Changing the learning modality in a BIO205 hybrid class: lessons learned

Spring 2021

Sp20 F2F learning required mandatory participation while Sp21 was asynchronous online and dependent upon personal accountability. To examine the effect of the two learning modalities, student performance was analyzed focusing on gene expression. Gene expression is a tenant of biology taught in high school and BIO156/181 and prerequisite for BIO205. Analysis of student performance on this subject should relate to modality since the subject was not covered prior to testing however, the students were given access to review materials and warned to refresh their memories.

- Using six exam questions related to the molecules and processes of gene expression the percent correct responses were 83% & 38% for Sp20 and Sp21, respectively.
- The seventh question related to the importance of gene expression and the performance was more consistent at 42% & 38% respectively. However, both scores were lower than desired and reflect students' inability to connect gene expression to the bigger picture.
- In each case, the question presentation was the same, requiring students to generate the appropriate terms.

The precipitous drop in scores for this prerequisite knowledge suggests that the F2F instructional modality is more supportive of student success compared to an asynchronous format where the students are dependent on their own personal accountability. This is especially true in STEM gateway and science classes like BIO205 where most students are trying to get into nursing, allied health, or other science programs. Students are very aware of grade impact on their plans and are more pro-active about advice and assistance when in a F2F class compared to an asynchronous online modality. As anecdotal support to this observation, Sp21 was hybrid with a F2F lab. Students asked many more lecture questions after lab than they did via email or in WebEx office hours. For all but a very few, electronic communication presented a barrier that F2F interaction does not. I believe that this is an aspect of the results presented; students in classes like BIO205 rise to greater levels of success when supported by F2F interaction with an instructor.