Expected Outcome 1: Ability to understand and critically evaluate scientific literature in the major

BIOL 4950 Undergraduate Seminar is a required course for all students majoring in one of the undergraduate degree programs administered by the Department of Biological Sciences. The course is taught both Fall and Spring semesters and has 18 or fewer students/section. The purpose of BIOL 4950 is to provide experience in the professional written and oral communication genres used in the biological sciences. Students present scientific papers using PowerPoint in a format typical of that used at professional scientific meetings. The expected outcome is that the student understands and explains the methodologies and findings of the paper effectively during the student’s presentation.

Assessment Method 1: Instructor evaluation of student presentations

Assessment Method Description

A rubric common to all sections was used by the instructor to assess each student’s presentation. This rubric addresses three skills: 1) Structure ideas clearly and expressively, using appropriate language free from bias and understand what it means to be an ethical and credible speaker; 2) Communicate candidly (in an open and direct manner) and effectively as an individual, in pairs, or in small groups; and 3) Actively listen to oral arguments and recognize when a recipient does not understand a message, adapting it as necessary.

Findings

On June 19th 2013 the five instructors who taught BIOL 4950 in the 2012-2013 academic year met to summarize and review the data. The results from the assessment of 53 students were considered. To determine the extent of competency of the average student using the rubric, the average score for each of the three skills was determined. It was decided that each of these skills should
count equally towards overall competency. Based on these findings, the extent of competency of the average student is “advanced.” Most students exceeded our standards in all three of the skills. In addition, very few students demonstrated a “basic” level of mastery, and no students demonstrated a general lack of competence (i.e., did not meet the standard).

How did you use findings for improvement?

We have not yet discussed the findings as a group. However, at the June 19th meeting there was extensive discussion of the rubrics (the course has a set of rubrics for a number of different assignments) and we found high agreement on their applicability. Findings will be disseminated to the faculty at a faculty meeting during the current academic year.

Additional Comments

Assessment Method 2: Self-reported student evaluation of student learning outcomes

Assessment Method Description

Graduating students in the program are requested to complete a survey to self-report on several learning outcomes. The survey asks them to respond to several learning outcome statements (listed below) using the following scale of Poor, Fair, Good, Very Good, Excellent.

Learning outcomes

Ability to write scientific paper
Analyze and interpret data
Think analytically
Apply general concepts in problem solving
Formulate creative/original ideas

Findings

Data from only 2 respondents were available from Summer and Fall 2013 graduates. In summarizing these we have used the following numerical scale: Poor=0, Fair=1, Good=2, Very good=3, and Excellent=4.

Mean scores for each of the learning outcomes are presented below:

Learning outcomes
Ability to write scientific paper: 1 (only 1 response)
Analyze and interpret data: 2
Think analytically: 2
Apply general concepts in problem solving: 2.5
Formulate creative/original ideas: 1.5

Mean ratings were relatively low (2 out of 4) for Think analytically and Analyze and interpret data. The lowest means were for Ability to write scientific paper and Formulate creative/original ideas, with means of 1 and 1.5 respectively. The highest mean was for Apply general concepts in problem solving, with a value of 2.5.

How did you use findings for improvement?

The means were low in general but based on data from only 2 respondents. These results will be disseminated and discussed at faculty meetings to strategize how to boost student perceptions of program learning outcome success. Greater emphasis on writing scientific reports in lab classes may increase the score for Ability to write scientific paper, along with Analyze and interpret data as students will improve as they get more practice. Work in classes with case studies and in small groups may be used to raise scores for Formulate creative/original ideas and Think analytically as those approaches allow students to practice skills in those areas.

Additional Comments

Expected Outcome 2: Compete successfully for jobs or positions in post-graduate or professional programs

Graduating students will be able to continue into post-graduate or professional programs at other colleges/Universities or obtain employment.

Assessment Method 1: Survey of graduating majors

Assessment Method Description

We used 2 surveys: one by COSAM and one by OIRA. Graduating students in the program are requested to complete a survey to self-report on several program metrics. The survey asks them for their future plans and whether they have applied and been accepted into a post-graduate or professional program, or have obtained employment.
Findings

Both respondents to the COSAM survey reported that they were planning on post-graduate work. One had applied but did not know about acceptance yet, and the other was planning on applying in the next year.

For the year 2012-2013, 22 Zoology students (the Plant Sciences major now is included in Organismal Biology and thus combines Zoology and Plant Sciences) responded to the OIRA survey of graduating students. Of these 7 indicated that at the time of graduation they were seeking employment. Of these three found employment in a field related to their major. The majority of the students, 11, are planning to enter graduate school. One student was seeking other opportunities.

**How did you use findings for improvement?**
These results indicate that a significant percentage of our Zoology students plan to continue their studies in graduate school. We will look for additional opportunities to provide them with experience in undergraduate research. These results also indicate that a significant number of these students graduate seeking jobs. Therefore we will continue our efforts to encourage these students to seek internships during their academic careers that will provide them with experience in their area of interest. We will work with our COSAM Student Services office to receive better feedback from our graduates.

Additional Comments