

Assessment of Student Learning within Biological Sciences: Implementation of Pre- and Post-ACAT Tests.

Purpose of Study:

To assess the instruction in the Department of Biological Sciences

Instrument:

Area Concentration Achievement Tests (ACATS) – this test reflects the overall level of integration of the various content components of a departmental major, providing information for programmatic and curricular evaluation.

Test Items:

Participating faculty derive test items which they believe to be appropriate for graduating senior majors and which reflect mastery of the content base of the discipline.

Methods:

Pre-testing (testing of freshman majors): Students in the Department of Biological Sciences' different Fall 2004 academic orientation classes were given the ACATS test to assess their level of knowledge at the beginning of their academic programs.

Post-testing (testing of senior majors): Students in the Department of Biological Sciences' Spring 2005 BIO 514 Evolution class were given the ACATS test to assess their level of knowledge near the end of their academic programs.

Results:

A major focus of the pilot project was to assess the logistics of the pre/post-testing approach to determine if the undertaking was practical and would provide the type of assessment information the department was seeking. Preliminary results indicate that the classes identified in which to administer the ACATS were appropriate and that the data collected could be used for assessment purposes. In addition, the courses selected in which to administer the test were found to provide the recommended amount of time for administering a four content area ACATS exam (48 minutes).

In the four core ACAT content areas (i.e., ecology, plant and animal physiology, vascular and non-vascular botany, invertebrate and vertebrate zoology) assessed, senior biology majors performed consistently higher than freshman majors (Table 1).

Table 1:

Standard scores for EKU Department of Biological Science's freshman (n=52) and senior (n=18) majors taking the ACATs assessment test, 2004-2005 AY.			
<u>Area</u>	Freshman	Seniors	
	<u>Standard Score</u> ^A	<u>Standard Score</u>	<u>Percentile</u> ^A
Ecology	426	528	61
Plant & Animal Physiology	462	472	39
Vascular & Non-Vascular Plants	448	516	56
Invertebrates & Vertebrate Zoology	409	474	40
OVERALL PERFORMANCE	409	483	43

Discussion:

Three issues were identified as problems in Biology's ACATS-pre/post-test assessment approach.

1. Tracking freshman who take the test.

It would be possible for a student to take the pre-test in their ASO class and take the BIO 514 class during the summer or as an on-line course—thus missing the post-test which will be administered in-class during the Fall and Spring terms.

2. Sample size. Because of the cost of the ACATS exams, not all freshmen in the ASO classes were tested in the pilot project. To establish a baseline set of data for use in future assessment comparisons, the Department of Biological Sciences will need to find a source of funding to support their program assessment activities.

3. Motivating students to do well on the ACAT. Discussion is underway to determine if including outcomes assessment into course requirements (part of grading) is desirable.