

SOAC report to the Curriculum Committee on the Problem Solving/Critical Thinking Outcome

Spring Semester 2014

The outcome reviewed this past year was the Problem Solving/Critical Thinking Outcome.

Problem Solving/Critical Thinking Outcome

It is the faculty's goal that students who earn a baccalaureate degree in the College of Agriculture and Life Sciences will:

- apply a holistic approach to solving complex, issue-laden problems
- apply a rational and objective process to:
 - distinguish verifiable facts from value claims
 - determine the accuracy of statements
 - identify assumptions and detect bias
 - distinguish relevant from irrelevant information
 - establish priorities
- summarize, analyze, and interpret simple research data and policy issues
- critically evaluate their own arguments and those of others

During the 2012/13 academic year the CALS Student Outcomes Assessment Committee developed a procedure and a rubric academic programs could use to assess the PS/CT Outcome. The procedure and rubric can be found at the following site: <http://www.cals.iastate.edu/assessment/assessments> . However, programs were free to use whatever method they wished and 4 programs, ABE, AgEDS, Agron and AnS chose to use the Critical Thinking Assessment Test (CAT) developed by Tennessee Tech University.

The table that follows this discussion summarizes the results from reports submitted by 13 of the College's academic programs. Three programs, Ag B, Biola, and Gen had not submitted reports as of this writing. One program, Ag Bio, submitted a report but not the summary for the table. The table shows that roughly half of the 13 programs concluded their students were achieving the PS/CT Outcome at the competent level (highest) while the other half reported their students achieving it at the developing level (intermediate). None of the reporting programs indicated their students were achieving at the emerging or lowest level.

A survey of the program improvement plans did not reveal a common strategy in all the programs. However, there were a number of strategies that were listed by more than one program. Those items follow:

1. Problem Solving/Critical Thinking is a broad outcome that includes multiple components. There is a need to more tightly define which of those components are

most appropriate for given programs so that those components can be highlighted in the curriculum.

2. Programs need to be more intentional in teaching problem solving and critical thinking by developing activities and exercises to improve our graduates' skills in these areas.
3. Faculty development opportunities are needed to enable our faculty to improve their abilities to teach problem solving and critical thinking.
4. A number of programs plan to use the PS/CT rubric to restructure courses mapped to this outcome and to assess student work in those courses. Also, where multiple courses are mapped to the PS/CT Outcome, a common rubric needs to be used in those courses.
5. Some programs expressed the need to conduct annual or semiannual assessments to properly track student achievement of the PS/CT Outcome.

Recommendations

Based on a review of the reports submitted, the SOAC makes the following recommendations to the CALS Curriculum Committee.

1. Faculty development activities should be conducted at the College and/or the department levels to familiarize our faculty on the multiple components of problem solving and critical thinking and to enable faculty to design the activities and exercises to help student achieve the College and program PS/CT outcomes. We recommend that the Curriculum Committee consider faculty development activities with the following goals: (1) to educate faculty members about PS/CT skills and (2) to mentor faculty members who seek to incorporate PS/CT skills in their courses and across the curricula of their departments.
2. All academic programs should be strongly encouraged to assess student attainment of the College outcomes according to the calendar established by the SOAC. Furthermore, all academic programs should be strongly encouraged to submit their reports on time.

It is the opinion of the SOAC members that the improvement plans and strategies in the reports submitted are reasonable and should prove effective in their intent. We believe that recommendation 1 will assist programs in implementing strategies 1 – 3 that were included in the plans of multiple academic programs.

Each of the last two years we have had to formulate a report to the Curriculum Committee with incomplete information because some program reports were not submitted or not submitted on time. If the SOAC is to provide the Curriculum Committee with data-based recommendations for continuous improvement of the College's curriculum, we need the cooperation of all academic programs in CALS.

Summary Table

Problem Solving/Critical Thinking				
Program	Status	Evidence	Feedback	Action
A Ecl	Competent	Summary tables in report	Discussion topic at faculty meeting	Synthesis and evaluation skills identified as areas for improvement; action plan in place
Ag B	No report submitted			
Ag ED	Developing	See report tables	Presented to AgEdS Curriculum Cmte and the Faculty and Staff at monthly faculty meeting	AgEdS Curriculum Committee will be looking at departmental courses, curriculum requirement, and professional development for faculty.
Ag St	Developing	See report tables	Presented to AgEdS Curriculum Cmte and the Faculty and Staff at monthly faculty meeting	AgEdS Curriculum Committee will be looking at departmental courses, curriculum requirement, and professional development for faculty.

Program	Status	Evidence	Feedback	Action
Agron	Competent	Agronomy Department concludes that the seniors have demonstrated that they meet the critical thinking learning outcomes of the College. See report.	The Agronomy Assessment committee shared the information with the Curriculum Committee and the Department Chair.	Agronomy Department action plan for continuous improvement by establishing professional development activities for faculty and staff to learn more about teaching critical thinking skills, faculty members develop strategic critical thinking activities/exercises to use in their courses, and will continue administering CAT exams to monitor progress over time.
An S	Competent as having matched national cohort average scores.	Matched national norms on the Critical Thinking Assessment Test	Shared with departmental chair and curriculum committee. Committee approved report and was shared with college assessment chairs.	Continued assessment (once per year, limited by the cost and time involved to conduct the assessment) was planned. The committee concluded that one year's data was not sufficient to make any large changes in curriculum. No other formal action was discussed.
AST	Developing	Performance on CAT exam; see report tables	Presented to technology curriculum committee	Critical thinking will receive more focus by faculty in departmental teaching; continued assessment of critical thinking skills with CAT exam to monitor progress
BBMB				
Biol	No report submitted			

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Dy S	Competent as having matched national cohort average scores.	Matched national norms on the Critical Thinking Assessment Test	Shared with departmental chair and curriculum committee. Committee approved report and was shared with college assessment chairs.	Continued assessment (once per year, limited by the cost and time involved to conduct the assessment) was planned. The committee concluded that one year's data was not sufficient to make any large changes in curriculum. No other formal action was discussed.
For	Competent	Summary tables in report	Discussion topic at faculty meeting	Synthesis and evaluation skills identified as areas for improvement; action plan in place
FSHN	Developing	% of FSHN students' average rubric score falling in 'developing' category: 167 (76.9%); 203 (61.1%); 311L (100%); 360 (58.3%) [see Table 3]	results shared at faculty meeting	A series of 6 faculty special topics meetings in Spring 2014 will focus on learning outcomes for various degree programs in preparation for external review
Gen	No report submitted			
Hort	Competent	Performance on critical writing capstone assignment in Hort 451	Shared with the Department of Horticulture Outcomes Assessment Committee	The Department of Horticulture will continue to monitor assignments that evaluate critical writing in HORT451 and other senior level courses to ensure Horticulture

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I Tech	Developing	Performance on CAT exam; see report tables	Presented to technology curriculum committee	Critical thinking will receive more focus by faculty in departmental teaching; continued assessment of critical thinking skills with CAT exam to monitor progress
Micro	Competent/Developing	See summary table in report.	Report given to Micro supervisory committee and shared with those who teach in the program	Micro faculty will discuss the report at an upcoming meeting and develop a plan for improvement.
PSA	Developing	See summary reports	Shared with department chair and sociology department undergraduate curriculum committee	A modified version of this rubric will be developed to be used in the structuring of specific course syllabi and assessment tools (mostly like in Soc 325 since all PSA majors must take), which will allow for ongoing assessment of student skills and development in this area.

Addendum:

The preceding report is the SOAC report to the CALS Curriculum Committee. The following programs submitted their program assessments to the SOAC after the recommendations were submitted to the curriculum committee: Agriculture Business, Biology, Environmental Science, Genetics and Global Resource Systems. Questions concerning these assessments and the recommendations resulting from them should be addressed to the chair of the CALS SOAC.