

Dr. Hammond Advice on how to design an effective online learning module

URiGEM 2020

1. What media to record the video

- a. Zoom
 - i. Pro: easier to record, good for co-instruction (co-instruction is great as it can be more engaging. Conversational style can be more interesting than just one person lecturing the entire time)
 - ii. Con: do not have subtitles. Need to think about how to generate the subtitles more accurately, as well as ASL.
- b. Youtube videos
 - i. Pro: Generate subtitles automatically. Subtitles allows students with disabilities and ESL students to better understand the material

2. Lab report module

- a. Better to write a lab report based on a science experiment
- b. Important to have someone assess and feedback the report
- c. Have both a written protocol and a video recording
 - i. The video should record how to run the experiment, but do not show the result of the experiment as it is part of their lab report
 - ii. The video should also have subtitles
- d. Have a example (not related with the experiment) of a lab report for students to understand it easier
- e. The module can run by two instructor discussing which section should XXX be put under

3. How to write learning objectives

- a. The objectives need to be specific, assessable, measurable and detailed
 - i. For example:
 1. explain in your own words about XXX instead of understand XXX
- b. Backward design: Start with goals and then develop activities and videos and lectures
- c. The activity should designed around the objective
 - i. fill in the blank, draw something and upload ... → then video comment them at specific time stamp, write emails to the students about the feedback

4. How to use Powerpoint more effectively

- a. Do not only read out the text on powerpoint
- b. DO: show pictures, animation, have pulsing time for students to interact
 - i. Have a 10 min module into a 3 - 4 session: pause the video and ask the question
 1. Students can answer the questions and submit it on the google form or..
 2. After the pulse, the lecture can show the answer and ask is that something students got
 3. Ask students to email us if they have any questions or any explanation

5. Communication with students, how to make the module more engaging and interactive

- a. Make it more immersive for students

- i. Do not only talk, show animation or hands on activities (eg. use lego to explain biobricks)
 - ii. Think about it when writing the script: which part can just be done through reading the text... if it can be done through text, don't talk about it and ask students to read the text beforehand → instead, talk about how to use it "the concept"
 - 1. Give students a material/video to read ahead of the time. The video is the engaging part
 - 2. Read a text → then at the beginning of the video: what is your definition of biology after reading the text? Pause.... And here is what I understand, xxxx how is that comparing to yours (mine should be very animated or life related)
 - iii. Annotate the powerpoint
 - iv. Static pictures are good if you want to show students details
 - v. Showing stimulation online
 - vi. Ask students to record their activities at home in a video and upload them
 - vii. Ask students to comment on the module
- b. Important: make everything consistent. Don't make students confuse
- i. Do not: Within one module, ask students to upload youtube videos and write google form with no clear instruction
 - ii. Do: have the class easy to access, have steps and easy to follow guideline
 - For example: step 1. Read the PDF step 2. Watch video/module, Step 3. Go to the google form and answer the questions
- c. Benefit of google form: gives a neat summary
6. Science As Art advice/last module design
- a. Ask the student to introduce/explain what Endo is in an artistic way/ building empathy → they might need to talk to experts....--> let them go out
 - i. Ask students to express their own experiences through art
 - ii. Why endometriosis and student's own experiences are related to biology?
7. For students who completed the course/how to encourage students to complete the course
- a. Recognition on wiki
 - b. Certificate
 - c. Something that can go on their resume → should tell them how to word it.
 - d. Incentives (an item)
 - e. Ask the advisors to use their letterhead to write a conclusion letter with the course to them.
8. Final advice
- a. Recommend to upload all the modules all together and ask students to complete it in their own time
 - i. Some students might not have stable internet access so students can download everything all at once
 - ii. Have flexibility on when students can complete the course
 - b. It should be downloadable so they don't need internet in the future
 - c. Make a syllabus that have the expected time
 - d. For designing the course, start with objective and then activities/lecture styles that can meet the objective