

#4. Executive Summary: Undergraduate Program Assessment: Alternative Delivery

Submit to the Assessment Committee Chair via email.

Department: Bio

Date: 8/18/19 Course(s): Bio 110

Alternative Format(s) – select as many as are applicable:

Dual Credit Select Select Select Select Select

Members (must include more than course instructor only) involved with analysis of artifacts:

Jennifer Freund, Rob Hermann, Kyle Johnson, Kristy Jurchen

See #3 Assessment Plan: Alternative Delivery: Student Outcomes for: a) Course requirement evaluation; b) Student Outcome; c) Question(s); e) Methodology

Analysis of artifacts:

1). Student Outcome: **PERFORMANCE CRITERIA*** - *How was data analyzed? (attach rubrics/scoring tools if used).* Given a classic biological scenario of Henrietta Lacks, students will relate multiple concepts of general biology to address issues of cancer, viral and organismal genetic diversity, environmental influences over life processes, and social implications of biological information. These outcomes are split into individual questions with a rubric to score each item. Both are attached.

2). **COMPARABILITY** – *How did you determine if the outcomes of the traditional and alternative delivery modes were comparable? (note “na” if delivery modes were not compared).* The response items were to be written independently by each participating student. The dual credit liaison scored each item for each student in both dual credit and typical delivery sections. The total score was also calculated per participating student. A one-tailed t-test determined the significant mean differences or lack thereof per test item and total score for students enrolled in dual credit versus typical delivery sections.

Summary of RESULTS*:

1). *Restate the assessment question(s) (from the Assessment plan):* As a result of this class and activities within this class, the student shall be able to use basic biological principles and apply it to an everyday living scenario. Specifically, I want to know if students can (a) recall biological principles, (b) select related principles for a given scenario, (c) apply the principle logically to solve a problem or explain a phenomenon, and (d) relate biological concepts to global or social contexts.

2). *Summarize the assessment results. A narrative summary is required. Charts, tables or graphs are encouraged but optional.* The results of the t-test for comparison of means were calculated for each test item and for the total score. For individual test items and the Total, the dual credit enrolled students scored slightly higher ($p < 0.05$) than the students enrolled in the on campus, typical delivery class. Therefore, it is safe to confirm that students enrolled in dual credit courses perform at least as well or better than the on campus, typical delivery students. The individual dual credit classes were combined into one data set, due to lower enrollment in the individual courses. By simply comparing scoring and student answers, there were no major differences between the individual schools--the rubric and questions are fairly straightforward.

3). **INTERPRETATION*** - *Discuss how the results answer the assessment question(s).* Considering the content of the questions, students in both courses were knowledgeable about genetic variation across populations, particularly for humans but less so for viruses. Overall--but not equitably between individuals, the dual credit students used more formal biological vocabulary and related expression of the disease more specifically to protein synthesis, whereas that detail was almost exclusively absent from the on campus, typical delivery course student responses. Though, a higher percentage of on-campus students began to use the proper vocabulary, fulfilling the goals set after the 2017-2018 academic year. This will continue to be a goal for the upcoming 2019-2020 academic year. Students in both sections were able to discuss some social implications of vaccination decisions and inequities of health care. Some students in off-campus dual credit classes--one two--seemed to have considerable misunderstanding of female vulnerability to diseases indicating they did not fully connect with the social justice in biology assessment item--but this was not the majority of students for dual credit students, nor was it a statistically different score from the on-campus population.

4). *Observations made that were not directly related to the question(s). (i.e. interrater reliability of the scoring tool was low)* The dual credit liaison scored each student response, so there was only one rater. This year, the delivery of the assessment was equitable through all courses again--as a quiz or in-class, non-resourced activity.

5). **How did the outcomes of the traditional and alternative format analysis compare?**
The alternative delivery students (dual credit) performed better or as well as on campus students.

Sharing of Results:

When were results shared? Date: 8/18/19

How were the results shared? (i.e. met as a department) emailed

Who were results shared with? (List names): Rob Hermann, Kyle Johnson, Jennifer Freund, Kristy Jurchen

Discussion of Results –Summarize your conclusions including:

1. **ACTION***- *How will what was learned from the assessment impact the alternative format teaching of this course starting the next academic year?* I will recommend to the alternative delivery instructors some specific resources for both vaccination issues, sexual assault and disease statistics, and social justice/global status of women information used in classes on campus. Additionally, I will share my formative assessment methods to help my students construct and share their understandings prior to the common assessment completion. Otherwise, the actual biological concepts were very strong as conveyed by the student artifacts.

2. **IMPACT***- *What is the anticipated impact of the ACTION* on student achievement of the learning outcome in the next academic year?* I anticipate observing greater application of biological concepts (genetic variation, vaccine science, and protein synthesis) to personal, real-life scenarios--meaning, they will not merely report the science but attribute them to decision-making they will need to consider with regards to vaccines, sexuality, parenting, and environmental exposures. I will do this through the Aquaponics/Tilapia system and updated technology and formative assessment integration.

3. **BUDGET IMPLICATIONS** – *Indicate budget requirements necessary for the successful implementation of the ACTION** (i.e. an additional staff person, new equipment, additional sections of a course). n/a--my aquaponics system was funded through the High Impact Learning Grant and will have minimal or no on-going budgetary costs outside of electricity through the building.

Submitted via email to Assessment Committee Chair by: Jen Freund

Reviewed by the Assessment Committee (date): 9/16/19

Submitter notified/additional action needed: na

BUDGET IMPLICATIONS – Assessment Committee Chair notified appropriate Dean: na

Approved & Posted to Assessment site: 9/16/19