

Lessons Learned

Closing the Assessment Loop

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BIOLOGY

"Assessing Effects of Student Research Participation"

College of Science and Math

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Along with a strong emphasis on the disciplinary fundamentals, the Biology Student Outcomes Assessment Plan emphasizes student learning of basic research methodology, critical thinking skills, and intellectual independence. In addition to Activity and Lab-based classes, these goals are often accomplished through faculty-supervised Independent Study projects (BIOL 190), as well as volunteer and paid opportunities for students to engage in research in faculty labs. Approximately 15-20% of Biology majors avail themselves of these research opportunities.

The broad goal of Biology's assessment project in 2009-10 was to quantify the effectiveness of all the student research

activities in meeting those departmental SOAP goals which are most relevant to research projects. Accordingly, we used assessment data to check whether active participation in a research project outside the classroom context as an undergraduate student enhances student learning, particularly in the areas of critical and independent thinking.

The assessment data were drawn from two direct instruments: 1) a version of the Biology post-test; 2) the BIOL 105 term paper, which is a culminating project on an evolutionary topic. The results of this study provide strong confirmation of the notion that research experience is correlated with increased student achievement in biology. Students with any research experience at

all scored somewhat higher on the Post-Test than students without such experience. Students with research experience also scored 3 points higher (on a 20-point scale), on average, on term papers than those without such experience. The effect was in fact much stronger for scores on the Evolution term paper than on the Biology Post-Test, but both effects were statistically significant. The conclusion to be drawn is that experience conducting research at the undergraduate level, whether as a volunteer, paid technician, or BIOL 190 student, clearly goes along with improved skills in biology and critical thinking.

Do you have success stories to share?

If you've done interesting or innovative assessment that you're willing to share, please contact IRAP at 278-8582 or e-mail cleimer@csufresno.edu.



SPECIAL EDUCATION

"Assessing Future Educators"

Kremen School of Education and Human Development

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The Special Education (SPED) program primarily engages in teacher preparation. Accordingly, very few pencil-and-paper assignments are used to evaluate their candidates. Direct assessment methods are usually hands-on, such as when the program assesses a candidate's ability to conduct assessment of students.

To complete this assignment, teacher candidates are required to use the Woodcock Johnson (III) Academic Achievement Test employing standard procedures including interpreting computer generated scores and graphs, writing an assessment report based on the data collected, and developing goals and objectives for an Individualized Education Program for a special education student. Faculty members use a 5-point scoring rubric to assess multiple dimensions of the assignment. Indirect assessment such as alumni and employer surveys are also used. All of the assessment data are then organized and analyzed by the Assessment Coordinator, then summarized and presented at program meetings where appropriate action is decided upon.

Every year the CSU Chancellors' Office administers an employer survey that asks about teachers' abilities, including their ability to assess. The 2006 survey results showed that SPED students'

knowledge of and ability to conduct formal and informal assessments of pupils was poor. After discussing this finding, the SPED faculty determined that assessment techniques as part of a course was inadequate preparation. The problem was addressed by adding a new assessment course and integrating assessment techniques into other existing courses. It takes two years to complete the program, then their summative assessment (i.e., employer survey) takes place once they are employed. Consequently, although the rubrics provide faculty members with early indicators of improvement, it takes at least three years to learn whether the changes resulted in better prepared teachers.

The evidence shows considerable improvement following these curriculum changes. Employer surveys of SPED candidates one year out indicated that candidates' ability to conduct assessments improved from 50% to 84% of respondents stating "well/adequately prepared." The faculty's ongoing formative assessment using rubrics and the employer surveys administered each year both show that these improvements are being maintained. Therefore, the changes fostered lasting success. The SPED program continues to engage in this multi-year assessment loop and is currently in the midst of assessing new changes that were instituted for addressing deficiencies in training candidates to teach mathematics.