

ESR – SAC Annual Report for Assessment of Outcomes 2011-2012

Please address the questions below

Send to learningassessment@pcc.edu by **June 22, 2012**; with Annual Report in the subject line

Note: Information provided in this report may be inserted into or summarized in Section 2C (LDC/DE) or 6B (CTE) of the Program Review Outline.

1. Describe changes that have been implemented towards improving students' attainment of outcomes that resulted from outcome assessments carried out in 2010-2011. These may include but are not limited to changes to content, materials, instruction, pedagogy etc.

Critical Thinking and Problem Solving: Other than environmental responsibility, perhaps critical thinking and problem solving are the most important core outcome for ESR classes. Science requires an understanding of the scientific method. The scientific method is followed and emphasized in all ESR classes. All of our majors' laboratory classes involve carrying out lab or field based data collection, examining data (mostly data collected by students) and processing (producing figures and using basic statistics) their data. They make conclusions about their data and answer post-lab questions formulated for applying principles of critical thinking. We have completed a critical thinking and problem solving assessment vehicle as part of the college wide assessment of critical thinking. We have continually modified our approach to instruction based on the results of this assessment.

Communication: ESR courses require that students write lab reports, field trip summaries, keep lab notebooks, write environmental issues papers and end of the term research reports. Students may, depending on the specific assignment, work in groups or individually. All of the laboratory courses, whether field based or lab based, require a written evaluation of data collected. An ESR 202 student recently won a library research award based on their term long evaluation of an urban watershed. Others in the class have also been finalists for the library research award. Oral presentations are an integral part of several ESR classes. An example is ESR 201 (Environmental Problem Solving: Laws and Policy), where students investigate a Northwest environmental issue. They research the problem; discuss how the problem is being or has been mitigated, the processes (both scientific and legal) of mitigation and which specific environmental laws apply to the problem (or issues). They offer their own opinions on the problem resolution. The students then write a report on their findings and make a PowerPoint presentation of their findings as well as write an abstract which is given to all students preceding their presentation. The presentation format is the same as the students may encounter at a professional meeting. Peer evaluation is another component used in many ESR classes. Other instructors have and continue to experiment with a variety of oral, written and poster presentations.

Community and Environmental Responsibility: This College Core Outcome is emphasized continually in all ESR classes. All ESR courses have this as a major focus. Courses cover issues associated with water quality, water treatment, soil and land quality, watershed issues and management, air pollution issues, solid waste issues, energy issues (alternatives and conservation), agricultural issues, and human cultural issues. Individual responsibility relative to the environment is also emphasized. Service learning is a critical component in many of the ESR courses. We are

continuing to modify course content and course materials to improve delivery of information relative to this outcome.

For each outcome assessed this year:

2. Describe the assessment design (tool and processes) used. Include relevant information about:

Self-Reflection

- The nature of the assessment (e.g., written work, project, portfolio, exam, survey, performance etc.) and if it is direct (assesses evidence mastery of outcomes) or indirect (student's perception of mastery).

During the 2011-2012 academic year the SAC assessed Self-Reflection. The assessment instrument was added to the laboratory notebook that covers each lab. The notebook had the following components that students needed to complete for each lab, the last component being self-awareness:

Content of Lab Notebooks

The grade for your lab notebook was based on having the following information for all labs where appropriate:

- A bound (**sewn only**, not spiral nor 3 ring binder), composition-type notebook,
- **Date of Lab**
- **Title of Lab**
- **Introductory notes for the lab – these are a summary of my PowerPoint notes – do not just print and glue my notes, but summarize them in your own words.**
- **Answers to all questions from the handouts**
- **All drawings (or photos) and notes for the lab – The photos and drawings will need to be labeled and described. Do not just glue them in – name them and describe what they are**
- **Figures drawings etc. for the notebook are to be either made directly in the notebook and/or glued and/or taped into the notebook – no staples!!**
- **At the end of each lab perform a self-assessment where you apply the information for each lab to your own experiences in your day to day life. In your assessment answer the following questions:**
 - **Has this lab given you insight into how your day to day actions influence the environment?**

- **How could you apply this information to helping and/or modify these impacts?**
- **Keep notes (journal) on how your actions and/or behavior may change as a result of the information learned in this lab.**
- **As you follow the daily news media relative to environmental issues – briefly describe how a particular lab or labs have influence your understanding of the issue.**

Notebooks and not the lab handouts will be turned in. You may use figures already in hand-outs but they must be attached into the notebook.

The notebooks must be neat and the labs discussed in order of completion by date.

- The student sample assessed (including sample size relative to the targeted student population for the assessment activity) process and rationale for selection of the student sample. Why was this group of students and/or courses chosen?

The students were in ESR 160 – their first course for environmental studies majors. By using this during the first course the students would be able to apply some of the processes in second year classes. The size of the spring 2012 class was 18 students.

- Any rubrics, checklists, surveys or other tools that were used to evaluate the student work. (Please include with your report). Where appropriate, identify benchmarks.

ESR Self-Reflection Rubric

Objective (Learning)	Level 4	Level 3	Level 2	Level 1
Did this component of your lab notebook impact your evaluation of environmental events? Reflect in detail on how labs impacted your thinking about interpreting and understanding environmental problems.	Understanding of environmental issues has been fully enhanced and personal learning is fully explained. Both attainment of technical expertise and interpretation has been applied accurately	Understanding of environmental issues has been enhanced and personal learning is explained. Both attainment of technical expertise and interpretation has been applied.	Understanding of environmental issues has not been enhanced and personal learning is poorly explained. Both attainment of technical expertise and interpretation has been poorly applied.	No understanding of environmental issues has been enhanced. Neither attainment of technical expertise nor interpretation has been applied.
Reflect on your own personal attitudes towards environmental issues. Did your work in labs cause those attitudes and interpretations to change?	Reflection on personal attitudes towards env. Issues are identified and are clearly and thoroughly linked to lab application to identify causes.	Reflection on personal attitudes towards env. Issues are identified and are clearly linked to lab application to identify causes.	Reflection on personal attitudes towards env. Issues are identified but only partially linked to lab application to identify causes.	No clear identification of changes or reflection on attitudes towards env. Issues.

- How you analyzed results, including steps taken to ensure that results are reliable (consistent from one evaluator to another).

There is only one section of ESR 160 during spring term. Student lab notebooks were collected twice during the term. Grades for both half term and end of term results were evaluated using the same criteria for each part of the spring term. After the first collection students were given comments and in class discussion on how to improve the lab notebooks – especially portion on self-reflection.

3. Provide information about the results (i.e., what did you learn about how well students are meeting the outcomes)?
 - If scored (e.g., if a rubric or other scaled tool is used), please report the data, and relate to any appropriate benchmarks.
 - Results should be broken down in a way that is meaningful and useful for making improvements to teaching/learning. Please show those specific results.

Summary table for student overall performance on lab notebook (overall as a %) and on Self-Reflection (grades 1- 4 based on rubric

Collection Period	Avg, Grade % (overall)	Avg. Grade – Self Reflection (1-4)
First ½ term	79	2.8
Final Notebook (second 1/2 term)	83	3.3

The students showed improvement on self-reflection from first half of the term to the final notebook. Improvement was made by students from first ½ of the term to the final evaluation of the notebook. I was impressed with the first notebook scores for self-reflection and even more impressed with the final evaluation. I learned that my explanation for evaluating the self-reflection actually made a difference. Though I do believe continued improvements can be made next year.

Students commented that they were made more aware of how to apply new knowledge in the evaluation of recent environmental events. They felt that by applying this information in a technical and thoughtful way they could themselves be better citizens and add their opinions to the environmental issues debate.

4. Identify any changes that should, as a result of this assessment, be implemented to help improve students' attainment of outcomes. (These may include, but are not limited to, changes in curriculum, content, materials, instruction, pedagogy etc).

The results of self-reflection assessments have given me a feeling for what it takes to mentor students to add self-reflection to the critical thinking assessment to make a more complete evaluation of environmental issues and problem solving. These assessments, along with other outcome assessments when taken as an integrated package allow students to indeed not become aware of how they fit into an environment, but how they can become part of the solution to resolving environmental problems.

5. Reflect on the effectiveness of this assessment tool and assessment process. Please describe any changes to assessment methodology that would lead to more meaningful results if this assessment were to be repeated (or adapted to another outcome). Is there a different kind of assessment tool or process that the SAC would like to use for this outcome in the future? If the assessment tool and processes does not need to be revised, please indicate this.

I have seen a new way to evaluate student success. These assessments, when taken in addition to traditional grading allow the students to be better able to deal with real world problems and make contributions to resolving these environmental problems. I don't have any major insights as to how to change this assessment tool, but I will remain minded to new ideas that will surely develop over time. The SAC will not revise the tool at this time, but next academic year may result in some changes.