Program Assessment **Part II.**

Measures, Data, Analysis & Action

Due by: May 31, 2017

Submit it electronically to the office of Institutional Effectiveness and Strategic Planning at xzhang@york.cuny.edu by the above due date.

Department & Program:	**Biology Department** **Biology, Biotechnology**
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Date submitted:	8/22/2017

Program Goal Indicate one goal assesse Spring 2017	**Program-level Student Learning Outcome (PSLO)** Based on the selected goal, list **two-three** program-level student learning outcomes assessed in Spring 2017.	**Measures** Identify at least one direct measure used to assess the stated learning outcomes. Use of indirect measure in addition to direct measure is optional; however, direct measure is required.	**Expected Level of Student Achievement** Indicate the expected level of achievement, standard/target for each outcome
1. Students understanc basic princ governing biological organisms communiti	Students will acquire fundamental information about biological systems.	Direct: 39%	60%
	Students will acquire fundamental knowledge of principles governing biological systems.	Direct: 39%	60%
	Students will be able to apply their knowledge to explain the reasons underlying the outcome of a biological process.	Direct: 38%	<60%
	Students will be able to analyze information about biological systems and use it to predict the outcome of a manipulation of a system.	Direct: 38%	<60%
	Students will be able to use data regarding a biological model to evaluate the plausibility of the model.	Direct: 12%	<<60%

Data Collection and Evaluation

For each outcome listed above, describe the source of data collection (course/section), sample size (number of students sampled) and when the data was collected and evaluated, i.e. what tools or instruments were used. Include information regarding number of personnel involved in evaluating the data and interpreting the results.

1. PSLO	Biological Principals I final exam, all 4 sections, n=125
2. PSLO	Biological Principals I final exam, all 4 sections, n=125
3. PSLO	Biological Principals I final exam, all 4 sections, n=125
4. PSLO	Biological Principals I final exam, all 4 sections, n=125
5. PSLO	Biological Principals I final exam, all 4 sections, n=125

Results & Analysis

Indicate what the results were for <u>each</u> outcome (use space as necessary). Include a table/chart/snapshot of summative data with analysis at the program level. Include interpretation of the results in narrative form. Provide comparative analysis of expected level of student achievement with actual assessment results.

All 5 PLSOs were assessed for Bio201 (Biological Principles I) students during the final exam. Three questions on the same topic (natural selection) were given to all Bio201 students, across all 4 sections. The questions were categorized in advance as knowledge/comprehension (PLSOs 1 and 2), application/analysis (PLSOs 3 and 4) and synthesis/evaluation (PLSO 5).

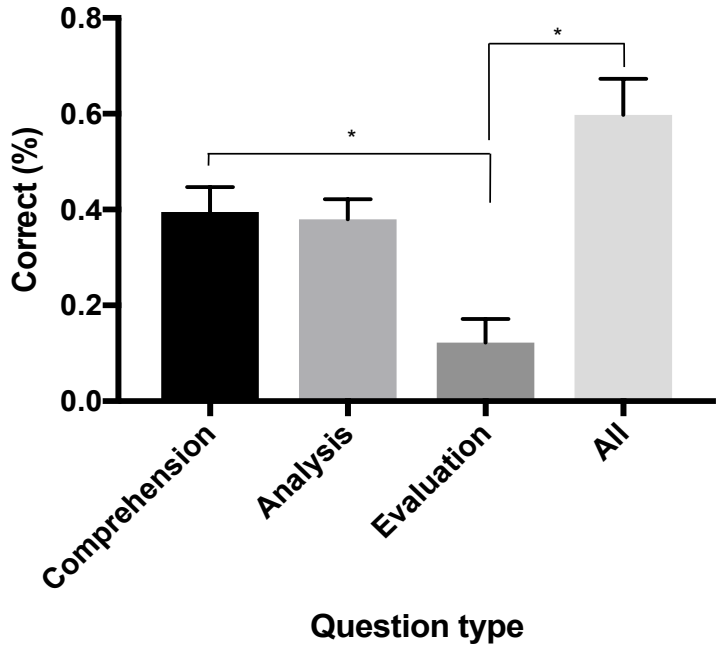

Figure 1. Student performance on PLSOs 1-5 and overall, assessed using the Biological Principles I final exam, Spring 2017. The average score for three questions assessing PLSOs, according to skill level (see above), and the overall score is shown (error bars indicate the SEM, 4 sections, n = 19-47, total number of students = 125). The differences in performance between the question testing comprehension and evaluative skills, and between evaluative skills and the overall performance are significant (p = 0.01-0.02, Tukey's multiple comparisons test).

Summary:

The performance on the knowledge/comprehension question, included to assess student performance on PLSOs 1 & 2, was below the average overall performance on the exam. This may indicate a below average comprehension of the subject (natural selection), or a difficulty in extracting relevant information from the explanatory text.

The students did as well on the application/analytical question (PLSOs 3 & 4) as they did on the test question designed to test comprehension. This is a better-than-expected outcome. The students performed significantly more poorly on the evaluative question, as expected.

The results of our analysis were based on data from a final exam given in May, 2017. The nature of the departmental response will be decided when we meet again during the Fall semester, but may include such actions as further data collection, increased reading practice on homework assignments (to address PLSO # 4 “Students will be able to analyze information about biological systems…”) , and extended coverage of natural selection (to address PLSO # 2 “Students will acquire fundamental knowledge of principles governing biological systems”).