MONTGOMERY COLLEGE

Informal, Low Risk, Formative Assessments

Enabling Learners to Learn Deeply

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The Context

General Biology 101 (non-majors, lab course)

Required Course

- non majors
- often as a last gasp course for lab requirement
- expectation that it will be “easy”

2 – 1 hr lectures/ week

2 – 2 hr labs/ week

The Goal

To engage students to interact with each other and the content of BIO101, be more confident

- Students rarely ask questions in class
- Students are reluctant to share video screens (this semester even in the lab groups with one another)
- Students rarely ask for “help” from the instructor – or tutors – or learning centers – or librarians
- Students gut it out alone
- I think this is because they lack confidence in themselves and particularly with science content

The Plan:

Learn How to Learn: Blooms Taxonomy & Biology

Add Self Scored – I know when I'm done tasks

- Compare two sections of BIO101 SRT: F2F
- One class gets self-scored assignments (low points, low risk)
- Both classes get presentation of Blooms Taxonomy and encouragement to look at, review, and discuss the levels asked in assignments
- One class starts with concept maps in Genetics – informs instruction by identifying prevalent confusions

The Revised Plan

Two sections had VERY uneven enrollments

SRT class N = 21 F2F class N= 8

- After exam 1 – poor performance – absences due to illness – and ? N = 17 SRT and N= 7 frequent absences due to illness F2F comparisons not possible
- Shift to comparing SRT Fall 21 class to prior SRT Spring 21 class based on exam profile in lab
- SRT lab group participation changed significantly which may also have altered the impact of the additional low risk, self-paced/scored assignments

Implementation

Learning to Learn and Low Risk Opportunities

- Explicit presentation of Blooms taxonomy
- Encouragement to review/level assigned tasks
- Lab exams mimic “lab practical” activities actually done during the SRT lab sessions
- Comparison based on “middle” sequence of labs for both classes – and Grades on LABX2,
- F21 class gets low risk, self scored, activities in addition to labs

The Data

S21 no intervention vs. F21 formative assmt

Perfomance on Lab Exam 2

RESULT:

Average Scores on Laboratory Exam 2 were not significantly different from one another.

S21 Mean Score 65.9/100

F21 Mean Score 66.93

Hypothesis: Lab Group Functioning (or lack there of) likely influenced the closeness in scores. More affective measures are needed.

Sample Student Work

Genetics problems, worksheets, online cases, SRT adapted labs, student selected topic presentations, peer feedback.

Participation Rates in assignments:
Genetics
10/15

DNA – Elephant Case
11/15

Clade Race – Evol
11/15

Presentations 100%

Feedback to Peers
12/15

Students' Feedback on Learning

One Sentence Summary

- I am finding it difficult to highlight the most important topics in each lab description, especially when there is thorough detail about each step or process. Thank you!
- Currently, what I'm feeling most confident about is cells. I love learning about cells, and all the new cells I've learned about is exciting. At the moment I am not confused about anything, but if I am I will stay in contact. Thank you.
- I am clear on the order of mitosis and the role of each cell. I am confused on the alternative pathway of cells.
- _____
- Today we learned about mitosis, and the importance of mitosis during the interphase of a cell, allowing it to recreate itself to replace destroyed or missing cells of their type.

““Tolerance for ambiguity and intellectual humility make it easier to hold conflicting ideas. “

Jose Antonio Bowen, *Teaching Change, 2021*

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