Topic: Note-taking

Participants: Mohamed Fadlelmula and Eyad Masad

Comment: I found this incredibly useful and believe students will too. Often, we expect them to have skills that they may not have given and no one explicitly addressed them. Note-taking needs to be explicitly taught and, in many cases, incentivized. See resources, point 5 on how to incentivize this.

Resources

1. The Cornell Note-taking System - to share with students plus some more videos about the method

2. Skeletal notes and/or handouts with gaps - Dr. Fadlelmula

3. OneNote - we have access to it via TAMUQ IT's subscription to Office 365. Decide if you want students to take notes by hand instead; there's evidence that supports hand-written notes ‘stick’ better. If you are okay with laptops in the classroom, OneNote is a good tool.

4. Other note-taking techniques to explore before deciding on what to share with your students

5. Snapshot of Dr. Masad's skeletal notes assignments. Dr. Masad incentivizes this by grading notes. Dr. Fadlelmula plans to incentive note-taking by allowing them to bring their notes to quizzes.

Research
Lessons Learned from the Active Learning Online Course

- “Results suggested that students receiving partial notes performed better on examinations later in the semester and on conceptual questions during the cumulative final examination than students receiving full notes. Students receiving full notes also self-reported more negative effects on attendance.”


- “When students take note, they remember as much as 70% of their notes within 24 hours, especially if they review their notes.”


**Topic: Using the Active Learning Cycle**

Participant: Bilal Mansoor

Three steps of the cycle:

1. assign students an activity that has them explore a new topic or concept;
2. introduce or teach the topic using a microlecture, text, or video; and
3. give students an assignment that requires they apply what they have learned in an authentic setting.

**Comment:** Common misconceptions regarding the use of AL cycle in any teaching format are:

(1) why expose students to content that is unfamiliar to them?

(2) once you have uncovered misconceptions OR lack of prerequisite knowledge, how best to use it to inform instruction?

**Hack:**

(1) Pique student interest in new learning by posting a thought-provoking problem/video or any other activity.

(2) Create teachable moments
Lessons Learned from the Active Learning Online Course

Research:

- [https://www.ted.com/talks/peter_norvig_the_100_000_student_classroom?language=en](https://www.ted.com/talks/peter_norvig_the_100_000_student_classroom?language=en)

- Uncovering and addressing students’ faulty mental models encourages students to question their misconceptions, leading to more motivated learning and deeper reasoning. Identifying your students’ faulty prior knowledge also provides you with key teachable moments (Nilson & Goodson, 2018).


**Topic: Establish a Rhythm for Participation**

Participants: Konstantinos Kakosimos and Eyad Masad

**Comment:** Providing a module roadmap helps students gain an understanding of course expectations and allows them to plan their work time more effectively. A predictable rhythm, often a weekly pace for modules, helps students manage their time to meet course expectations.

**Resources:**

- Online Classroom routines ([https://blog.nise.institute/online-classroom-routines-making-online-instruction-work-now](https://blog.nise.institute/online-classroom-routines-making-online-instruction-work-now))
- Dr. Kakosimos will work on a two-week basis with a regular rhythm. Dr. Masad will work on weekly basis.
Lessons Learned from the Active Learning Online Course

- Snapshot of Dr. Masad’s module roadmap

<table>
<thead>
<tr>
<th>MEEN 222 Materials Science</th>
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<tbody>
<tr>
<td>Mechanical Engineering Program - Texas A&amp;M at Qatar</td>
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<tr>
<td>Fall 2020</td>
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</tbody>
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Course Master Plan

Notes:
- Useful resources of recorded lectures:
  - Source 1: Unless a link is provided, video lectures are from the YouTube channel of Dr. Patrick Shamberger, Assistant Professor, Department of Materials Science and Engineering - Texas A&M University?
  - Source 2: YouTube Channel of Tonya Coffey
  - Source 3: Materials Concepts

- All recorded lectures are from Source 1 unless a link is provided.

Week 1: (Aug 23 – Aug 27)

Issues to Address:
- What is Materials Science and Engineering?
- Why are Materials Important?
- Why is it important for engineers to understand materials?

Class Notes:
- Chapter 1: Introduction to Materials Science & Engineering

Recorded Lecture:
- What is Materials Engineering?

Concept Review and Illustration

Assignment:
- Aug 27 - Skeletal Outline for Week 1

Research

A rhythm also reduces stress because the structure answers questions, such as, “What’s next?” (Boettcher & Conrad, 2016). It is particularly important to establish a rhythm for posting, reading, and replying to the online discussion forums, which are the online version of classroom discussions. The other online activities can be scheduled around the discussion forums. For example, a discussion forum might open with a problem, question, or challenge on Monday; require an initial posting or a comment by Wednesday; and close with a
Lessons Learned from the Active Learning Online Course

deepen, more analytic, and collaborative comment by Friday or Saturday. Readings, content assignments, and collaborative activities can revolve around these class discussions.

**Topic: Microlectures**

**Participant:** Dr. Abdala

**Comment:** Dr. Abdala plans on using microlectures this semester and observed that they hold as a good pre-class activity regardless of class format (online or face-to-face).

**Resources**

- [CTL slides on how and why to create microlectures](#)

**Research**

Our main findings are that shorter videos are much more engaging, that informal talking-head videos are more engaging, that Khan-style tablet drawings are more engaging, that even high-quality pre-recorded classroom lectures might not make for engaging online videos, and that students engage differently with lecture and tutorial videos. -- How video production affects student engagement: an empirical study of MOOC videos

Philip J. Guo, Juho Kim, and Rob Rubin. 2014. How video production affects student engagement: an empirical study of MOOC videos. In *Proceedings of the first ACM conference on Learning @ scale conference (L@S ’14)*. Association for Computing Machinery, New York, NY, USA, 41-50. DOI: [https://doi.org/10.1145/2556325.2566239](https://doi.org/10.1145/2556325.2566239)

**Topic: Effective Teamwork**

**Participant:** Dr. Khraisheh

**Comment:** Dr. Khraisheh plans on making teams sign a team charter that they will be held to in the event of conflict or unequal work distribution.

**Resources**

- [Group project tools](#)
- [Sample team contract](#)

**Research**
Lessons Learned from the Active Learning Online Course

- Assigning work to student teams can lead to learning benefits and student satisfaction, provided that the instructor pays attention to how the teams and the assignments are set up.

- Compared to students taught traditionally, students taught in a manner that incorporates small-group learning achieve higher grades, learn at a deeper level, retain information longer, are less likely to drop out of school, acquire greater communication and teamwork skills, and gain a better understanding of the environment in which they will be working as professionals.
  Turning Student Groups into Effective Teams,