

## **SYNOPSIS OF THE USE OF COURSE-EMBEDDED ASSESSMENT IN A MEDIUM SIZED PUBLIC UNIVERSITY'S GENERAL EDUCATION PROGRAM**

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### **Introduction**

In 1998, the General Education Council at a medium sized public university realized that it needed to improve its assessment practices in general education. Although the existing data from standardized tests, student surveys, and course materials had yielded some interesting information, the Council rightfully concluded the data did not indicate that the course met the general education criteria. The Council wanted data that would indicate compliance with the general education learning outcomes and reveal the quality of student performance in meeting the newly articulated outcome objectives. After much discussion, the Council settled on a faculty-driven course-embedded assessment process that would allow for flexibility in teaching style and course content but still measure quality of student performance throughout the program.

### **Explanation of Course-Embedded Assessment**

Course-embedded assessment, a cutting-edge formalized assessment based on the work of Barbara Walvoord and Virginia Johnson Anderson (1995), is a process that allows multiple section courses to use the same outcomes and rubrics, thereby guaranteeing consistency without the use of cookie-cutter syllabi or methods. As with any new approach, course-embedded assessment is time-consuming at first due to development and piloting. Once the process is

formalized, however, the assessment of any given class should only take one-half to one hour of individual faculty time. The beauty of course-embedded assessment is twofold: (1) assessment and the consequent improvement of teaching and learning is in the hands of the instructor rather than an administrator or outside testing agency; and (2) the data gathering and interpretation is flexible enough to appeal to such diverse disciplines as mathematics and English. Thus, the entire university can follow the same plan.

The idea of embedded assessment for the university's general education courses was first discussed in the 1997–98 academic year by administrators within the College of Arts and Sciences (Flake, Doerner & Trahan, 2001). A thorough search of the literature provides evidence that formal analysis of course-embedded data has occurred at the course level in other institutions (Farmer, 1993; Whitfield, 2003) and that a similar framework addressing programs is articulated at the institutional level by the Office of Institutional Effectiveness & Planning (Kelley, 2005) at a medium sized institution of higher education. Thus far, embedded approaches have been used to assign grades and evaluate the effectiveness of the teaching-learning process (Wright, 1997), but they have yet to be formally implemented in a large program such as General Education. Institutional Web sites that describe course-embedded assessment processes can be accessed via the key terms “course-embedded assessment,” in addition to “course evaluation,” into an ERIC search.

### **Program Implementation of Student Learning Outcomes**

Different student learning objectives for the seven general education categories (University of Northern Colorado General Education Council, 2005) had been proposed in the early 1990s when faculty were not concerned with assessment; consequently, many of the objectives were not measurable. The first step in implementing course-embedded assessment was to transform the current course objectives to general education learning outcomes (Golson & Gerretson, 2001). For many disciplines, this simply meant rewording objectives, using active verbs to reflect active learning. In some cases, as Walvoord and Anderson (1998) anticipated, critical thinking

was substituted for coverage, and instructors were able to apply the outcomes to the learning that occurred in their classrooms. In other cases, however, the outcomes, although now active, remained vague and indefinable; instructors found it difficult to measure outcomes. This initiated discussions about redefining the general education outcomes, a process that was particularly important for multicultural courses, which were very broad in nature. In courses where outcomes were fairly well defined, such as mathematics and composition, instructors began thinking about how the outcomes matched what they taught in their courses. As outcomes had to be included on all general education course syllabi, the process could be monitored by the General Education Council each time a course came up for review.

One year later, for the first time in the history of the institution, all faculty and students were aware of the general education learning outcomes and faculty understood that they would be accountable for meeting learning outcome expectations. Consequently, even though several instructors still “covered” the same material, they now did so with special attention to meeting the required critical thinking and basic skills as stipulated in the general education learning outcomes. Once faculty became aware that what they had been doing remained the same and the only additional task was documentation submitted to the General Education Council, most were motivated to comply. If a faculty member ignored the reporting process, his or her course was put on probation and reviewed the following year. If the process was ignored the second year, the course would be dropped from the general education offerings. This criterion encouraged faculty to “improve student learning “rather than being placed on the defensive” (Whitfield, 2003).

## **Rubrics**

As part of course-embedded assessment, instructors were asked to supply rubrics to measure objectives. All instructors of the courses under review the first semester of implementation were asked to attend a workshop session to be mentored in identifying tools of assessment that aligned with the general education learning outcomes.

Instructors were asked to bring their general course syllabi, along with their course section syllabi, in addition to sample tests, paper assignments, and so forth. Faculty members of the General Education Council who had piloted the project led the discussion and facilitated the workshop's hands-on application to each instructor's existing assessments. One instructor in economics brought a multiple-choice examination; another instructor in geography produced a combination of short answer essays and multiple-choice questions. Some instructors used final papers while others used experiments and/or projects.

Many faculty members had difficulty understanding the concept of a grading rubric and needed training in producing scoring guides that aligned their testing items with the general education outcome criteria. The first training was laborious, but faculty became more comfortable when they realized that they did not have to align all assignments or test questions with every category outcome. In fact, one or two of the outcomes were sometimes inappropriate for some courses and therefore were not addressed. For example, composition did not address the research outcome until students completed a second-level intermediate writing research course. An instructor in economics addressed outcomes with 75% of the final exam and used the remaining 25% to evaluate comprehension of additional material that she felt was important. Once the majority of faculty had been trained and the majority of the courses had been assessed, models of assessment materials were made available for first-time instructors of courses under general education review. The Council currently sponsors course-embedded training sessions whenever necessary, with previously trained faculty given a small stipend to lead workshop sessions implementing hands-on training with instructor-made assessment materials.

### **Reporting Process**

The administration of the process is fairly simple. Every year, the Council identifies courses to be evaluated within each of the general education categories. Instructors for each course identified are sent letters that request submission of a packet containing a syllabus, course-embedded assessment data entered into a standard reporting

form (see Appendix for examples), rubrics, sample work examined, and reflections on the data analysis results. The tables, consisting of raw data of numbers of students who “exceeded,” “met,” and “did not meet” outcomes, are then submitted to the appropriate General Education Area Committee. For the general education skills categories of composition and mathematics, a fourth category of “in progress” was added to present information of student progress towards “meeting expectations.” The Area Committees next review the materials and present their recommendations to the Council. Then, Department Chairs are informed of which courses continue to meet or no longer meet the general education criteria. Sections from multiple section courses are reviewed on a rotating basis. The process benefits both the General Education Program and those teaching general education courses, as individual instructors now have information in hand on how they can improve course delivery.

### **Data Analysis**

The raw data gives departments an understanding of the level of student performance. For example, in the Introduction to College Composition course, writing that “exceeds expectations” is defined as “senior-level” writing, writing that some faculty in other departments tend to expect of all students regardless of their placement. “Meets expectations” is defined as B-/C+ “senior-level” writing. And “does not meet expectations” is defined as writing that would not be accepted at the “senior level.” As there are five outcomes—critical thinking, rhetorical stance, structure, coherence, and grammar—writing can “exceed expectations” in critical/creative thinking, but barely “meet expectations” in grammar, for example. After four years of data collecting, we have found that approximately 57% of the Introduction to College Composition students “meet” or “exceed expectations” in one or more outcomes. The remaining 43% of the students produce writing that is faulty in one or more outcome area. In contrast, approximately 85% of the Introduction to College Composition students earn grades of C or better. The difference can be explained by several factors: first, “exceeds” and “meets” predicts upper division rather than introductory competency; and second, whereas a small

portion of the grade for the first introductory course may be based on participation, attendance, number of required journal entries, and so forth, assessment of learning outcomes is based on evaluation of one final written paper. Results from the second-level general education composition courses indicate some improvement. For example, there is a 9.6% increase in the advanced category of the critical/creative thinking outcome from the first- to the second-level general education course. In contrast, there is a 10% decrease in ability to structure essays coherently. There is some speculation that this may be due to more advanced thinking and greater attempt to articulate complexity.

The mathematics instructors, on the other hand, were given the choice to use well-chosen comprehensive final exam questions, course projects, and/or problem write-ups. From careful analyses by the Departmental Assessment Committee, and after faculty discussions, the Committee Chair was able to shorten the list of evaluation techniques to the satisfaction of those required to submit general education course reviews. Due to the statistical nature of the assessment table, the department quickly made a smooth transition to complete implementation of general education course-embedded assessment. From that point on, the perception of mathematics and English instructors changed from “we already assess” to “we document what we already assess.”

### **Evaluation of the Effectiveness of Course-Embedded Approach**

The virtue of course-embedded assessment is that it puts assessment in the hands of faculty, rather than outside agencies. It yields data on student achievement that can be used to improve instruction. Moreover, it could replace standardized testing as an assessment method in general education. In addition, there are benefits for category areas (Gerretson & Golson, 2002). For example, in composition, the data helped demonstrate to students that in order to improve, they must continue writing throughout their college years. In other words, a grade of A in Introduction to College Composition indicates that the student writes well at the introductory level, but does not guarantee a grade of A in a sophomore level composition class, much less a grade of A in an upper division course. Nor does

a grade of A in a general education mathematics course imply success in an advanced economics course.

There are other benefits as well, not the least of which is that instructors feel more engaged in a common cause rather than simply teaching an assigned section of a service course. In fact, the Department of Mathematical Sciences has used the general education course-embedded assessment as a model to develop the department's annual program review. Each program emphasis requires instructors to submit a packet similar to the general education course review packet to collect information on student achievement in connection with the Mathematical Sciences Program objectives.

When instructors in higher-level writing courses began assessing improvement with the same course-embedded rubric as used in the lower levels, writing faculty were able to track student learning throughout the four years. Although we are not claiming that improvement occurred because of brilliant instruction, we can point to a steady upward trend, thus achieving some accountability. And as an added benefit to students, instructors in disciplines other than English have borrowed from the composition rubric to create rubrics to measure writing outcomes in their discipline, thus bringing some consistency to assessing writing throughout the disciplines.

## **Conclusion**

Course-embedded assessment has allowed the general education faculty to see themselves as planning and assessing learning outcomes at the course level over a period of years. Although some instructors and/or area committees continue to fine-tune the rubric or suggest better ways of gathering data, most now teach with the general education outcomes in mind and most see their work as contributing to a more unified cohesive instruction. In other words, there has been an evolution from informal assessment via graded papers toward collating the data to matched course goals and general education learning outcomes. Courses with multiple sections now have a system to track outcomes across sections and across years. The process has become so natural that other disciplines have incorporated the composition skills category course-embedded assessment into the writing-outcomes section

of their rubrics. Although the university faculty, the General Education Council and the general education course instructors do not expect miracles from course-embedded assessment, the process has allowed faculty and students to have informative conversations about learning expectations. This is an improvement over the past situation. Our course-embedded approach is now moving past its infancy as we begin to use our analyses of student achievement to inform instruction.

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Appendix

**GENERAL EDUCATION SKILLS CATEGORY 2—  
MATHEMATICS COURSE-EMBEDDED ASSESSMENT  
REPORTING FORM**

Course Name: \_\_\_\_\_ Course # \_\_\_\_\_ Section # \_\_\_\_\_  
 Instructor’s Name: \_\_\_\_\_ Enrollment \_\_\_\_\_ Term \_\_\_\_\_

**A. STUDENT OUTCOME OBJECTIVES**

<i>Objective</i>	<i>Exceeds expectations</i>	<i>Meets expectations</i>	<i>Does not meet expectations</i>	
	<i>Advanced</i>	<i>Proficient</i>	<i>Partially proficient</i>	<i>Not proficient</i>
1. The student will demonstrate proficiency in the use of mathematics and/or statistics to structure their understanding of and investigate questions in the world around them.				
2. The student will demonstrate proficiency in treating mathematical and/or statistical content at an appropriate level.				
3. The student will demonstrate competence in the use of numerical, graphical, and algebraic representations.				
4. The student will demonstrate the ability to interpret data, analyze graphical information, and communicate solutions in written and oral form.				
5. The student will demonstrate proficiency in the use of mathematics and/or statistics to formulate and solve problems.				
6. The student will demonstrate proficiency in using technology such as hand held calculators and computers to support their use of mathematics and/or statistics.				

**B. STUDENT WORK EXAMINED:** List the tasks used to measure each objective (e.g., exams, research project/paper assignments, presentation or class assignments) and attach a copy of each.

- C. SCORING CRITERIA: Briefly explain the criteria used to evaluate student performance in relation to each objective (i.e., what constitutes Advanced, Proficient, Partially proficient, Not proficient) and attach copies of measurement instruments.
- D. YOUR REFLECTIONS ON THE RESULTS: Briefly, why do you think students performed as they did in this class? What might be done to improve their performance?
- E. SUGGESTIONS FOR IMPROVEMENT: Briefly, how might the course-embedded assessment process be improved? Ideas for possible revisions of listed student outcomes objectives are especially welcome.

**GENERAL EDUCATION SKILLS CATEGORY 1—  
COMPOSITION COURSE-EMBEDDED ASSESSMENT  
REPORTING FORM**

Course Name: \_\_\_\_\_ Course # \_\_\_\_\_ Section # \_\_\_\_\_  
 Instructor’s Name: \_\_\_\_\_ Enrollment \_\_\_\_\_ Term \_\_\_\_\_

**A. STUDENT OUTCOME OBJECTIVES**

<i>Objective</i>	<i>Exceeds expectations</i>	<i>Meets expectations</i>	<i>Does not meet expectations</i>	
	<i>Advanced</i>	<i>Proficient</i>	<i>Partially proficient</i>	<i>Not proficient</i>
1. The student will demonstrate critical and creative thinking skills (including cognition, comprehension, application, analysis, synthesis, and evaluation) in his or her approach to the topic.				
2. The student will demonstrate the ability to vary rhetorical strategies in conjunction with varying purposes, audiences, and content.				
3. The student will demonstrate the ability to incorporate source material into writing.				

<i>Objective</i>	<i>Exceeds expectations</i>	<i>Meets expectations</i>	<i>Does not meet expectations</i>	
	<i>Advanced</i>	<i>Proficient</i>	<i>Partially proficient</i>	<i>Not proficient</i>
4. The student will demonstrate the ability to structure essays coherently.				
5. The student will demonstrate knowledge and understanding of standard English usage with respect to grammar, punctuation, and spelling.				

- B. **STUDENT WORK EXAMINED:** List the tasks used to measure each objective (e.g., exams, research project/paper assignments, presentation or class assignments) and attach a copy of each.
- C. **SCORING CRITERIA:** Briefly explain the criteria used to evaluate student performance in relation to each objective (i.e., what constitutes Advanced, Proficient, Partially Proficient, Not Proficient). Attach copies of measurement tools that deviate from standard rubric.
- D. **YOUR REFLECTIONS ON THE RESULTS:** Briefly, why do you think students performed as they did in this class? What might be done to improve their performance?
- E. **SUGGESTIONS FOR IMPROVEMENT:** Briefly, how might the course-embedded assessment process be improved? Ideas for possible revisions of listed student outcomes objectives are especially welcome.