

Predicting Success in Online and In-Person Laboratory Classes

I. Introduction

The purpose of this project is to study the varying student attitudes and academic differences between students who take microbiology labs in-person versus online. At the start of the semester, we will give students a survey to measure individual grit levels in order to see how this type of long-term motivation helps students

succeed in the course. Throughout the semester, we will keep each of the two class types as similar as possible with consistent grading, testing and assignments, the only difference being that the online section will complete the lab at home with a kit.

II. Methods

This research experiment is broken down into four phases:

- Firstly, before the start of the course, students took a survey that measured their personal grit factor in order for us to conclude how to advise students in the future.
- The second phase focuses on the learning in the two course specifically. The online

and in-person versions of the class use the same assignments, tests and grading system. Now that this portion of the study has been completed, we will analyze our quantitative results, such as test scores, to better understand the success of the two courses.

- This brings us to the third phase of the study in which we will create a survey that will help us evaluate the qualitative aspects of the experiment. This survey will include how students feel about the course, what they think could be changed, what they appreciated and if they would take a class similar to this in the future.
- Two semesters after the course has finished, we plan to send out a follow up survey to hear students perspectives after they have experienced other classes and once again to hear their feedback.

III. Project Outcomes

The anticipated products of this project are:

- The conclusion of whether or not teaching a microbiology lab course online is as effective as teaching the course in-person
- A model curriculum for how to set up an online lab course for educators to use in the future if the class has been proven successful
- How to advise students on which class section they should take based on their grit factor.
- . With all of this new information, we are prepared to make our findings available through a variety of conferences and publications.

IV. Future Direction

The next step in our research is to analyze our qualitative and quantitative data with two different strategies.

Qualitative: We will use the survey results to provide information about student demographics, attitudes and backgrounds, as well as using student responses to determine their grit factors using the 1-5 grit scale.

Quantitative: We will analyze our quantitative results- such as test scores, through use of two-sample problem tests, t-bell curves, t-tests and/or pooled two-sample tests.

All of this information will help us determine how effective the two teaching styles are, if students enjoy one over the other, and how we can perfect these courses in the future.

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