Life Sciences Uniting in Assessing Student Writing

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Assessment Motivation and Goals

Clearly stated student learning outcomes (SLOs) are a necessary foundation for an evidence-based educational program through which faculty, staff, and student efforts can be aligned. The new School of Life Sciences sought to establish a common set of SLO's with a single SLO concerning professional communication to be assessed in all its undergraduate majors to maximize course complementarity, scaffolding, and student success.

1. Challenges and Strengths

In total, the five undergraduate major programs presented a task of consolidating 23 SLO's.

Diverse objectives existed in each of the prior departments.

Common academic values and core competencies in the sciences were understood.

The Biology and Marine Biology programs had gone through two rounds of SLO review and consolidation over the four years leading up to the formation of the School of Life Sciences, so we were able to proceed on that previous effort built on internal and external inputs.

Shared excitement to join forces in exploration and education!

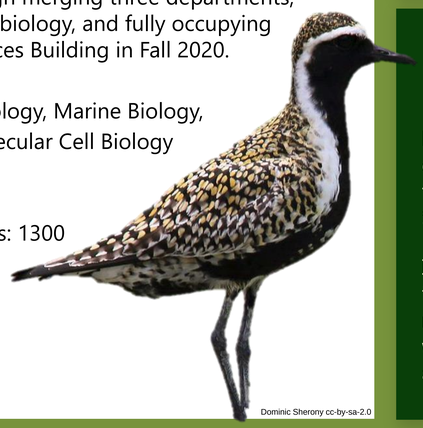
2. Student Learning Outcomes

1. Student will be able to explain biological processes from molecules to ecosystems in an evolutionary context, including being able to use examples from Hawaii.
2. Student will be able to demonstrate scientific literacy by critically evaluating scientific evidence, identifying gaps in knowledge, and applying strong evidence-based biological arguments to real-world problems.
3. Student will be able to apply the scientific method to generate new hypotheses, formulate experimental approaches and outline potential outcomes, applying appropriate logical and quantitative methods.
4. Student will work individually and in teams in an ethical manner, and demonstrate respect for diversity of viewpoints.
5. Student will, in oral and written forms, be able to communicate biological information clearly and professionally.

Biology | Botany | Microbiology

School of Life Sciences

- Formed in Fall 2019 through merging three departments, Biology, Botany, and Microbiology, and fully occupying a new School of Life Sciences Building in Fall 2020.
- Undergraduate majors: Biology, Marine Biology, Botany, Microbiology, Molecular Cell Biology
- Number of faculty: 40
- Number of undergraduates: 1300
- Graduates each year: 250



Dominic Sherony cc-by-sa-2.0

3. Results!

Random samples of mid-semester written lab reports were collected from students in BIOL 171L Spring 2020 as initial formative assessment in the common introductory course for all School of Life Sciences undergraduate degrees.

In the introductory course 1/12 of students met our benchmark for mastery of SLO 2 and SLO 5. No students in their first course met the benchmark on SLO 3, but the average score for that SLO was above the introductory ranking on our rubric, as were the average scores for SLO 2 and SLO 5.

4. Insights and ...

Multiple SLO's, not simply those explicitly referencing writing, can be effectively assessed through individual writing assignments.

100-level assessment conducted on mid-semester lab reports can be used to guide instruction on final lab reports for the current semester ***and*** also serve as a reference for subsequent courses.

Focus on specific components of the SLO's for specific gains.

Generating hypotheses and testable predictions is an ability that requires more development in writing assignments between common introductory courses and upper-level specializations.

Generating hypotheses and testable predictions, communicating these to peers in written and oral form, and debating them, is a motivating endeavor. Comparing the quality of writing on different subjects helped highlight student interests.

... next Steps

Rubrics, rubrics, rubrics! Written communication was accessible to rapid early assessment in the new School of Life Sciences due to previous development and testing of a rubric for that SLO. We need similar tools for more direct measures of our other SLO's.

Broader communication of assessment results and insights.