OUR APPROACH TO ONLINE, ASYNCHRONOUS LECTURES

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In this presentation, we will outline our approach to the development of online lectures for introductory first year physics courses. We chose to deliver lectures asynchronously with synchronous support for the increased flexibility this offers students. Our lectures are set up as quizzes that include short videos to introduce new material followed by questions for students to put into practice the learned material. This lecture structure is the basis of constructive alignment; the connections between lectures and assessment are explicit for students as they practice solving similar problems in both. Within each lecture, we actively engage students using strategies such as predict-observe-explain activities, real life examples, and historic interludes. Further, the videos were developed whilst keeping in mind the principles of cognitive load theory and Universal Design for Learning.

During this presentation, we will also detail how students interacted with the material and the feedback students have given. We note that while we do not think that online lectures should replace face-to-face lectures for all students, online lectures can be a useful resource for students who are unable to attend live lectures; as a revision tool; or to free up time in the lecture for active learning.

REFERENCES

Australian Council of the Deans of Science. (2021). *Resource Repository*. Retrieved June 7, 2021, from https://www.acds.edu.au/teaching-learning/resource-repository/.

Bhansali, A., Angstmann, E., & Sharma, M. D. (2020, September). AEQ-PHYSICS: A VALID AND RELIABLE TOOL TO MEASURE EMOTIONS IN PHYSICS. In *Proceedings of The Australian Conference on Science and Mathematics Education (formerly UniServe Science Conference)* (pp. 93-98).

CAST (2018). *Universal Design for Learning Guidelines version 2.2*. Retrieved June 7, 2021, from http://udlguidelines.cast.org.

Sweller, J. (1988). COGNITIVE LOAD DURING PROBLEM SOLVING: EFFECTS ON LEARNING. *Cognitive Science.* 12(2). pp. 257-285.