice, then Bob, then Claire. Alice, can you unmute your mic?”</p>	13 minutes
Interaction	7 minutes	Show the students a video.	20 minutes
Interaction	6 minutes	Give the students the students a task to follow-up on the video, maybe a searching task.	26 minutes
Interaction	4 minutes	[Chat] Get students to post a three sentence summary of their findings.	30 minutes
Break	5 minutes	<p><i>“We’re going to take a 5 minute break now, I going for a cup of tea. I’ll be playing some music in the interim. So we’ll see you at [CurrentTime + 5 minutes]”.</i></p> <p>Put up picture of a forest, or some nature-y thing over the break.</p>	35 minutes
Details	10 minutes	Facts and figures, processes and procedures, diagrams and descriptions, all the key information.	45 minutes
Benefits	3 minutes	Advantages, boons, reasons why this is a good thing, and worth discussing.	48 minutes
Shortcomings	3 minutes	Disadvantages, banes, why it isn’t always a good thing, and what the critics say.	51 minutes
My View	3 minutes	You, as lecturer, bring in your experience, your perspective, your view on things. What you like or don’t like about the topic	54 minutes
Summary	2 minutes	“Everyone type in one word, one phrase, one idea, that they heard during the class, anything you can remember”. Lecturer reads words as they are appearing on the screen.	56 minutes
Closing	2 minutes	Final thoughts, homework, reminders	58 minutes

One Hour On-Line Lecture – Almost Full Interaction

THEME	TIME	DESCRIPTION	Total
Introduction to Class	3 minutes	Welcome everyone, any notifications, any instructions for class, any business to tie up since last class.	3 minutes
Introduction to Topic	4 minutes	Overview, helicopter view of topic, main ideas, not too much detail, but main themes.	7 minutes
Interaction	6 minutes	<p>“Does anyone know anything about [<i>this topic</i>]?”</p> <ul style="list-style-type: none"> • [Chat] Type “Yes” or “No” in the chat • [Voting] Vote on Question 1 <p>“Now I’ve already mentioned that everyone is going to have to speak at least once during this module, so if you answered yes, and want to say something about [<i>this topic</i>] just type “me” into the chat.</p> <p>“OK, we’ll hear from Alice, then Bob, then Claire. Alice, can you unmute your mic?”</p>	13 minutes
Interaction	7 minutes	Show the students a video.	20 minutes
Interaction	6 minutes	Give the students the students a task to follow-up on the video, maybe a searching task.	26 minutes
Interaction	4 minutes	[Chat] Get students to post a three sentence summary of their findings.	30 minutes
Break	5 minutes	<p><i>“We’re going to take a 5 minute break now, I going for a cup of tea. I’ll be playing some music in the interim. So we’ll see you at [CurrentTime + 5 minutes]”.</i></p> <p>Put up picture of a forest, or some nature-y thing over the break.</p>	35 minutes
Interaction	15 minutes	Pick three or four students to share their findings with the class.	50 minutes
My View	5 minutes	Outline advantages and disadvantages, then you, as lecturer, bring in your experience, your perspective, your view on things. What you like or don’t like about the topic	55 minutes
Summary	2 minutes	“Everyone type in one word, one phrase, one idea, that they heard during the class, anything you can remember”. Lecturer reads words as they are appearing on the screen.	57 minutes
Closing	2 minutes	Final thoughts, homework, reminders	59 minutes

ONE HOUR ONLINE LECTURERS WITH INCREASING CREATIVITY

One Hour On-Line Lecture – Almost No Creativity

THEME	TIME	DESCRIPTION	Total
Introduction to Class	3 minutes	Welcome everyone, any notifications, any instructions for class, any business to tie up since last class.	3 minutes
Introduction to Topic	4 minutes	Overview, helicopter view of topic, main ideas, not too much detail, but main themes.	7 minutes
Details – Part 1	20 minutes	Facts and figures, processes and procedures, diagrams and descriptions, all the key information.	27 minutes
Break	5 minutes	<i>“We’re going to take a 5 minute break now, I going for a cup of tea. I’ll be playing some music in the interim. So we’ll see you at [CurrentTime + 5 minutes]”</i> . Put up picture of a forest, or some nature-y thing over the break.	32 minutes
Details – Part 2	20 minutes	Facts and figures, processes and procedures, diagrams and descriptions, all the key information.	52 minutes
Key Points	2 minutes	<i>“Everyone write down three words that represent what you think the three key points of the lesson was, email them to me and I’ll put them all together in a Word Cloud for next week.”</i>	54 minutes
Summary	2 minutes	A quick summary of the topics	56 minutes
Closing	2 minutes	Final thoughts, homework, reminders	58 minutes

One Hour On-Line Lecture – A Little Creativity

THEME	TIME	DESCRIPTION	Total
Introduction to Class	3 minutes	Welcome everyone, any notifications, any instructions for class, any business to tie up since last class.	3 minutes
Introduction to Topic	4 minutes	Overview, helicopter view of topic, main ideas, not too much detail, but main themes.	7 minutes
Details – Part 1	10 minutes	Facts and figures, processes and procedures, diagrams and descriptions, all the key information.	17 minutes
Simulator	10 minutes	Spend some time playing with a simulator, or completing a crossword, or drawing a picture.	27 minutes
Break	5 minutes	<i>"We're going to take a 5 minute break now, I going for a cup of tea. I'll be playing some music in the interim. So we'll see you at [CurrentTime + 5 minutes]".</i> Put up picture of a forest, or some nature-y thing over the break.	32 minutes
Details – Part 2	20 minutes	Facts and figures, processes and procedures, diagrams and descriptions, all the key information.	52 minutes
Key Points	2 minutes	<i>"Everyone write down three words that represent what you think the three key points of the lesson was, email them to me and I'll put them all together in a Word Cloud for next week."</i>	54 minutes
Summary	2 minutes	A quick summary of the topics	56 minutes
Closing	2 minutes	Final thoughts, homework, reminders	58 minutes

One Hour On-Line Lecture – Some Creativity			
THEME	TIME	DESCRIPTION	Total
Introduction to Class	3 minutes	Welcome everyone, any notifications, any instructions for class, any business to tie up since last class.	3 minutes
Introduction to Topic	4 minutes	Overview, helicopter view of topic, main ideas, not too much detail, but main themes.	7 minutes
Details – Part 1	10 minutes	Facts and figures, processes and procedures, diagrams and descriptions, all the key information.	17 minutes
Simulator	10 minutes	Spend some time playing with a simulator, or completing a crossword, or drawing a picture.	27 minutes
Break	5 minutes	<i>“We’re going to take a 5 minute break now, I going for a cup of tea. I’ll be playing some music in the interim. So we’ll see you at [CurrentTime + 5 minutes]”</i> . Put up picture of a forest, or some nature-y thing over the break.	32 minutes
Video	8 minutes	Watch a fun, interesting video relevant to the topic.	40 minutes
Activity	5 minutes	Get the students to draw a diagram to represent their key takeaways from the video; it could be an abstract image, a concept map, a MindMap, a chart, or an infographic.	45 minutes
Benefits	3 minutes	Advantages, boons, reasons why this is a good thing, and worth discussing.	48 minutes
Shortcomings	3 minutes	Disadvantages, banes, why it isn’t always a good thing, and what the critics say.	51 minutes
My View	3 minutes	You, as lecturer, bring in your experience, your perspective, your view on things. What you like or don’t like about the topic	54 minutes
Summary	2 minutes	A quick summary of the topics	56 minutes
Closing	2 minutes	Final thoughts, homework, reminders	58 minutes

One Hour On-Line Lecture – Loads of Creativity

THEME	TIME	DESCRIPTION	Total
Introduction to Class	3 minutes	Welcome everyone, any notifications, any instructions for class, any business to tie up since last class.	3 minutes
Introduction to Topic	4 minutes	Introduce the topic using a Word Cloud, a MinMap, a Prezi, or an infographic.	7 minutes
Details – Part 1	10 minutes	Facts and figures, processes and procedures, diagrams and descriptions, all the key information.	17 minutes
Simulator	10 minutes	Spend some time playing with a simulator, or completing a crossword, or drawing a picture.	27 minutes
Break	5 minutes	<i>“We’re going to take a 5 minute break now, I going for a cup of tea. I’ll be playing some music in the interim. So we’ll see you at [CurrentTime + 5 minutes]”</i> . Put up picture of a forest, or some nature-y thing over the break.	32 minutes
Video	8 minutes	Watch a fun, interesting video relevant to the topic.	40 minutes
Activity	5 minutes	Get the students to draw a diagram to represent their key takeaways from the video; it could be an abstract image, a concept map, a MindMap, a chart, or an infographic.	45 minutes
Benefits	3 minutes	Advantages, boons, reasons why this is a good thing, and worth discussing.	48 minutes
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My View	3 minutes	You, as lecturer, bring in your experience, your perspective, your view on things. What you like or don’t like about the topic	54 minutes
Summary	2 minutes	A quick summary of the topics	56 minutes
Closing	2 minutes	Final thoughts, homework, reminders	58 minutes

One Hour On-Line Lecture – Almost Full Creativity

THEME	TIME	DESCRIPTION	Total
Introduction to Class	3 minutes	Welcome everyone, any notifications, any instructions for class, any business to tie up since last class.	3 minutes
Introduction to Topic	4 minutes	Introduce the topic using a Word Cloud, a MinMap, a Prezi, or an infographic.	7 minutes
Guest Lecturer	20 minutes	Surprise the students with a guest lecturer to come into chat for 20 minutes about the topic.	27 minutes
Break	5 minutes	<i>"We're going to take a 5 minute break now, I going for a cup of tea. I'll be playing some music in the interim. So we'll see you at [CurrentTime + 5 minutes]"</i> . Put up picture of a forest, or some nature-y thing over the break.	32 minutes
Video	8 minutes	Watch a fun, interesting video relevant to the topic.	40 minutes
Activity	5 minutes	Get the students to draw a diagram to represent their key takeaways from the video; it could be an abstract image, a concept map, a MindMap, a chart, or an infographic.	45 minutes
Benefits	3 minutes	Advantages, boons, reasons why this is a good thing, and worth discussing.	48 minutes
Shortcomings	3 minutes	Disadvantages, banes, why it isn't always a good thing, and what the critics say.	51 minutes
My View	3 minutes	You, as lecturer, bring in your experience, your perspective, your view on things. What you like or don't like about the topic	54 minutes
Summary	2 minutes	A quick summary of the topics	56 minutes
Closing	2 minutes	Final thoughts, homework, reminders	58 minutes

TOP FIVE OF USEFUL ONLINE TOPICS

Great books if you're preparing for online teaching next year:

- 1) "The Distracted Mind" by Adam Gazzaley and Larry Rosen
- 2) "E-Learning: Concepts and Practice" by Bryn Holmes and John Gardner
- 3) "Multimedia for Learning" by Stephen Alessi and Stanley Trollip
- 4) "Mindset: The New Psychology of Success" by Carol Dweck
- 5) "e-Learning and the Science of Instruction" by Ruth Clark and Richard Mayer

Online classroom voting tools:

- 1) Google Forms, <https://google.com/forms/about/>
 - 2) Kahoot, <https://kahoot.com>
 - 3) Plickers, <https://get.plickers.com>
 - 4) SurveyPlanet, <https://surveyplanet.com>
 - 5) Socrative, <https://socrative.com>
- & paper <https://cseweb.ucsd.edu/~wgg/Abstracts/activeclass-cscl03.pdf>

Creating animated video tools:

- 1) Powtoon, <https://powtoon.com>
 - 2) Voki, <https://voki.com>
 - 3) DoppelMe, <http://doppelme.com>
 - 4) Animoto, <http://animoto.com>
 - 5) GoAnimate, <https://goanimate.com>
- & paper: https://sicet.org/main/wp-content/uploads/2016/11/ijttl-09-01-1_Berk.pdf

Prototyping and Wire-framing tools

- 1) Pencil Project, <http://pencil.evolus.vn>
 - 2) FluidUI, <https://fluidui.com>
 - 3) Mockingbird, <https://gomockingbird.com/mockingbird>
 - 4) Talltree, <http://wireframe.talltree.us/default.asp>
 - 5) Cacao, <https://cacao.com>
- & Paper <http://journal.kuim.edu.my/index.php/JILMI/article/viewFile/352/302>

Creative Commons sites:

- 1) Main CC site, <https://search.creativecommons.org>
 - 2) OER CC site, <https://oercommons.org>
 - 3) Wikimedia CC, https://commons.wikimedia.org/wiki/Main_Page
 - 4) Vimeo CC, <https://vimeo.com/creativecommons>
 - 5) Flickr CC, <https://flickr.com/creativecommons/>
- & Paper <http://eac150.adamnorman.com/wp-content/uploads/2011/CC/Readings/Nonfiction/Cory%20Doctorow-Content.doc>

MORE TO THINK ABOUT

Start Small: Piloting New Approaches

One of the biggest challenges of moving online is that certain activities that are done a particular way in the classroom will have to be done in a very different way in the online environment. We are all going to be teaching online in September, so if you want to start creating additional learning resources as well, start with something small (*pilot* the new resource) to explore whether or not a particular approach might be suitable for you and your students.

Starting with something small means that you won't have to spend a lot of time on this, and you won't have to develop a wide range of new skills immediately. Don't be hard on yourself, we are all in a scenario we didn't sign up for, so take it one step at a time, and don't beat yourself up for not being a super-eTeacher immediately, just take it slow and steady, there will be setbacks as well as successes.

As an educator you are very busy most of the time, so it's important that these first steps are made as effortless as possible, so a five step process in implementing the pilot, and those five steps is recommended as follows:

- Step 1: Selecting a technology/technique to pilot
- Step 2: Exploring the possible ways to use the technology/technique
- Step 3: Creating a simple activity using the technology/technique
- Step 4: Testing the activity on with learners
- Step 5: Evaluating the outcome of the pilot

To get you started here are six different potential technology/technique types to get you started. There are many more potential technology/technique types, but these are the ones that will give you the most impact for the least effort. In the table below are listed an example of each technology/technique type you could use for the pilot, and how you may build upon the work you do in the pilot in the future.

Tech	For the Pilot	Other things to try
Presentations	Presentation with audio	<ul style="list-style-type: none">• Creating Infographics• Using Prezi• Accessible PowerPoint
Podcasts	Audio recording	<ul style="list-style-type: none">• Edited audio recordings• Audio with soundscapes
Videos	Video recording	<ul style="list-style-type: none">• Creating Animated videos• Editing videos• Adding quizzes to videos
Documents	PDF document	<ul style="list-style-type: none">• Interactive PDF content• Accessible PDF content
Games	Word games (e.g. a crossword or a quiz)	<ul style="list-style-type: none">• Interactive games• Gamification• Serious Games• Digital badges
Searching	Search for information	<ul style="list-style-type: none">• Searching for multimedia• Creating WebQuests

The three key considerations you should think about at this stage (to help you pick which one of the above six activities for the pilot) are:

1. **The topic being taught:** Some topics more readily lend themselves to a particular type of content, for example, podcasts might suit a language learning topic, and a presentation might be more suitable for teaching the visual arts.
2. **Your resources and skills:** Some of the content types will be easier to produce with a laptop, others may suit a mobile phone; for some you need internet access. The technology you use should be determined by what you feel comfortable doing with your skillset using technologies.
3. **Learner resources and skills:** As well as your own resources, it is worth considering what technology the learners have access to, and what their technical skills are. So do they have internet access at home (and is it quick enough)? Do they have a computer or tablet, or is the only thing they have a mobile phone with relatively small screen?

Examples of technology/technique

Tech	Description
Presentations	Adding audio to a presentation can really enhance the immersiveness of it; so you could provide a running commentary over all of the slides, or only on ones you want to place particular emphasis on (including how to pronounce specific terms), or maybe just give the presentation some background music, a soundtrack.
Podcasts	Audio recordings can be a nice change of pace for the students, they can listen to podcasts while doing other things like having mowing the garden or lying in bed. This, in turn, means they are able to pay attention for longer periods of time on the content.
Videos	Videos, that you create, or locate, can be an enjoyable way to engage students, and provides them with content that they can absorb at their own pace. Videos can illustrate the inside of the human body, the surface of Mercury, and the inside of a computer.
Documents	A glossary can be really, really useful for students when they are dealing with online content, so if you were to write down 10 words a week and provide definitions for them, you have over 100 definitions by the end of the semester.
Games	Games can be a more enjoyable way to learn about a topic, so if you want to get a student familiar with terminology associated with a topic, a wordsearch or crossword can be a nice way of doing it. A simple game of "True or False", where you make a statement and get all the students to type in "True" or "False" can also be effective.
Searching	Searches can be great fun as long as they are focused, and students are able to recognise which sites provide quality content and which ones do not. It can be useful to ask different students to search for different content and bring the answers together as a collage. Consider using a social bookmarking like StumbleUpon.

CREATING PILOT TECH

Creating a Presentation (with Audio)

Presentation software allows you to create, edit, and display text and images in the form of slides. Some presentation software also allows you to attach audio content that can be synchronised with the slides which are automatically advanced. So it's a lot like making a movie, but a lot easier to do.

What do you need?	<ul style="list-style-type: none">• A pen and paper, or a word processor• Presentation software that allows you to attach audio content (e.g. PowerPoint, Prezi, and Keynote).
What do you do?	<ul style="list-style-type: none">• Develop the presentation first.• Next develop a script, so write down the key words you need to mention about this topic, and based on these words create some sentences. Using those sentences, create a script that you can read for the audio. If you want to create a 5 minute audio, that is usually somewhere between 500 and 750 words in the script. Rehearse reading the script a few times before recording. Some of us prefer sitting down at a table when recording, others like to do it standing.• Start the presentation software running, with the recording process activated, and read the script, and step through the slides as appropriate.• If you make a mistake, just stop the recording, and take a breath and start again. If you keep making mistakes after 5 recordings, take a break, make yourself a cup of tea and come back to it later. When you are happy with the presentation, save that presentation.
Online delivery	<ul style="list-style-type: none">• If you and your learners have access to the internet, you have a lot of options to distribute it to your learners. You can share it with them using cloud storage (e.g. DropBox, Google Drive, and AWS), you can email it to them, if you have a website you can upload it there, or to a Virtual Learning Environment (e.g. Moodle, Blackboard, and Edmodo).

Creating a Podcast

A podcast is an audio file that a learner can either listen to online or download and listen to offline. Podcasts are often presented by an individual or two people, but it is also possible to produce collaborative podcasts from multiple contributors. Podcasts are like radio programs that you can listen to whenever you want.

What do you need?	<ul style="list-style-type: none">• A pen and paper, or a word processor• Something to record audio with (a mobile phone, laptop or tablet)
What do you do?	<ul style="list-style-type: none">• The first thing to do is develop a script, so write down the key words you need to mention about this topic, and based on these words create some sentences. Using those sentences, create a script that you can read for the podcast. If you want to create a 5 minutes podcast, that is usually somewhere between 500 and 750 words in the script• Rehearse reading the script a few times before recording• Some of us prefer sitting down at a table when recording, others like to do it standing• Start the recording device and read the script. Almost all mobile phones, laptops and tablets have recording software on them.• If you make a mistake, just stop the recording, and take a breath and start again. If you keep making mistakes after 5 recordings, take a break, make yourself a cup of tea and come back to it later. When you are happy with the recording, save that recording
Online delivery	<ul style="list-style-type: none">• If you and your learners have access to the internet, you have a lot of options to distribute it to your learners. You can share it with them using cloud storage (e.g. DropBox, Google Drive, and AWS), you can email it to them, if you have a website you can upload it there, or to a Virtual Learning Environment (e.g. Moodle, Blackboard, and Edmodo). You can also add it to a podcasting site (e.g. pod-O-matic, SoundCloud or audioBoom)

Creating a Video

A video recording is a recording of visual and audio information received by a camera. A wide range of fancy video recording software is available, but almost all mobile phones, laptops and tablets have basic video recording software already on them.

What do you need?	<ul style="list-style-type: none">• A pen and paper, or a word processor• Something to record video with (a mobile phone, laptop or tablet)
What do you do?	<ul style="list-style-type: none">• The first thing to do is develop a script, so write down the key words you need to mention about this topic, and based on these words create some sentences. Using those sentences, create a script that you can read for the podcast. If you want to create a 5 minutes video, that is usually somewhere between 500 and 750 words in the script• Rehearse reading the script a few times before recording• Record yourself against a blank wall with a copy of the script taped to the wall near the camera• Don't look at the camera, look through it, and imagine there is a learner right behind the camera• If you make a mistake, just stop the recording, and take a breath and start again. If you keep making mistakes after 5 recordings, take a break, make yourself a cup of tea and come back to it later. When you are happy with the recording, save that recording
Online delivery	<ul style="list-style-type: none">• If you and your learners have access to the internet, you have a lot of options to distribute it to your learners. You can share it with them using cloud storage (e.g. DropBox, Google Drive, and AWS), you can email it to them, if you have a website you can upload it there, or to a Virtual Learning Environment (e.g. Moodle, Blackboard, and Edmodo). You can also add it to a video sharing site (e.g. YouTube, Vimeo, and DailyMotion)

Creating a Document

Creating an easy-to-read document for the learners can be very helpful in terms of producing content that they can refer to during class and afterwards. In the context of the pilot we are going to focus on developing a document in PDF format.

What do you need?	<ul style="list-style-type: none">• A word processor
What do you do?	<ul style="list-style-type: none">• There are many ways to create a PDF document, one of the easiest ways in to use Microsoft Word, LibreOffice or OpenOffice Writer. Any of those will allow you to save a document as PDF.• Good educational document should always start with a glossary of terms, therefore you should consider putting a glossary at the start of your document that provides very simple explanations for all of the keywords you will be using throughout.• Leave plenty of space for the learners to write notes in your document. If you leave a wide margin to the left of each page of the document, and some blank lines at the bottom of each page, you could suggest that the learners use the Cornell Note Taking technique (https://www.timeatlas.com/cornell-note-template/). It suggests that the learners should add their own diagrams and memory aids in the left margin, and a summary of each page at the bottom of that page.• Use images where possible, because remember a picture really is worth 1000 words.• To see if your completed document is visually appealing, print out a copy of it, and hold it at arm's length, does anything jump out at you as looking cluttered?• Consider reading some of Edward Tufte's work on the visual display of information to help you create better handouts.
Online delivery	<ul style="list-style-type: none">• If you and your learners have access to the internet, you have a lot of options to distribute it to your learners. You can share it with them using cloud storage (e.g. DropBox, Google Drive, and AWS), you can email it to them, if you have a website you can upload it there, or to a Virtual Learning Environment (e.g. Moodle, Blackboard, and Edmodo).

Creating a Game

The internet allows you to both play and create a wide range of games that can be very helpful to learners. This activity is focussed on the creation of simple word games (like a crossword or Hangman) and to develop simple quizzes.

What do you need?	<ul style="list-style-type: none">• Internet access via a mobile phone, laptop or tablet
What do you do?	<ul style="list-style-type: none">• For the word games activity the first thing to do is to create a list of words relevant to your topic of study and to develop a clue for each of the words. The clues can be used in the crossword, as well as for hints in Hangman, and as questions in the quiz activity.<ul style="list-style-type: none">○ For the crossword activity, go online and locate a free crossword generator, for example, the following<ul style="list-style-type: none">▪ https://crosswordhobbyist.com▪ http://www.crauswords.com▪ http://www.eclipsecrossword.com○ For the Hangman activity, go online and locate a free Hangman generator, for example, the following<ul style="list-style-type: none">▪ https://www.hangmanwords.com/create▪ https://mylanguageexchange.com/HManBuilder.asp▪ https://www.propofs.com/games/create-game/○ For the quiz activity, go online and locate a free quiz generator, for example, the following<ul style="list-style-type: none">▪ https://hotpot.uvic.ca/wintutor6/tutorial.htm▪ https://www.quiz-maker.com▪ https://www.vocabtest.com▪ https://quizlet.com/en-gb• Once you have created the game, you will be given a web address (a URL) that you can share with your learners so that they can play.
Online delivery	<ul style="list-style-type: none">• This has to be an online activity, use the web address provided.

Creating a Search Activity

A Search Activity in this context refers to the use of an online search engine to help the learners understand. This activity focuses on information-based search tasks.

What do you need?	<ul style="list-style-type: none"> • Internet access via a mobile phone, laptop or tablet • A search engine website (e.g. Google, Bing, and Baidu)
What do you do?	<ul style="list-style-type: none"> • Develop a series of questions for the learners to teach them how to use a search engine, for example <ol style="list-style-type: none"> 1. <i>What was the first search engine online?</i> <ul style="list-style-type: none"> ▪ The Archie search engine. 2. <i>Find meaning of word “perquisition”</i> <ul style="list-style-type: none"> ▪ a thorough search 3. <i>Find a web page that contains the exact phrase: Learning Outcome</i> <ul style="list-style-type: none"> ▪ Google “Learning Outcome”. 4. <i>Find a web page that contains the word “learning” but NOT the word “teaching”.</i> <ul style="list-style-type: none"> ▪ Google learning –teaching 5. <i>What is Dihydrogen Monoxide?</i> <ul style="list-style-type: none"> ▪ It’s water 6. <i>Find out how many miles we are away for Kiltimagh, County Mayo, Ireland.</i> <ul style="list-style-type: none"> ▪ Depends on where you are 7. <i>What is a European storm petrel?</i> <ul style="list-style-type: none"> ▪ It’s a seabird 8. <i>What is the deepest part of the ocean?</i> <ul style="list-style-type: none"> ▪ It’s the Challenger Deep in the Mariana Trench 9. <i>How high is the highest mountain on Earth?</i> <ul style="list-style-type: none"> ▪ Mount Everest, 8848m 10. <i>Look for the phrase “Evaluation Criteria” in three different search engines, are the first 10 pages returned the same in all three engines?</i> <ul style="list-style-type: none"> ▪ Very unlikely
Online delivery	<ul style="list-style-type: none"> • This has to be an online activity

MORE CONSIDERATIONS

Copyright

Copyright, as you know, is a legal concept that allows the creator of an original piece of work to have exclusive rights for its use and distribution. It is usually only granted for a limited period of time, for example in the Republic of Ireland copyright for literary, dramatic, musical and artistic works are for the life of the creator and 70 years thereafter, and for sound recordings, film, and broadcasts the term of protection is 50 years from the year of creation. Not all copyrights expire, for example, in the United Kingdom the copyright for J.M. Barrie's play *Peter Pan* was granted in perpetuity to the *Great Ormon Street Hospital*, a children's hospital in London, based on Barrie's wishes.

The exclusive rights are not absolute, there are exceptions, such as "Fair Dealing" (also known as "Fair Use") which is an umbrella term for a collection of exceptions that are not considered to prejudice the rights of the copyright holder. Examples of these include:

- Using the content for research or private study
- Using it for criticism or review or for reporting current events
- Copying a small amount of the content that doesn't represent a "substantial" part of the work
- For educational purposes
- Parodies and pastiches

A major limitation on copyright is that copyright protects only the original expression of ideas, and not the underlying ideas themselves. It is worth discussing copyright because even if you never have had to consider in a classroom setting, if you are developing online content, and particularly if you are making that content publically available, it is important to be sure the content you generate doesn't include any copyrighted materials.

For Example

An interesting example concerning copyright (that might be worth mentioning to learners) is the *Monkey Selfie Copyright Dispute*. In 2011 wildlife photographer David Slater went to Indonesia to take photographs of an endangered monkey species (the Celebes crested macaques). Slater spent a couple of days with the monkeys, teaching them how to click the shutter-release button on his camera to take a picture. One of the monkeys took a picture of itself (on the right), which was published in several British newspapers including the Daily Mail, The Telegraph, and The Guardian, on 4th July 2011. Five days later the image was uploaded onto Wikimedia Commons, a site that only accepts media available under a free content license, in the public domain, or otherwise ineligible for copyright, asserting that the photographs were in the public domain as "*the work of a non-human animal, it has no human author in whom copyright is vested*". Slater asked Wikimedia Commons to take down the pictures, which they did for a time, but after a lot of internal discussion agreed that the monkey took the picture and the monkey can't hold copyright. Slater argued that he set up the shot, practiced with the monkeys, and even held the tripod for this shot, so he was the owner of the picture, but on 21st August 2014 the United States Copyright Office ruled that the picture cannot be copyrighted as it wasn't taken by a human.



Creative Commons

To help avoid copyright pitfalls an American non-profit organization called *Creative Commons* (CC) was set up in 2001 by Harvard scholar Lawrence Lessig to expand “*the range of creative works available for others to build upon legally and to share*”. To achieve this the organisation have created a number of standard, free legal permissions (called *Creative Commons licenses*) that describe which rights the creator wants to reserve and which they are willing to waive for the benefit of other creators.

Creative Commons licenses are not designed to replace copyright, but they can replace individual negotiations for specific rights between copyright owner and licensees, which are necessary under an "all rights reserved" copyright management. By 2015 over one billion works were licensed under the various Creative Commons licenses.

Organisations like Google Images, flickr, YouTube, vimeo, SoundCloud, and Wikipedia use Creative Commons licenses, so when you upload content to them, you are asked which licence you wish to attach to that content. A useful website to search for content that has Creative Commons licenses is:

- <https://search.creativecommons.org>

Creative Commons Licence Elements

There are six standard Creative Commons licences available. Each licence is formed from one or more of the following four licence elements:

- Attribution:** This means that others must credit you as the original creator of the work. All Creative Commons licences require users to provide attribution.
- Non-Commercial:** This means that others may not share, adapt or reuse your work if their use is primarily intended for commercial advantage or monetary compensation.
- NoDerivatives:** This means that others can share your work, but they must not change it. Note that users still have the range of fair dealing rights.
- ShareAlike:** This means that those who adapt or remix your work must use the same Creative Commons licence on any derivative works.

There are standard icons associated with each of those elements:



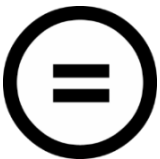







	
(a) Attribution	(b) Non-Commercial
	
(c) NoDerivatives	(d) ShareAlike

Figure 3.x Creative Commons Licence Elements Logos

Creative Commons Licences

From those four Licence Elements, the following six standard licences are available:

	<p>Attribution</p> <p>This licence lets others distribute, remix, tweak, and build upon your work, even commercially, as long as they credit you for the original creation.</p>
	<p>Attribution-NonCommercial</p> <p>This licence lets others remix, tweak, and build upon your work non-commercially with credit to you (their new works must also be non-commercial).</p>
	<p>Attribution-ShareAlike</p> <p>This licence lets others remix, tweak, and build upon your work even for commercial purposes, as long as they credit you and license their new creations under the identical terms.</p>
	<p>Attribution-NonCommercial-ShareAlike</p> <p>This licence lets others remix, tweak, and build upon your work non-commercially, as long as they credit you and license their new creations under the identical terms.</p>
	<p>Attribution-NoDerivatives</p> <p>This licence allows for redistribution, commercial and non-commercial, as long as it is passed along unchanged and in whole, with credit to you.</p>
	<p>Attribution-NonCommercial-NoDerivatives</p> <p>This licence is the most restrictive of our six main licences, only allowing others to download your works and share them with others as long as they credit you, but they can't change them in any way or use them commercially.</p>

Creative Commons licenses are drafted to be legally enforceable around the world, and have been enforced in court in various jurisdictions. Creative Commons licenses contain a “severability” clause, this allows a court to eliminate any provision determined to be unenforceable, and enforce the remaining provisions of the license.

Usability

When developing content it is important to remember to design it in such a way that it is easy to understand how to use the content, so for example if you create an interactive quiz and the learners can't figure out how to answer the quiz because the interface is either not easy-to-use or not easy to learn-to-use then it will not only fail its objective but it will also lead to learner frustration.

Three key pillars of good usability are³:

1. **User-centred Design:** The sooner you involve learners in the design of content, the more likely they are to be happy with the outcome. Their involvement could be as simple as consulting them on choice of colour, or it could be presenting them with early storyboards or prototypes for feedback.
2. **Measure Progress:** At the start of the development of content, decide on what metrics you are going to measure to ensure the completed content meets the needs you set out to achieve. This could be something as simple as count the number of "clicks" it takes a learner to complete a task, to measuring how long it takes for a learner to learn how to use the complete system.
3. **Iterative Design:** Developing educational content doesn't have to be a one-time thing, so once the content is completed it can be tested, and based on the feedback of that testing, the content can be redesigned and redeveloped leading to retesting. The process can reoccur over and over again until no problems are found in the Testing phase. This process is intended to ultimately improve the quality and functionality of the content.

An effective way to test the usability of content is to invite a small pool of learners to participate in a usability testing session. During this session the learners are given a series of tasks to complete using the content, without any assistance from you. If you get them to do it one at a time you can note how they approach the tasks, what level of frustration occurs, and how long it takes to accomplish each task. Analysis of several learners' performance can lead to improvements in the system.

Observation is only one of a number of methods of usability evaluation, others include GOMS (Goals, Operator, Methods, and Selection rules), the Think-aloud protocol, and personas.

There are a number of design guidelines that have been developed to aid designers in creating usable content, including Christopher Wickens' *Thirteen Principles of Display Design* and Ben Shneiderman's Eight Golden Rules of Interface Design, but the most widespread guidelines for usability are Jakob Nielsen's Ten Heuristics from his 1994 book *Usability Engineering*. Those heuristics are outlined on the next page, and there is a checksheet for them on the following page.

Nielsen also defined the five quality components of Usability as:

1. Learnability
2. Efficiency
3. Memorability
4. Errors (as in low error rate)
5. Satisfaction.

which can be used as effective measures in a usability testing session.

³ Gould, J.D., Lewis, C, 1985, "Designing for Usability: Key Principles and What Designers Think", *Communications of the ACM*, 28(3)

Nielsen's Heuristics	
Heuristic	Description
1. Visibility of system status	The user needs to know what's going on inside the system within a reasonable time. For example when uploading files using Google Drive, a pop-up window appears that indicates the file is being uploaded, and confirms when the upload is completed.
2. Match between system and the real world	The user needs to understand what is happening so the systems needs use terminology that the user is familiar with. For example if the user of the system uses American spelling and terminology, then the system should use American spelling and terminology.
3. User control and freedom	The user should have some freedom of choice when using the system, and if the user selects an option in error, it should be possible to undo that error. For example when you delete an email in Gmail, a message appears saying "The conversation has been moved to the Trash. Learn more Undo ". Allowing the user the chance to undo.
4. Consistency and standards	Different parts of the system should not have a different look-and-feel, either in terms of appearance, actions or terminology. For example a button that does one thing on one screen shouldn't do something different on another screen. The opposite is also true, the same function shouldn't be represented by two different buttons on two different screens.
5. Error prevention	The user should be prevented from making errors, this can be achieved by testing prototype systems with users, and identifying commonly made errors, and either eliminating them in the redesign or asked the users "Are you sure?" before you allow them to do it. For example many email systems check if you have the word "attached" in your message, and will suggest you should include an attachment if you haven't already.
6. Recognition rather than recall	The user shouldn't have to recall a large amount of information from page to page, the system should minimise the user's memory load by making objects, actions, and options visible. For example many websites provide breadcrumbs to show the user their current location within a website, such as: "HOME > SHOPPING > HARDWARE > MONITORS".
7. Flexibility and efficiency of use	The system should have different ways of doing the same thing depending on the level experience of the user, this includes having hidden options ("accelerators") for expert users than novice users don't need to know about. For example when copying-and-pasting in Microsoft Word, the novice user can do RIGHT-CLICK COPY, and RIGHT-CLICK PASTE, and the expert user can do "CTRL-C" and "CTRL-V"
8. Aesthetic and minimalist design	The user should only be presented with information that is directly relevant to the current interaction. Keep the information on each page to the necessary minimum. For example the Google Search home page is a good example of this.
9. Error recovery	The user should be presented that error messages that are expressed in plain language, that precisely indicate the problem, and constructively suggest a solution. For example it is better that the system does not give a message like "System Error 4245", and instead saying something like "You typed in some letters, but you should have typed in numbers".
10. Help and documentation	All help should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large. For example a Frequently Asked Questions (FAQ) list can often be more attractive to users than a manual.

Evaluating the Outcome of the Pilot

Once you've gotten to the end of the pilot, the final step is to evaluate the whole process, to reflect on what went well and what went badly, and how to make sure that any problems are fixed if you are doing this again.

It is always important to ask yourself two key questions during any teaching process, "*what am I doing?*", and "*why am I doing it?*", these questions help you reflect on the process, and reflection is a very important part of any teaching process, without it we tend to jump to conclusions about why things happened, whereas if we have structured and focused questions we can obtain accurate and useful feedback.

To evaluate the effectiveness of the pilot, I've created two questionnaires, one for you and one for your learners. The one for you is below and the learner questionnaire is on the next page.

So here's your reflective questionnaire:

What went well?	
What went badly?	
What surprised you?	
How long did the pilot take to develop?	
What were the key technical issues?	
Was the resource meaningful to your learners?	
What will you do differently next time?	

Learner Feedback

Please circle the number that best reflects your views on the following questions:

1. What did you think of the online content?

1	2	3	4	5
Hated it	Disliked it	Neutral	Liked it	Loved it

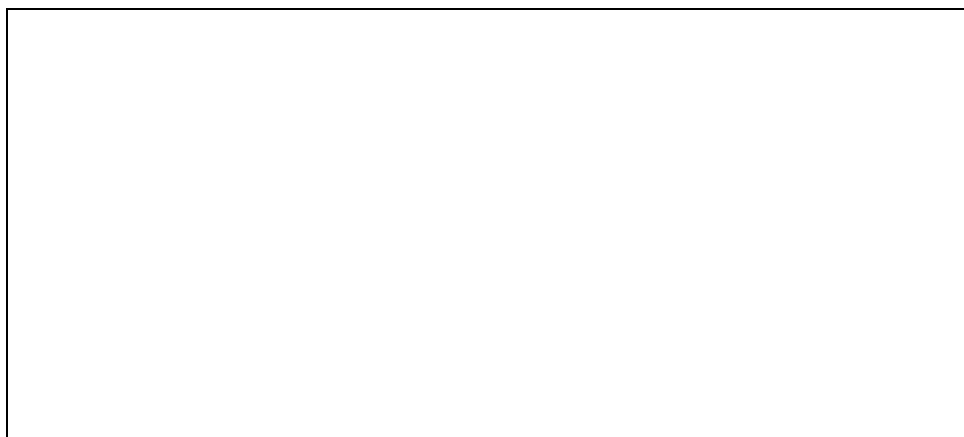
2. Would you like if there was more online content like this?

1	2	3	4	5
Definitely not	Wouldn't like	Neutral	I'd like more	I'd love more

3. How much time did you spend engaging with the resource?

4. If you would like more online content, what topic would you like to see?

5. Draw a picture of how you would like to see it presented:



Appendix A. Tips on Universally Designing your content

Universal Design is a philosophy of designing content that says you should design it so that it can be used to the greatest extent possible by all people regardless of their circumstances, and should meet peoples' needs. Simply put, universal design is good design.

Ten Tips for Beginners

1. Use a minimum of 14pt font size where possible in all documents, and justify the text to the left margin only.
2. Colour the document backgrounds with off-white/cream (for PowerPoints and other documents), and for handouts print out on cream paper if possible.
3. Try to break sentences into short readable units
4. Explain new terms when you first use them (consider creating a glossary)
5. Use bullet points, or better yet numbers, rather than long passages of prose
6. Include Pictures and Graphics to support text (e.g. flowcharts) and get students as an activity to create their own graphics/visuals for your topic
7. Make sure all handouts and notes are available well in advance of class
8. Try to break large documents (PowerPoints, Word docs, etc.) into multiple smaller documents, or at least create clear section breaks, and make the documents available to the students in a format that allows them to alter font size, type and colour (e.g. avoid providing PDF files)
9. Avoid Idioms, colloquialisms, and figurative language; also avoid examples that are too culturally specific, or gender biased
10. Consider using a font kind to people with dyslexia, like OpenDyslexic and Dyslexie, otherwise stick with sans serif fonts such as Arial, Comic Sans, Verdana, Tahoma or Sassoon

Ten Tips for Intermediates

1. Start each lesson stating a set of learning outcomes you want the students to achieve in this class (and link these outcomes to material they have already covered in previous lessons where possible).
2. Provide sample assessments (CA and exams) with solutions, and annotate these solutions with advice on answering questions and study tips. Give the assessments early in the semester, and provide the solutions over the following weeks.
3. If you are using videos and audio files, include a transcript. If it's a pre-existing video normally if you goggle a distinctive phrase from the video/audio, there's usually a transcript of it somewhere on the web.
4. Consider checking your materials using an accessibly tool where applicable.
5. Consider incorporating a peer-reviewing element into your assessments, but make sure you teach students to be supportive and respectful of each other and their work.
6. Once a semester do an activity that gives the students some choice in the activity (it could be for example in terms of doing the activity individually or in groups; on-line or paper-based; in the classroom or as fieldwork; or some combination of these).

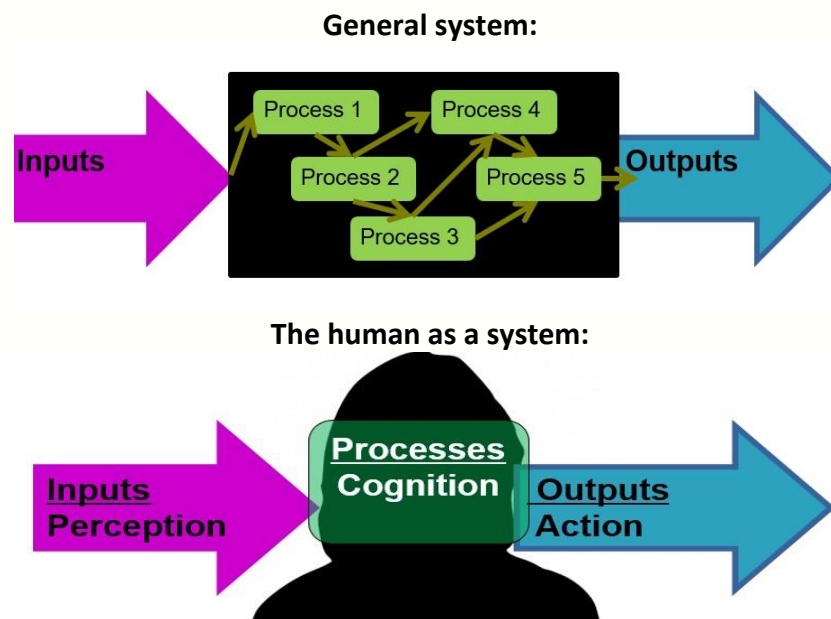
7. Instead of having a single large assessment, consider breaking it down into a few parts, and provide some quick feedback after each part to help the students understand what you are looking for in your assessments.
8. Give your students marks for participation in class (this is very easy to do on-line with discussion boards).
9. Create an anonymous comments box for students, you can do this on-line using SurveyMonkey
10. Give assessment instructions both orally and in written format, and remind students frequently of deadlines and delivery dates (Consider creating a class calendar also, with assessments, lab times, and other class activities).

Ten Tips for Advanced

1. Communicate high expectations to all students in your class. If you have accommodated all students, everyone should have an equal chance at success. Provide them with exemplars.
2. Upload your videos onto YouTube, and caption them, and learn more about the Web Accessibility Initiative (WAI).
3. When developing learning materials, in terms of the range of learners sensory preferences use the V-A-R-K Learning Styles model to create different types of learning materials and activities, e.g. PNG, Podcasts, PowerPoint, and Playdough
4. Explore each of the three common types of alignment in programme design: Vertical Alignment (linking modules between different years), Horizontal Alignment (linking modules in the same year), and Constructive Alignment (linking Learning Outcomes, Teaching, and Assessment, in a single module).
5. Pre-teach all symbols and unfamiliar vocabulary in an early class, and create a glossary booklet (with both text and visual descriptions) that you hand out at the start of the semester.
6. Consider the physical tasks that the students are required to do in class, find ways that you can provide alternatives in the requirements for speed, strength, timing, and range of these activities.
7. Create assessments so that the criteria to achieve a passing grade, a good grade, a very good grade, and an excellent grade are clearly articulated. Is it possible to provide alternative criteria for each level also?
8. Involve students as much as possible in setting their own learning goals. Also work with them to create a personalized checklist of goals agreed to, and encourage them to tick off each goal as it is accomplished to let them see their progress.
9. When developing learning materials, in terms of the range of learners' cognitive preferences use Keirsey Temperament Sorter to create different types of learning materials and activities, e.g. create activities that include aspects of problem solving, planning, personal growth, and proficiency.
10. Create a series of supporting documents to increase students' independent learning skills and discipline-specific skills that they can access at their own rate.

Appendix B. Universal Design for Learning: A Systems View

A systems view means that you view all phenomena by considering what are the inputs into the phenomena, what are the outputs of the phenomena, and how are the inputs converted into the outputs (usually as a results of a number of intermediate processes). We can treat a student in the same way; how do they take in information? Through their senses; How do they process information? Using cognition; and how do they demonstrate their learning? Through actions and activities.



Universal Design for Learning recommends we provide multiple means of input, processing, and output to ensure a range of students can be easily engaged in the learning process, and that there is equity between students.

INPUTS REPRESENTATION	PROCESSES ENGAGEMENT	OUTPUTS ACTION/EXPRESSION
<p>This is the WHAT of learning, it focuses on Perception, Language and Symbols, and Comprehension.</p> <p>Things to consider include alternatives in the display of information, including auditory and visual displays, and to support comprehension.</p>	<p>This is the HOW of learning, it focuses on Interest, Effort and Persistence, and Self-Regulation.</p> <p>Things to consider include creating authentic, relevant and valuable experiences. To increase motivation and to promote self-belief.</p>	<p>This is the WHY of learning, it focuses on Actions, Expression and Communication, and Executive Function.</p> <p>Things to consider include allowing the students multiple tools for different types of communication, and to guide reflection and monitoring.</p>