

Assessment Report Summaries 2017-2018

Biology

This AAR presents data from the assessment of the four-year curriculum in the Department of Biology. The assessment focused on two major aspects of student learning – an established knowledge base within the biological sciences and a demonstrable competency in regard to the analysis of data and the application of biological concepts. Data were collected from responses of senior students to a locally produced examination that emphasized a knowledge of fundamental concepts and the analysis of presented data. Overall, the results indicate that our students have a well-developed knowledge base in biology related concepts; however, a majority of the students struggled in their ability to apply the information, at least in the context of a rigorous exam. In the context of the first year courses, the Department of Biology has already initiated a curricular agenda that places greater emphasis on analysis of data and the application of concepts. Similar practices will be utilized in more advanced classes as we continue with our curricular changes.

Chemistry

The chemistry department is carrying out direct assessment of student learning through the incorporation of tracked questions in exams, quizzes, and assignments. This will allow us to look at the trajectory of individual students on their performance throughout the chemistry sequence. At this point in time, our new assessment strategy is in its infancy. Because we are tracking individual students throughout their four academic years, we anticipate that it will take 4-6 years to begin to gather data that will inform the direction of our efforts to improve student performance.

Computer Science

The Computer Science (CS) department administers a standardized test – the Major Field Test, developed by ETS – to all graduating seniors. This test provides an overall score for the department as well as subscores of three content areas that we can compare to other departments who administered the test. Two factors that complicate assessment are the small sample sizes and high variability in instruction quality. This year, we had just 7 graduating seniors, and the majority of courses in the major have been taught by visiting and adjunct faculty during their time here. Therefore, drawing meaningful conclusions from the results is difficult, but we look for any consistency and trends in the data. This year, our results show a continuation of our relatively high scores in one area (“Discrete Math and Algorithms”) and drops in the other two (“Programming and Software Engineering” and “Architecture and Systems”). The latter might be explained by the staffing of the relevant courses when this cohort was taking them, but we will monitor the category in future cohorts.

Economics

The Department of Economics has conducted an assessment exercise on an annual basis over the last six years. Such diligence has been recognized by the assessment committee to all academic units and to the larger faculty body. Presently, the department is short-staffed and going through a transition phase with the recent resignation, retirement, and upcoming retirement of tenure-line faculty members. So, in the 2017-18 academic year we focused on our efforts in closing the assessment loop. We underscored the pedagogical and curriculum implications of our previous assessment exercises as we now have enough data to identify the strengths and weaknesses of our program. This has already led to certain curricular changes.

Educational Studies

Based on assessment data collected from internal and external measures, we found that Educational Studies student teachers did ultimately have the skills and dispositions needed to create a positive, engaging classroom environment. At the same time, given what was learned throughout this assessment cycle, we know student teachers could use additional education earlier in the curriculum so that they can start student teaching with a stronger understanding of theories and research on this topic and how to apply this information in a dynamic, diverse classroom. With the information gained in this assessment cycle, we are developing a new course for 2019 dedicated to classroom environments.

English

During the 2017 – 18 academic year, the English department directly assessed student learning in ENGL 401: Senior Writing Project using a rubric created by English department faculty. 2017 – 18 was the first year that ENGL 401 was a required and not an elective course, so the evaluation had the potential to more accurately than ever before reveal to faculty the student learning outcomes of the English-Writing sequence. While there were two slight drops in the scores and one negligible drop, all five of the average scores (for “Originality”; “Complexity”; “Shape”; “Language”; and “Rhetorical Awareness”) were in the “Mastering” range. With this information, the department continues to develop a snapshot of student learning that indicates a significantly positive trajectory for student learning in creative writing: from “high-emerging”/“low-developing” at the 200 level to “high-developing” at the 300 level to “low-mastering” at the 400 level. This information will be shared more broadly (especially with prospective students and parents) and factored into the unit’s ongoing conversations about pedagogy (including considering the use of more careful scaffolding and ePortfolios).

Mathematics

In Spring 2018, nine graduating seniors completed the senior exit survey. From their responses to questions related to the department’s student learning goals, it is clear that our majors are better informed about the goals and recognize that, for the most part, the goals were addressed in their classes. As was the case in the past, we are especially pleased with our success in meeting the goals that address analytical and problem-solving skills, and conceptual development. Following an earlier recommendation from the Assessment Committee that we separate embedded goals from our previous two goals, we developed a set of five goals (see page 7). We also made information about the goals more accessible to students. The goals are now available on the department webpage. In addition, we discuss them in our classes and with our teaching assistants.

The exit survey data also indicate that our seniors continue to wish for a wider variety of upper-level courses. They also wish for more courses with real-world applications, and also for opportunities to further develop their computer skills. In response to requests from students interested in actuarial science, a few years ago we added the course Time Series and Regression Analysis (recently revised and now under the new name of Computational Data Analysis). More recently, we added two lower-level, formal reasoning courses: Mathematics of Finance and Statistics. While the two formal reasoning courses do not count for the major, they cover applied topics, useful to students interested in actuarial science or financial math, in general.

Another earlier student request was for more proof preparation before students get to upper-level courses that assume they are proficient at writing proofs. In response to that request, we developed a new Calculus sequence that merges the traditional Calculus sequence with the first-year Analysis sequence. The conceptual content of this new sequence is higher than that of the traditional sequence, which allows for greater emphasis on concepts and proof. The new sequence also incorporates computer skills. The first two courses in the sequence have a weekly computer lab component. The goal is to introduce basic programming skills early in the curriculum, thereby allowing more time for the development of specialized computational and programming skills in subsequent upper-level courses. We also moved our 400-level, proof-based courses to the 300 level (while keeping the same course contents) and moved some of our applied courses to the 400 level. This change was made to ensure continuity from sophomore year to junior year in terms of teaching concepts and proof writing, and also to provide an opportunity for offering applied courses with more theoretical content.

In order to ensure that students are prepared to take the first course in the Calculus sequence, we now administer a placement test (given twice, so far). Although we have not yet conducted a formal assessment, it is clear to those who have taught Calculus I since the introduction of the placement test that the test is working. The students' math backgrounds in Calculus I are more uniform and also stronger. Students who didn't pass the test were instructed to take Math 145, a formal reasoning course that doubles up as a remedial course.

To better engage our students in professional, extra-curricular activities, including research-related activities, we have implemented a number of programs, e.g., Beling Student Speaker Series, Brown-Bag Lunch Series, mathematical contests, panel discussions on teaching, graduate programs, and actuarial science, and participation in undergraduate math conferences. Judging from student participation and attendance, it is fair to say that those programs have been well received by students.

Finally, we developed our own sophomore-level developmental assessment test and our own senior-level summative assessment test. We have administered these tests only twice and once, respectively. Therefore, we are still in the process of revising the tests and working on the logistics. More information about the outcomes of both tests is available in the next section.

Nursing

Efforts continue to review the CCTDI and current practices to promote critical thinking (e.g., high fidelity simulation; self-paced learning modules; written clinical and classroom assignments that evidence critical thinking). For the last 5 years, the School of Nursing has been examining the effectiveness of critical thinking evaluation and curricular modifications that could enhance critical thinking. Beginning with the School of Nursing Fall Retreat held August 16, 2013, the review of the CCTDI, including the 7 factors that comprise the subscales, was discussed with an emphasis on ways to modify existing teaching tools used in classroom and in clinical to enhance critical thinking. The retreat was attended by all School of Nursing faculty and professional staff and included a discussion on best practices in nursing education to evidence critical thinking followed by an experiential exercise allowing all faculty to modify at least one learning exercise used in a Fall course. The outcome of the meeting was that every faculty member revised at least

one learning tool starting in a Fall 2013 class that made the tenets of critical thinking more overt in an assignment. A decision to retain the CCTDI was made to assure analysis across decades of data and because no superior direct measure was identified. Discussion began about how to incorporate CCTDI results into academic advising and a plan was further developed at the Fall 2014 Retreat.

Ongoing discussion of the impact adding language to assignments that promote critical thinking in each clinical course is addressed in Faculty Course Evaluations completed for each course. Consensus was reached by the School of Nursing to continue using the CCTDI in the 2018-2019 academic year.

Physics

- (1) This data has been shared with faculty in the department.
- (2) We have had brief discussions about how we might utilize this data to improve student learning outcomes. Some faculty members have already been using these results to partially inform the revisions they make to their pedagogy in an ongoing fashion.
- (3) We have agreed to continue to collect pre-test and post-test data for two direct assessment instruments, i.e.FCI and CSEM.
- (4) E-CLASS is a self-reported student survey, and it is about their learning attitudes, not about measured outcomes. We the faculty believe that it is important to cultivate these particular attitudes, and that the students' self-reports constitute valuable information. We have therefore agreed to continue to collect this data for future Phys 399.
- (5) There was significant disagreement among some faculty members who have taught Quantum Mechanics (Phys 407) about the value of the QMCS instrument. We agreed that, for now, we will continue to use this instrument, and also look for, or design, a better instrument for measuring students' understanding of Quantum Mechanics.
- (6) During the current semester, one faculty member combined their own judgment with the pre-test results of CSEM, to inform the department that that particular group of students is less prepared than is usually the case, and asked if other faculty members could offer skills sessions to help this group. Four faculty members delivered skills sessions for this group of students.
- (7) During the current semester, another faculty member initiated a request, informed partially by assessment, that we track the post-graduation and/or summer plans of our upper-class majors using a shared online spreadsheet where we indicate the names of all of the students for whom we are writing letters of recommendation. As of today, we are successfully tracking and helping 6 out of 12 seniors, 8 out of 10 juniors and 5 out of 10 sophomores.

Political Science

As a department, we agree that one of the most important skills we want our students to develop is the ability to create meaningful conversations among scholars in the field around problems that matter. We want our students to understand the implications of competing perspectives and to enter those debates in order to stake their own positions. In the capstone, this is accomplished through a literature review in the context of a larger empirical research project. Students complain that the literature review is one of the most difficult parts of the Senior research process; and it counts for a substantial part of their grade. Important as this skill is, we find that it is often one of the most difficult for students to master. Getting students to move beyond strings of short summaries or "book reports" on what they read takes time, patience, and a lot of

practice. We know that we need to incorporate more assignments that give students instruction and practice with identifying different perspectives, schools, and underlying assumptions. Our theory courses generally do a good job with this. Several of our Gateway courses build in explicit assignments on identifying different perspectives, assumptions, and implications. Clearly, our work on this is not done, however.

Specific efforts should include:

1. Integrating more assignments at the 200- and 300-levels on synthesizing multiple and competing perspectives in the academic literature;
2. Providing class instruction and smaller scaffolded assignments to prepare students to undertake written reviews of literature on a topic;
3. Giving special attention to underlying assumptions and implications of different perspectives when presenting material and choosing/discussing readings.

In August/September, Greg Shaw, who is taking over Chair's duties, will convene the department for a discussion of 2017-18 assessment results. The focus of these discussions will be two-fold: (1) develop an action plan for implementing the remedies outlined above and (2) more purposefully select assignments for use in the final round of assessing this learning goal in 2018-19.

Psychology

This past year we assessed the following student learning goals: the learning of key concepts in our psychology 100 class, the ability to critically think about and applying psychological principles related to research design and analysis, as well as principles applying psychological outcomes to everyday life and social situation in the context of appropriately using ethics to understand the limitations of psychological knowledge. The data suggests students were successfully exposed to a psychology curriculum that demonstrates these learning goals. Direct measures from the introductory level course in psychology suggest students demonstrated knowledge of most subfields in Psychology. Indirect measures from a senior student exit survey and a survey of faculty teaching our Research Methods course in the department also suggest students have been exposed to a consistent level of instruction regarding the critical analysis, interpretation, reporting, and execution of scientific inquiry within the science of psychology.

Sociology

As part of our external review during AY 15-16, we were charged with re-considering whether to require Introductory Sociology for majors and minors. One school of thought suggests that a standardized introductory course guarantees that students have the same foundational knowledge that they can access in their coursework moving forward. Another school of thought, which the sociology program currently practices, suggests a "Ferris wheel" approach, in that students can jump into the major from a variety of entry points; as long as scaffolding still takes place in core, required courses, there will still be strong disciplinary knowledge upon which students can build.

In order to help us to consider this question, we designed an assessment model that would examine consistency in student learning outcomes in a range of introductory sociology courses, and also compare those outcomes to our other 100-level course: Social Problems. (After all, since we currently only count one 100-level course

toward the major or minor, requiring Introductory Sociology would negate Social Problems. Further, we were curious about how learning outcomes might differ between introductory-level courses.)

Hispanic Studies

In 2017-2018 academic year the Hispanic Studies Department assessed the critical thinking skills of students in one 400-level literature class using direct measure. Preliminary results show that our students are meeting our goals. Hispanic Studies is considering the creation of assessable learning goals for the obligatory study abroad requirement and also creating a signature work project.